ECO-PRODUCTS DIRECTORY 2004

For Sustainable Production & Consumption

ASIAN PRODUCTIVITY ORGANIZATION
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Foreword

Greening the supply chains is currently one of the main key pillars supporting the implementation of the APO’s Green Productivity (GP) Program. The program related to greening of supply chains took shape with the establishment of the GP Advisory Committee (GPAC) in Japan in 2003. The committee, involving senior representatives from around 40 leading Japanese companies, is currently chaired by Mr. Yoichi Morishita, Chairman of Matsushita Electric Industrial Company Ltd. Its role is to advise and support the APO in implementing GP-related activities by sharing the rich experience of those companies in environmental management. The GPAC identified three core activities in the field of greening supply chains; compiling and updating an eco-products database; organizing an eco-products exhibition on a regular basis in Asia; and implementing pilot projects on greening supply chains.

The development of a database consisting of eco-materials and eco-products including services will facilitate the greening of supply chains through the expansion of green markets and development of global standards for eco-brands in the Asian region. As an early initiative, this first publication will only cover selected eco-products available in Japan. Complied in the form of a data book, the database is expected to create awareness that eco-products contribute to the goal of sustainable production and consumption. Up to 700 selected eco-materials and eco-products are featured in this publication.

This eco-product database publication will be launched during the Eco-Products International Fair held in Malaysia in September 2004, the first eco-products exhibition held in Southeast Asia. It is my hope that this publication will contribute to an enhanced understanding of the importance of environmentally friendly products and services while also accelerating the expansion of green markets in Asia, which is currently the world’s manufacturing center.

Our sincere thanks are due to Professor Ryoichi Yamamoto, Chairman of the Subcommittee on the Eco-Product Database of the GPAC, all the members of the committee and working group, and the Society of Non-Traditional Technology for their dedicated efforts and leadership in bringing this publication to fruition while creating greater awareness of the importance of harmonizing productivity with environmental preservation among the business community and public in the APO region.

Takashi Tajima
Secretary-General

Tokyo
September 2004
Introduction

Achieving a Sustainable Economy through Eco-innovation

It is now clear that if the current world economy continues its present course, environmental destruction and social collapse will be inevitable. The following facts should provide sufficient empirical evidence to support this assertion. For example, overall 760 tons of CO₂ are emitted globally every second; about 50% of this accumulates in our atmosphere and has become the major cause of global warming. Other signs and reasons include the reduction of oxygen at a rate of 710 tons per second due to excessive consumption, an increase in the world population by 2.4 persons per second, and the exponential increase in the production of materials such as metal, cement, and plastic. In the industrial civilization of the 20th century, economic development inevitably increased the consumption of resources and energy, as well as the discharge of substances that place a burden on the environment. The increased input and output of such substances has made clear the extent of resource depletion and limited ability of earth’s ecosystems to absorb and purify substances causing environmental burdens. In the 21st century, giant nations such as China and India are starting to show rapid economic growth with massive consumption of resources and energy accompanied by massive discharges of environmentally burdening substances, following in the footsteps of the OECD nations. On the other hand, as summarized in a recent report by the Swedish government, attempts to uncouple massive consumption of resources and energy and massive discharges of environmentally unfriendly substances from economic growth have failed even in OECD members. This implies that while the world economy grows at a rate of 3% every year, we are heading directly toward the depletion of resources, environmental destruction, and social collapse.

To resolve this problem, we need to promote eco-innovation at every level, including technical, policy, management, and individual lifestyle levels, and disseminate such innovation swiftly into society. The goals are clear: reducing materialism, substituting for hazardous substances, and decarbonization in energy use.

In eco-innovation efforts, it is vital to increase two indicators. One is improving performance per resource input or increasing resource productivity, which expresses the economic added value. The other is eco-efficiency, which indicates improved performance per environmental impact or increased added economic value during the product life cycle. Worldwide, active efforts are being committed to eco-innovation. In 2000, the EU issued the End-of-Life Vehicles Directive to ban the use of lead, mercury, hexavalent chromium, and cadmium. In 2001, the EU published a Green Paper on Integrated Product Policy. Since 2003, based on the Restriction of Hazardous Substances Directive or Energy Using Product Directive Proposal, businesses have been required to prepare ecological profiles of their products. In addition, the Registration, Evaluation, and Authorization of Chemicals Regulation Proposal is further reinforcing chemical substance management. In 2001, Japan enacted the Law on Promoting Green Purchasing to mandate eco-friendly procurement by national and local governments. Meanwhile, the United Nations Environment Programme is striving to spread the cleaner production concept and the Asian Productivity Organization its Green Productivity concept worldwide. All these activities will promote eco-innovation, along with the development of eco-materials, eco-products, and eco-services. Still, no methods for the rapid and explosive spread of eco-innovation to communities have been developed. This document is the first attempt to remedy this lack in Asia. Just as a small ripple can set off a tidal wave, I am convinced that Asia will soon see markedly accelerating trends in Green Productivity, eco-design, and eco-products. Human beings are currently facing an environmental struggle of life-or-death proportions: Which will be achieved first, environmental destruction and social collapse or the development and dissemination of eco-innovation?

Ryoichi Yamamoto
Professor
Institute of Industrial Science, University of Tokyo
Background of the Eco-Products Database

Subcommittee on the Eco-Products Database & Database Working Group

As mentioned in the Foreword, the Green Productivity Advisory Committee (GPAC) (List 1) of the Asian Productivity Organization (APO) decided to compile a database on major eco-materials, eco-components, and eco-products produced in Japan with the aim of disseminating eco-friendly products in Asia and officially distributing it at the first eco-products fair in Southeast Asia, the Eco-Products International Fair 2004, to be held in Malaysia from 2 to 4 September 2004.

To launch the database project, the Subcommittee on the Eco-Products Database (chaired by Ryoichi Yamamoto, see List 2) was set up within the GPAC and the first subcommittee meeting was held in February 2004. The meeting discussed database development methodology, especially standards, companies to be included, specific work methods, and database maintenance and management methods. As a result, it was decided that the Society of Non-Traditional Technology (SNTT) would be requested to cooperate in the compilation work.

Upon receiving this request from the Subcommittee on the Eco-Products Database, the SNTT established a Database Working Group (List 3) comprised of scientists and experts from the University of Tokyo, the National Institute for Materials Science, and the Green Purchasing Network (GPN) to undertake detailed reviews for compiling the database.

Structure of Database and Data Collection Methods

The Database Working Group held three committee meetings to review proposed structures for the database, selection of data to be included, and data format. The results of the review were introduced during the second meeting of the Subcommittee on the Eco-Products Database (April 2004). Finally, basic approval was attained before the actual work began.

The database structure and data collection methods are as follows:

1. Proposed database structure
   (1) Definition of eco-material, eco-products, and eco-components
   (2) Development of eco-materials and eco-products in Japan
   (3) Related organizations
   (4) Data
      I. Eco-materials Classification by material (five categories + composite materials)
      II. Eco-products 16 product categories, niche products, other features
      III. Eco-components Semiproducts
   (5) List of companies providing data and their Web sites

2. Data provided per product
   (1) Product name and features
   (2) Description
   (3) Photograph
   (4) Company name
   (5) Web site, etc.
   (6) Category

3. Criteria for inclusion in the database
   (1) Listed company
   (2) More than 5,000 employees (at least approximately 3,000 employees depending on business area)
   (3) Disclosure of an environment report on the Web site
   (4) Products with top-three market share (according to Nikkei data from autumn 2003)
   (5) Data on other characteristics may be provided based on the decision of the Database Working Group even if the above criteria are not met.

About 700 eco-materials, eco-products, and eco-components manufactured in Japan were included in the database.

List 1
List of members of the GPAC

List 2
List of members of the Subcommittee on Eco-Products Database

List 3
List of members of the Database Working Group
Green Productivity Advisory Committee

Members List

(As of end of June 2004)

Chairperson
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Eco-materials, Eco-components, Eco-products - What are they? -

The term “eco” originally came from two words, “Environment” and “Consciousness”. It has been widely used with “material” “product,” or “service” in Japan to indicate that those materials, products, or services take environmental impacts into account throughout their life cycle.

1. Eco-materials

The term “eco-materials” was first introduced to Japan by Professor Ryoichi Yamamoto and his colleagues at the University of Tokyo in 1991 as a proactive measure to respond to the movement for sustainable development. Eco-materials are defined as those can contribute to environmental improvement throughout their life cycle, while maintaining acceptable performance. The environmental performance of eco-materials can be improved by:

1. Avoiding and/or reducing the use of non-renewable and less abundant resources;
2. Enhancing the closed material loop by recycling and reusing waste;
3. Increasing resource efficiency, including that of energy and materials;
4. Using more durable materials with fewer maintenance requirements;
5. Promoting the use of renewable resources and energy; and

In other words, eco-materials are a key concept in material science and technology to minimize environmental impacts, enhance the recyclability of materials, and increase energy and material efficiency. Eco-materials can enhance the development of eco-products as well as the promotion of the green procurement movement in Japan and other parts of the world.

2. Eco-components

The term “eco-components” as defined in this book refers to those used as components or parts of eco-products. Eco-components can be one of the essential, functioning parts of a subsystem or equipment, or a combination of parts, assemblies, attachments, or accessories of an eco-product. They are sometimes called semi-products and used as inputs in eco-product manufacturing.

Similar to eco-materials, eco-components are produced with consideration of environmental impacts through the whole life cycle. As a result, the six factors improving the environmental performance of eco-materials can also be applied to eco-components. Eco-design or life cycle design concepts, methodologies, and tools are also used in the production of eco-components. In addition, eco-components can contribute to the manufacture of eco-products through eco-design by designing for disassembly, upgradability, and waste prevention.

3. Eco-products

Eco-products are designed according to the eco-design concepts and principles. In other words, eco-products are products with environmentally friendly features. Life cycle concepts and engineering play a very important role during the development phase of eco-product manufacture. Eco-products are made from improved raw materials including the use of recycled or biomass materials. In addition, during the production process, minimal energy and water resources are used while emitting less waste and pollutants. In the consumption phase, the use of eco-products can result in energy and water savings, emission minimization, and reducing waste and the need for waste treatment. Eco-products are also designed to ensure that their materials and components can be recovered and recycled.

In Japan, eco-products normally bear eco-labels, classified as type I, type II, or type III according to ISO 14020 standards. In addition, products listed in the database of the Green Purchasing Network are also considered to be eco-products.

While the economy is shifting from the production of goods toward services, eco-products can be transformed into services to improve resource productivity and eco-efficiency.
Categories

Recently, many eco-products have been developed in Japan. Eco-labelling (types I to III) has been introduced to standardize or evaluate these products. The classification of available eco-products into categories and the compilation of a databook on such products should aid both consumers and companies in using and developing eco-products easily and appropriately. Based on this objective, information collected on eco-products was categorized from three perspectives: A) environmental load; B) environmental performance index; and C) life cycle stage. These categories are considered useful for investigating the effects that eco-products have on which environmental loads, with what level of eco-performance, and at which stage.

For category A, products were categorized according to the environmental impact reduction with the use of eco-products. Among various environmental problems currently observed, products were grouped according to their impact on the following five: global warming as a global environmental problem; air pollution as a local environmental problem; the issue of hazardous substances; management of waste due to landfill site limitations; and the consumption of resources due to Japan’s dependence on other countries for most. Details of the classification are as follows:

A1. **Global warming** : Products effective for reducing greenhouse gases such as CO₂ which cause global warming. The category includes products with energy-saving effects and those that contribute to decreasing deforestation, in addition to products that directly reduce the discharge of greenhouse gases.

A2. **Air pollution** : Products that reduce the discharge of air pollutants such as nitrogen oxides, sulfur oxides, and suspended particulate matter, discharge of which is restricted by the Air Pollution Control Law and other governmental regulations. The category also includes products with properties promoting air cleaning.

A3. **Hazardous substances** : Products with actions to reduce the discharge of substances affecting the human body and ecology such as substances subject to the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law), and material safety data sheet. The category includes products that use hazardous substances in lesser amounts or which use no hazardous substances at all, as well as certain products composed of hazardous substances which can be reused/recycled.

A4. **Waste** : Products that reduce the final disposal amount. They include those with reduced volume or weight and those supported by reuse/recycling systems.

A5. **Resource consumption** : Products that reduce the consumption of resources such as minerals, wood, water, etc. They include those using few resources in the product itself or in the manufacturing process and those that can be reused/recycled efficiently.

In category B, products were categorized based on the environmental performance required for resolving the environmental problems in “A” above. The following seven environmental performance indices were selected:

B1. **Recyclability** : Index of the ease of recycling. The category includes products that are easy to disassemble and classify for reuse and recycling and those designed so that recycling can be carried out efficiently.

B2. **Longevity** : Index of longer life for conventional products. The category includes products designed for longer-term use and those of which the use can be extended by repair.

B3. **Resource saving** : Index of resource saving for conventional products. The category includes products designed to save resources by reducing product weight or enhancing product design efficiency.

B4. **Higher quality** : Index of enhanced quality for conventional products. The category includes those effective for improving the environment due to enhanced quality and services (environmental efficiency) achieved for the same environmental loads.

B5. **Energy saving** : Index of energy saving for conventional products. The category includes those made
under an efficient process design, those that have been made lightweight, or those designed to reduce energy consumption during use.

B6. Environmental purification: Index of products with the function of cleaning the environment. The use of these products should detoxify hazardous substances or waste in the environment and recycling systems.

B7. Usage of recycled materials: Index of the enhancement of the rate of use of recycled resources for conventional products. The category includes products that use recycled resources in the products themselves or during the manufacturing process.

Furthermore, as it is preferable that measures for environmental problems be implemented in the entire product life cycle, for category C products were distinguished by life cycle stage as measured using the life cycle assessment method. The following six life cycle stages were selected:

C1. Materials extraction: Stage for mining resources used for products in mine sites. The category includes facilities for reducing environmental impact in this stage.

C2. Materials and components production: Manufacturing stage of half-finished products in general, such as primary products and parts serving as the material for products. Products in this category include half-finished products and products designed to reduce the environmental load in the manufacturing process.

C3. Design and materials selection: Stage in which parts and materials are selected and products are designed. The category includes those made of parts and materials that are eco-friendly or designed taking the environment into consideration, and eco-products based on design.

C4. Products manufacture: Stage in which products are manufactured using parts and materials. The category includes products reducing the environmental load during the manufacturing process.

C5. Product use, Maintenance and Repair: Stage in which manufactured products are used by consumers, including prolonged use due to repair. The category includes products with a reduced environmental load during use such as energy-saving products, products cleaning the environment during use, products of which the life can be prolonged by repair, and long-life products.

C6. End-of-life: Stage in which products are disposed of/recycled after use. The category includes products with low final disposal amounts, those easy to break down, those with high reusability/recyclability, and products with recycling systems.

Figure Conceptual outline of a product's life cycle stages.
1. Development of Basic Concepts

1.1 History of Eco-design

Eco-design has a long history dating from the 1960s. The concept, methodologies, and tools of eco-design can be divided into product-oriented and system-oriented approaches (Figure 1). The publication of Silent Spring by Rachel Carson in 1962 initiated a new movement for environmental protection and sustainable development. Since then, various organizations and governments introduced principles, methodologies, programs, laws, and regulations related to eco-design and sustainable development. The first life cycle assessment (LCA) project was conducted by Coca Cola in the USA in 1969. The declaration of the United Nations Conference on the Human Environment in 1972 also marked a milestone in eco-design history. In the 1970s, Ruedi Mueller-Wenk, a Swiss engineer, introduced the concept of “eco-balance” or “ecological accounting” to address the impact of products, companies, and others on the environment. Later in that decade, the three main concepts of eco-design, Resource Productivity, The Natural Step, and Industrial Ecology, were introduced in Europe and North America.

The last decade of the 20th century saw a bloom in the development of eco-design concepts, methodologies, and tools. In 1991, the eco-material concept was introduced to Japan by Professor Ryoichi Yamamoto and his colleagues as a proactive measure for eco-design and sustainable development in the field of material science and engineering. At the same time, a green chemistry program was started in the USA. The World Business Council for Sustainable Development (WBCSD) introduced the eco-efficiency concept in 1992. One year later, Ernst Ulrich von Weizsäcker introduced the factor 4 concept and then the factor 10 concept was introduced by his colleague Friedrich Schmidt-Bleek in Europe to enhance resource productivity while reducing the impact on the environment by a factor of 4 or 10, respectively, to achieve the goal of sustainable development. These two concepts have been widely used in Japan as indicators of sustainable development or of the benefits of eco-products. Following the introduction of the pollution prevention concept in the USA, several other concepts such as Cleaner Production, Green Productivity, zero Emission, and Inverse Manufacturing were initiated in Europe and Asia in 1994. In the period from 1996 to 1999, various system-oriented concepts were proposed, including the ISO 14000 series, functional economy, Product-Service System, Servicizing, Integrated Product Policy, Sustainable Service System, and Triple bottom line. At the same time, the United Nations Environment Programme (UNEP), in collaboration with scientists in the Netherlands, published the first eco-design manual under a project called PROMISE. Since then, the trend in concept development has moved toward holistic management systems of products and services.

At the beginning of the 21st Century, European and OECD countries introduced new systems and tools to cope with the growing demand for the appropriate management of chemicals. The first system was a globally harmonized system (GHS) for the classification and labelling of chemicals, introduced in 2001. One year thereafter, the OECD countries organized a workshop in Tokyo, Japan, to develop a plan for a more holistic approach to chemical management, referred to as the Chemical product policies (CPP). In 2003, European scientists proposed the establishment of a new EU directive setting eco-design requirements for energy-using products (EUP). This proposed directive may be enacted by the end of 2004, and when it is, it will be mandatory for manufacturers to address the life-cycle environmental performance of electrical and electronic products.
As shown in Figure 1, Eco-design development trends are shifting from products to services, from the old industrial economy to the new service economy. The importance of system-oriented approaches and concepts has increasingly been emphasized in the later phases of development.

1.2 Eco-materials
In the beginning, the eco-material concept focused on the development of materials that could contribute to environmental conservation and protection. Environmental issues and functional properties of materials were considered, including structural materials used in construction or automobile manufacture and special functional materials such as semiconductors or solar cells. Eco-materials now include the socioeconomic aspects, as shown in Figure 2. Halada and Yamamoto [1] stated that there are three dimensions to eco-materials: 1) expanding human frontiers or functional properties; 2) coexistence with the environment; and 3) optimizing amenities or socioeconomic performance.

A further development of the eco-materials concept by Yagi [2] was based on the ten superior properties of eco-materials (Figure 3). This is considered one of the most comprehensive definitions. From the viewpoint of material science and engineering, an eco-material should have at least one of those ten superior properties compared with conventional materials. A more detailed explanation of those properties of eco-materials is given in Box 1. As a result, a very wide range of eco-materials has been developed in various industries such as iron and steel, electronics, chemicals, paper, construction, textiles, and polymers.

![Figure 2 Three dimensions of the eco-materials concept](image)

![Figure 3 Superior properties of eco-materials in the 21st century](image)

Recently, the Eco-materials Forum in Japan has started an eco-materials guideline project to develop a standardized concept of and criteria for the evaluation of eco-materials. The conceptual definition of eco-materials in this project is: “Eco-materials are those that can contribute to reduction of environmental burden throughout their life cycles” [3]. In other words, any material can be an eco-material as long as it satisfies prerequisites (I) and the necessary conditions for eco-materials (II and/or III) in Figure 4. The prerequisites of eco-materials include the optimization of physical and/or chemical properties and superior technical performance (I in Figure 4). The necessary conditions are: significant environmental improvement compared with conventional materials (II); and no tradeoff of the environmental load throughout the whole life cycle, and if there is a tradeoff, all life cycle environmental data must be available to verify the improvement of environmental performance (III).

It should be noted that the entire life cycle impacts of eco-materials must be considered and improved. Condition II includes six vectors: 1) green resource profile; 2) minimal environmental impact during the material manufacturing process; 3) high productivity in use; 4) minimal use of hazardous substances; 5) high recyclability; and 6) high environmental purification efficiency. It is not necessary for an eco-material to include all six vectors, but it must include at least one.

Figure 4  Conceptual model of eco-materials within the context of material sciences

Box 1  Definitions of superior properties of eco-materials

1. Energy-saving ability reduces the total life cycle energy consumption of a system or device.
2. Resource-saving ability reduces the total life cycle material consumption of a system or device.
3. Reusability allows the reuse of collected products for similar functions.
4. Recyclability allows the use of collected products as raw materials.
5. Structural reliability determines the basic mechanical integrity.
6. Chemical stability allows the material to be used over the long term without chemical degradation.
7. Biological safety allows use with no negative effects on ecological systems.
8. Substitutability allows use as an alternative to “bad” materials.
9. Amenity elements ensure the comfort of the working environment.
10. Cleanability allows a pollutant to be separate, fixed, removed, and detoxified in environmental treatment processes.
In addition to the development of methodologies and tools, several books on eco-materials have been published in Japanese to help practitioners, students, and other interested persons apply the concept, methodologies, and tools. The latest, an eco-material selection guideline, was published in June 2004.

Along with the publication of books, an eco-material international conference has been held every two years in Japan, China, and the USA. These conference provides a good opportunity for materials researchers and industrial engineers to exchange ideas related to eco-materials. In 2003, the fourth eco-material conference was held in Yokohama, Japan, which attracted more than 150 presentations including 26 invited lectures. In 2005, the fifth international conference on eco-materials will be organized in Singapore.

1.3 Eco-components and Eco-products

Similar to eco-materials, the prefix “eco” in eco-components and eco-products originally denoted that they were environmental consciousness or ecologically sound. It also reflected economic issues in later phases of development. The concept of eco-components and eco-products in Japan began to develop in the 1980s, along with the development of the eco-design concept, methodologies, and tools. Several definitions have been introduced by various organizations and industries under three different auspices: the Green Purchasing Network (GPN), type I and type II eco-labelling, and eco-product exhibitions. In other words, there are numerous criteria for eco-component and eco-product evaluation. Almost every large Japanese company such as Sony, Canon, Panasonic, NEC, and Toyota has its own criteria. In addition, each product category may also have different criteria. For example, NEC has 24 eco-product standards to evaluate its products [4]. However, they all share such common aspects as resource and energy saving, recyclability, use of recycled materials, longevity, and ability to contribute to environmental purification processes. These common aspects have been described in eco-design guidelines or in ISO standards on eco-labelling (ISO 14020 to ISO 14025).

The first set of eco-products was introduced in 1989 when the Eco-Mark Program was established [5]. The Eco-Mark Program is classified as type I eco-labelling according to ISO standards. The number of certified products reached more than 5600 in 2003, up from 265 in 1989. In addition, Eco-Mark product categories also increased from 14 in 1989 to 59 in 2003. Two basic requirements for Eco-Mark products are 1) the minimization of environmental impact during the manufacturing, use, and disposal phases compared with similar products; and 2) the reduction of environmental impact by any means. Furthermore, the Eco-Mark criteria for eco-products depend heavily on the life cycle concept. The product life stage covers from resource extraction to manufacturing, distribution, use and consumption, disposal, and recycling. A total of nine environmental aspects are taken into account during the development of product criteria:

1. Resource consumption;
2. Discharge of greenhouse gases;
3. Discharge of ozone layer-depleting substances;
4. Deterioration of eco-systems;
5. Discharge of atmospheric pollutants;
6. Discharge of water pollutants;
7. Discharge/disposal of solid waste;
8. Use/discharge of hazardous materials; and
9. Other environmental impacts.

In addition to the basic requirements for Eco-Mark products, environment-related laws and regulations are another important issue in developing these criteria to ensure the compliance of products with regulations. All Eco-Mark products must comply with laws and regulations. The quality of Eco-Mark products is crucial and included in the product criteria.

A few years after the introduction of the Eco-Mark Program, several companies introduced their own criteria for eco-products. These are classified as type II eco-labelling [6]. In the beginning of concept development, most criteria for eco-products focused on one or two environmental aspects including energy saving and/or compliance with laws and regulations. In the later phase, environmental and economic aspects have increasingly been included, especially since the start of the Factor X Program in Japan with the participation of more than 50 companies. The criteria for type II eco-labelling vary by company. Companies participating in the Factor X Program such as Mitsubishi, Matsushita Electric, Hitachi, Toshiba, Canon, and Fujitsu have developed their own calculation methods for type II eco-labels. The details of eco-efficiency or the Factor X Program are explained in section 2.4. Other companies such as NEC have also developed standards to evaluate their eco-components and eco-products. The details vary and depend on the focus of the company. However, the three main concerns of global warming, resource efficiency, and energy efficiency are found in most criteria sets.

In addition to eco-labelling programs, the GPN and the enactment of the Green Procurement Law in Japan have played a major role in eco-product development [7]. In 1994, the Shiga prefectural government
was the first local government in Japan to introduce comprehensive guidelines on green purchasing. Two years later, the GPN was established to promote the green purchasing concept and activities. In 2000, the Japanese government enacted the Green Procurement Law. Under the law, all state institutions must follow its stipulations in the purchase of 14 product categories such as copy and printing paper, stationery and office supplies, office furniture, electronic appliances, and others. The criteria for each product category were mainly based on those of the Eco-Mark Program and GPN criteria or on existing governmental targets.

2. Methodology and tools for eco-materials and eco-products

2.1 Eco-design manuals

During the history of eco-design, it has been referred to using many terms, such as Design for the Environment, Green Design, Eco-Redesign, life Cycle Design, Environmentally Conscious Design, or Design for Sustainability. Numerous series of eco-design manuals have been published worldwide, and about 20 have been published since 1994. In addition, some 60 eco-design tools are available. In Japan, more than 10 eco-design manuals have been published in Japanese either as original or translated versions.

In 1997, the UNEP published Eco-design: A Promising Approach to Sustainable Production and Consumption [8]. Known as the PROMISE Manual, it was intended to be used by product designers and developers. The manual was based on academic R&D on Design for the Environment at the Technical University of Delft (TU Delft). The manual has been widely recognized as the most comprehensive and relevant to the eco-efficiency of materials, components, and products.

The PROMISE Manual was mainly based on a qualitative evaluation model consisting of a comprehensive checklist of eight strategies at four levels of product development and 33 sub-strategies (Figure 5). This qualitative approach was intended to stimulate creative solutions at the most basic level of product design including material selection, production forms, and process choices. In addition, the manual includes a continual improvement procedure (Plan-Do-Check-Act), worksheets for planning and analysis, examples, and a resource guide. The primary focus of this manual is on manufactured goods. Many of the strategies, however, could be applicable to services as well.

![Diagram of four levels of eco-design strategies in the PROMISE Manual](image)

Source: UNEP, 1997

Figure 5 Four levels of eco-design strategies in the PROMISE Manual

A few years after publication of the PROMISE Manual, the UNEP and TU Delft decided to publish a new manual on eco-design, which will be completed in 2004. The Japanese version of the new manual is expected to be available in 2005. It will not completely replace the PROMISE Manual, but will offer updated information and include new areas of eco-design such as eco-innovation and eco-benchmarking (Figure 6). Eco-benchmarking will ensure improvements in eco-products compared with existing or previous products. Eco-innovation will steer product designers or developers in the appropriate direction of new eco-products, newly emerging markets, and the use of sustainable technologies during the product development phase.
In addition to eco-redesign, eco-benchmarking, and eco-innovation modules, other supporting modules such as product-oriented environmental management system (POEMS), internal and external drivers, sustainable consumption, and communication will be added in this manual. Each module will include four levels to meet the specific needs of different users. The first level (A) provides a basic introduction to the topic. This level is useful for top and middle management level. The second level (A+) gives more in-depth information and the theory of the topic, which are meant for middle managers, students, trainers, and academics who wish to examine further details. The third level (B) consists of tools and skills needed for eco-design projects. Level B is for students, academics, trainers, and product designers. Finally, level C explains how to implement the eco-design concept, tools, and skills in an organization or company.

2.2 Eco-material classification

Some researchers tried to classify eco-materials from the viewpoint of the LCA concept. New developments in materials or eco-materials should be viewed in the full context of sustainability. A recent study by Nguyen et al. proposed a new eco-material classification from the perspective of sustainability. The Natural Step [9]. This classification method is based on four sustainable principles, in which eco-materials are classified as: 1) cyclic materials; 2) materials for ecology and environmental protection; 3) materials for society and human health; and 4) materials for energy based on the two main criteria of source and function. These four main categories are then further classified into ten sub-categories (Figure 7).

![Diagram of eco-material classification](image)

Qualitative assessment and classification of 359 identified commercial eco-materials were carried out during the research of Nguyen et al. Examples of eco-materials are shown in Table 1. As illustrated...
in Figure 8, the main focus of Japanese industries in material development is “cyclic” materials, which accounted for 31% of the total. This was done by developing recycled materials and increasing the efficiency of material usage through increased wear resistance or longevity, or process simplification. The second issue is related to health, classified in the materials for society and health category (accounting for 29%). Hazardous free materials such as lead-free soldering material, halogen flame-retardant-free plastics, and chromium-free steel received great attention in this category. In the materials for energy category, accounting for 22%, effort is made to increase energy efficiency by reducing the weight of materials for automobiles such as by using ultra-light steel and aluminum-magnesium lightweight alloys. In the disposal and treatment category, accounting for the remaining 18%, biodegradable plastics, catalysts, and biological membranes, and microbial enzymes are among several eco-materials commercially available in Japan.

![Pie chart showing distribution of eco-materials among the four groups of Nguyen et al.](chart)

**Figure 8** Distribution of eco-materials among the four groups of Nguyen et al.

<table>
<thead>
<tr>
<th>Sub-category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.A: Recycled materials</td>
<td>Eco-cement, coal ash concrete, glass ceramics from waste, recycled plastics, silica fertilizer, marine tetra blocks</td>
</tr>
<tr>
<td>I.B: Renewable materials</td>
<td>Wood ceramics, wood-based materials, soil ceramics, biodegradable plastic made from vegetable base</td>
</tr>
<tr>
<td>I.C: Materials for efficiency</td>
<td>Waste reduction materials, wear-resistant metals and alloys, prepainted steel, corrosion-resistant steel and alloys</td>
</tr>
<tr>
<td>II.A: Materials for waste treatment</td>
<td>Membranes for exhaust gas separation, ion-exchange resins, microbial enzymes, absorbent materials for oil and grease removal</td>
</tr>
<tr>
<td>II.B: Materials for reduction of environmental load</td>
<td>Catalysts and biological membrane materials for fuel cells, carbon-fiber composites, photo-catalyst coating materials for construction</td>
</tr>
<tr>
<td>II.C: Materials for easy disposal or recycling</td>
<td>Biodegradable plastics, functionally graded material, colorbetos to replace asbestos, Toyota super olefin plastic (TSOP)</td>
</tr>
<tr>
<td>III.A: Hazard-free materials</td>
<td>Lead-free soldering, halogen flame retardant-free plastics, chromium-free steel, volatile organic compound-free adhesives, heavy metal-free polyesters</td>
</tr>
<tr>
<td>III.B: Materials for reducing human health impacts</td>
<td>Vibration-damping steel sheets, soundproof panels, antibacterial coating materials, surgical bone-ceramics</td>
</tr>
<tr>
<td>IV.A: Materials for energy efficiency</td>
<td>Ultra-light steel, aluminum-magnesium lightweight alloys, heat-resistant alloys for turbines, high magnetic-induction steel sheets, highly endothermic steel, chromo-phobic fibers, heat mirror film for household energy saving</td>
</tr>
<tr>
<td>IV.B: Materials for green energy</td>
<td>High-grade silicon for solar cells, thermoelectric conversion materials, selective transparent glass, durable sealing sheets for solar batteries</td>
</tr>
</tbody>
</table>

The classification of eco-materials using the principles and concepts of sustainability can help product designers understand the current development status in this field. It also helps strategic environment
planners take the right directions during the planning phase. This assessment will also promote green purchasing programs that are currently popular in Japan.

2.3 Eco-materials guidelines

As indicated above, numerous eco-materials have been commercialized in Japan. These eco-materials were judged by various definitions and criteria that were sometime incompatible. The need to introduce standardized criteria to define and evaluate eco-materials prompted Japanese scientists and engineers to initiate a project called the “eco-materials guidelines” under the Eco-materials Forum. Qualitative guidelines have recently been introduced as the outcome of that project. For company to determine whether its materials are eco-materials, it must use a qualitative checklist including the six vectors shown in Figure 4 and the entire life cycle, as illustrated in Figure 9. After covering all six vectors on the checklist, any doubts are resolved when company personnel and experts double-check using the LCA method. In this case, a cradle-to-grave life cycle inventory process is carried out to verify the results.

![Life cycle stages in the new Eco-materials Forum eco-material guidelines](image)

**Figure 9  Life cycle stages in the new Eco-materials Forum eco-material guidelines**

2.3.1 Green resources profile

The green resources profile is related to both the new resource and recycling stages. The main question is whether “materials are from resources with a green resource profile” [3]. The four major issues in such a profile are:

1) Reducing the use of nonrenewable resources;
2) Substituting nonrenewable with well-managed renewable natural resources;
3) Reducing the use of renewable natural resources; and
4) Increasing the use of recycled resources.

Several quantitative indicators can be used, including total material requirement (TMR), material intensity (MI), ecological footprint (EF), and ratio of recycled materials used.

2.3.2 Production process with minimal environmental impacts

Production processes involving minimal environmental impacts are related to the four life cycle stages of material manufacturing, product manufacturing, recycling, and waste disposal. The main question is whether “materials are fabricated, disposed of, and recycled through a process with low environmental impact” [3]. The seven major issues are:
1) Reducing CO₂ emissions during material manufacturing processes;
2) Reducing emissions of pollutants during material manufacturing processes;
3) Increasing production yields;
4) Reducing energy and input materials during product manufacturing processes;
5) Reducing energy and input materials during the recycling process;
6) Reducing energy and input materials during the waste disposal stage; and
7) Reducing landfill areas.

Quantitative indicators for this aspect could include the CO₂, SOx, and NOx emissions, energy consumption, and material productivity.

2.3.3 High productivity
High productivity is related to the consumption stage of the whole life cycle of materials. The main question is whether “materials can exhibit high productivity in the applied product” [3]. Major issues are:

1) Reducing energy and input material at the consumption stage; and
2) Enhancing the reuse and longevity of materials and products.

Quantitative indicators could be energy and material efficiency during the consumption stage.

2.3.4 Minimal hazardous substances
Minimizing the use of hazardous substances involves the material manufacturing, collection, and recycling stages. The main question is whether “materials could reduce the emission of hazardous chemical substances from the product and its waste” [3]. Major issues are:

1) Reducing the use of hazardous or potentially hazardous substances; and
2) Establishing a collection system for hazardous chemical substances from used products.

Quantitative indicators of this aspect could be the total amounts of hazardous substances used and released in these life cycle stages. Information on hazardous substances could be obtained using the pollutant release and transfer register (PRTR) approach.

2.3.5 High recyclability
High recyclability is related to the material manufacturing and recycling stages. The main question is whether “material could contribute to efficiency recycling” [3]. Major issues are:

1) Increasing the ratio of recycled resources;
2) Enhancing the ease of separation and recoverability of other products;
3) Establishing a closed-loop recycling system; and
4) Enhancing an open-loop recycling system.

A quantitative indicator could be the ratio of recycled over virgin material.

2.3.6 High environmental treatment efficiency
High environmental treatment efficiency involves the consumption stage. The main question is whether “material can increase the efficiency of environmental treatment or purification processes” [3]. Major issues are:

1) Purifying volatile organic compounds (VOCs) or sick-building syndrome organic compounds in the living environment;
2) Removing hazardous substances in contaminated environments (air, water, and soil); and
3) Removing hazardous substances from exhaust gas.

2.4 Eco-efficiency and Factor X
Eco-efficiency and Factor X are normally used as indicators for eco-materials, eco-components, and eco-products for decision making or communication to stakeholders. The term eco-efficiency was coined by the WBCSD in 1992 [10]. The eco-efficiency of products or services was defined in a WBCSD report as:

\[
\text{Eco-efficiency} = \frac{\text{Product or service value}}{\text{Environmental influence}}
\]
Since then, many Japanese companies have shown interest in further development and implementation of these indicators. Eco-efficiency methods in Japan can be classified into two main categories: those at the company or factory level and those at product or service level.

2.4.1 Company level

Many Japanese companies such as Sony, NEC, Ricoh, and Fuji Xerox have been effectively using eco-efficiency indicators to inform their environmental management and performance. The most effective eco-efficiency indicators used are sales revenue and environmental impact. However, each company’s indicator is slightly different in terms of system boundaries (gate-to-gate or life cycle basis) and the environmental impact categories selected.

2.4.2 Product or service level

A national project on eco-efficiency has been carried out by the Japan Environment Management Association for Industry (JEMAI) on Factor X since 2001. The aim is to define the factors (indicators or indices) for products and services which could be used by Japanese industries. The two main focuses in the Factor X Program are resource productivity and environmental efficiency (Table 2). Many large Japanese companies participate in this project, including Mitsubishi Electric, the Matsushita Electric Group, Hitachi Ltd., Canon Corporation, Ricoh Corporation, Japan NTT, Fujitsu Company, and other electronics companies.

Among these companies, the Matsushita Electric Group has been actively developing the Factor X methodology and tools. Recently, the group has introduced its own Factor X method [11] focusing on greenhouse gas efficiency, resource efficiency, and specific chemical substances. The company has used its Factor X tool to evaluate more than 50 of its commercial products. Most products achieved a factor of greater than 2, with an exceptional factor of 18.5 for a fax machine for greenhouse gas efficiency. Resource efficiency has increased by a factor of less than 2 for most products. Matsushita has set the target of factor 4 for all products, and by 2010, average greenhouse gas and resource factors should increase by 1.5- and 1.7-fold, respectively, compared with products in 2000. The eco-innovation progress can be easily understood by both business leaders and consumers by using factor X values.

Table 2  Factor X indicators

<table>
<thead>
<tr>
<th>Resource productivity</th>
<th>Numerator</th>
<th>Product or service value</th>
<th>Optional</th>
<th>Denominator</th>
<th>Environmental impact</th>
<th>Mandatory</th>
<th>Economic value, physical amount, specific function</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Environmental efficiency</th>
<th>Numerator</th>
<th>Product or service value</th>
<th>Optional</th>
<th>Denominator</th>
<th>Environmental impact</th>
<th>Mandatory</th>
<th>Economic value, physical amount, specific function</th>
</tr>
</thead>
</table>

2.5 Life cycle assessment methodologies and database

At the moment, only three LCA database centers have been established (in Germany, Japan, and China). In Japan, the national LCA project has been carried out since 1997 by JEMAI. The objectives of this project were to develop a Japanese LCA methodology based on endpoint modeling and a database library. The Japan LCA methodology, called the Life Cycle Inventory Assessment Method Based on Endpoint Modeling (LIME) was introduced to industry in March 2003. In addition to the development of methodology, LCI data were collected. Transparent, reliable LCI data on approximately 250 industrial product categories were voluntarily obtained from 56 industrial associations in Japan in the LIME project. The system boundary for these data was set as “gate to gate.” A total of 14 substances (CO₂, CH₄, hydrofluorocarbon, polyfluorocarbon, N₂O, SF₆, NOx, SOx, dust, biological oxygen demand, chemical oxygen demand, total P, total N, and suspended solid to air or water) were included in the LCI database library. In addition, three types of LCIA factor lists for characterization, endpoints, and weighting are published in the database. However, at this time, it is available only in Japanese (http://lcaadb.jemai.or.jp/).

In addition to LIME, another LCA method called JEPIX or Eco-indicator Japan has been developed by the Japan Science and Technology Agency. This method is based on the Swiss Eco-Scarcity method (distance-to-target approach).
2.6 Green procurement guidelines

One of the major players in the green procurement movement in Japan is the GPN. This network was established in 1996 with the ultimate goal of promoting green procurement in Japan. As of March 2004, it had 2,889 organizational members including corporations, consumer associations, environmental NGOs, and cooperative associations. The main activities of the network are to promote green procurement movements, introduce purchasing guidelines, and publish an Internet-based GPN database and databook on eco-products [7]. Most major companies such as Matsushita, Sony, Canon, Toyota, Honda, and Fuji Xerox are members of this network. In addition, all municipal and prefectural governments joined the GPN to enhance the effectiveness of green purchasing activities. The organizations in the network share a commitment to reducing environmental impacts through green purchasing.

2.6.1 Principles of green purchasing

The GPN introduced its four principles of green purchasing as guidelines for consumers and institutional purchasers to ensure responsibility in purchasing. These principles were finalized after receiving comments from thousands of members. The latest version of these principles was introduced in 2001. The first principle is the necessity of purchasing. The need for any specific product should be carefully considered before purchasing. The second principle is to consider carefully “various environmental impacts over its life cycle.” The environmental impacts include energy consumption, resources, global warming, ozone depletion, air and water pollution, and waste generation. The third principle suggests that purchasers consider the environmental performance of suppliers. The final principle states that purchasers should collect all available environment-related information on products as well as on suppliers before making a final decision. These principles have been adopted by several organizations and consumers. In addition, big corporations and organizations have introduced their own green purchasing policies based on these principles.

2.6.2 Purchasing guidelines

Based on its principles of green purchasing, the GPN has also introduced specific purchasing guidelines for each category of products. So far, 17 guidelines have been established including those for copy/printing paper, copiers, printers, facsimile machines, toilet paper, tissue paper, personal computers, refrigerators, stationery and office supplies, washing machines, light-bulbs and devices, motor cars, air-conditioners, office furniture, TV sets, uniforms and work wear, and hotels and inns.

2.6.3 Japan Green Procurement Standardization Initiatives

At this stage, many big companies in Japan have introduced their own green procurement guidelines. One of major problems in green procurement activities is information on the use of chemicals. A recent survey of 10 electronics companies in Japan reported that about 2500 different chemicals were currently used and controlled at company level. Purchasers need fast, reliable, and accurate information on these chemicals to ensure they make the right choice. As a result, there is a need to introduce standardized green procurement guidelines. In 2001, a national project on the Japan Green Procurement Standardization Initiatives was voluntarily launched by about 53 big companies. In July 2003, the first guidelines for standardization of material declaration were introduced. They included 29 chemical substance groups such as heavy metals and compounds and halogenated compounds to be carefully surveyed. The project also introduced a manual, survey tool, and data confirmation tool that could be used by interested companies.

2.7 Eco-labelling programs

The use of environmental labelling (or eco-labelling) to provide information on the environmental performance of products and services has become popular in recent years. In Japan, all three types of eco-labelling (I, II, and III) are now used. Among 14 different type I eco-labels, the most popular is the Eco-Mark introduced by the Japan Environment Association. The Eco-leaf is the only type III eco-label, while numerous type II eco-labels are on the market.

The Eco-mark (type I eco-label) was started in 1989 with only seven product categories, such as “aerosol products that use no specified chlorofluorocarbons.” Since then, the Japan Environment Association has expanded the number of product categories, and Eco-marks had been awarded to 5618 certified products in 59 product categories as of September 2003 [5].

In addition to type I eco-labelling, various Japanese companies have established their own eco-labels. By 2002, more than 30 Japanese companies had information on their Web sites on eco-labelling program and symbols (Table 3) [6].

The Eco-leaf program (type III eco-label) was started by the JEMAI. The first trial phase of this program was launched in May 1999, and the Eco-leaf was launched in 2002. So far, 26 different product categories and 83 product environmental declaration sheets have been published on the JEMAI Web site, which can be accessed by the public [13].
Table 3  Examples of type II eco-labels of Japanese companies

<table>
<thead>
<tr>
<th>Hitachi, Ltd.</th>
<th>Fujitsu Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toppan Printing Co., Ltd.</td>
<td>Seiko Instruments (Inc.)</td>
</tr>
<tr>
<td>Okamura Corporation</td>
<td>Sharp (Inc.)</td>
</tr>
<tr>
<td>NEC</td>
<td>Matsushita Electric Group</td>
</tr>
</tbody>
</table>

3. Current Industrial Practices

3.1 Eco-materials

A recent study by Nguyen et al. reported a list of eco-materials based on the environmental reports or responsible care reports in 2002 of more than 40 Japanese companies in several industrial sectors including metals, cement, chemicals, and others [9]. Altogether 359 different eco-materials were identified and further investigated to determine their eco-material classification.

![Eco-materials used in Japanese industries](image)

Figure 10  Eco-materials used in Japanese industries

Among industrial sectors, the steel industry (ferrous metal) was one of the leading industries in Japan in the field of eco-materials development. Figure 10 shows that this industry produced 38% of all eco-materials. The second leading industry was plastics and rubber, which accounted for 27%. Nonferrous and inorganic industries followed as the third and fourth (accounting for 11% and 8%, respectively).
These commercialized eco-materials were then qualitatively classified using the LCA concept with five stages of material, production, distribution, consumption, and end-of-life. As illustrated in Figure 11, most eco-materials were developed with the consideration on the production and consumption stages, especially in iron and steel (55% and 38%, respectively), plastics (25% and 49%, respectively), nonferrous metals (35% and 60%, respectively), and inorganic chemical industries (48% and 41%, respectively). In contrast, ceramics and paper industries focused on the development of eco-materials in the material stage (45% and 33%, respectively) by using renewable or recycled materials.

In the iron and steel industry, there were three main focuses in eco-material development. First of all, hazardous substance-free steel such as lead-free and chromate-free steel during production received the greatest research and manufacturing attention. In addition to the hazardous substance-free issue, new advanced technologies in the steel-making process enabled easier production of steel by eliminating cleaning processes or allowing the use of easily formable steel processes. Thirdly, the iron and steel industry also focused on the consumption stage by producing high-efficiency steel such as high tensile-strength steel, weather-resistant steel, or higher energy-efficiency steel used in automobiles.

The second remarkable industry in the field of eco-material development was the plastics industry. Hazardous substance-free materials such as halogen-free flame-retardant or VOC-free plastics were the main eco-materials in the plastics industry. The industry also focused on the development of biomass and biodegradable plastics as eco-materials.

In general, the development of eco-materials in Japan has taken advantage of advanced and newly developed technologies. Ultra-light steel, formable steel, recyclable plastics (Toyota super olefin plastics), halogen-free flame-retardant polymers, and eco-cement are typical examples of eco-materials based on advanced technology.

Furthermore, the results of another study by Yamada et al. [12] suggested that the development of eco-materials in Japan was still in the early stage. R&D activities on eco-materials should be diversified and better balanced between all sustainable concerns. The introduction of eco-material guidelines is essential for this.

3.2 Eco-components

Another study on the current status of eco-components and eco-products in Japan was conducted during the development of this databook. More than 500 eco-components and eco-products were investigated to determine the current trends in development. This study covered more than 300 companies in Japan including electronics, construction, automobile, and machinery manufacturers. The distribution of eco-components and eco-products in different industrial sectors is shown in Figure 12. Electrical and electronic industries contributed the largest number of eco-components, or 33% of the total. Packaging components, automobile parts, and construction components were second (18%), third (16%), and fourth (15%), respectively. Machinery parts closely followed at fifth, with 13%.

In the electrical and electronics industries, hazardous substance-free components are one of the most crucial concerns as they are closely monitored by the authorities. This concern is related to the three life
cycle stages of manufacturing, product use, and end of life (Figure 13). These industries also have focused on global warming because energy consumption during the production and use of eco-components is closely related to their industries.

Similarly, the automobile and machinery industries also conducted R&D on eco-components to reduce energy consumption during the product use phase. This will help reduce the impact of global warming.

Unlike the electrical and electronics industries, the packaging industry has focused on resource conservation and recycling. This is due to the relatively short life of its products (a few months or years). As a result, most packaging materials and components were carefully developed with great attention to the material selection, design, and end-of-life stages (Figure 13).

3.3 Eco-products

Studies on the development of eco-products in Japan have been scattered. With more than 500 eco-components and eco-products on the market, the authors tried determine the development status and
trends of eco-products in Japan while preparing this databook. As shown in Figure 12, the three leading sectors in the field of eco-product production were machinery, home appliances, and office furniture (20%, 17%, and 14%, respectively). Commodities/outdoor/house kits, and office and information technology (IT) equipment categories followed with 11%. Automobile and carrier industries contributed only 4% of the total number of eco-products. This is due to the scale and complexity of eco-products in each sector. Unlike commodities or outdoor goods, a car consists of hundreds or thousands of different components. The apparel and fabric industries surprisingly contributed only 3% of the total number of eco-products.

Figure 14  Distribution of eco-products in different industries during six life cycle stages

Eco-products were also classified into six life cycle stages to understand the concerns of Japanese industries. Figure 14 illustrates the distribution of eco-products in different life cycle stages in Japanese industries. As seen from the graph, the main concern of Japanese industries was the improvement of eco-products during the use phase. For example, the eco-products involved in the consumption phase in automobile and home electronic appliances accounted for 92.9% and 72.1%, respectively, of the total number of eco-products in those industries. In other industries such as machinery, commodities, IT equipment, and construction and civil engineering, the figures were about 50% or higher. End-of-life issues were another concern of Japanese industries, especially in the apparel and fabric sectors (accounting for 100%). Other sectors also paid attention to the environmental impacts of eco-products at the end-of-life stage.

The development and production of eco-materials, eco-components, and eco-products make a great contribution to companies’ sales and revenues. Table 4 indicates the percentage share of eco-products in the total sales of selected electronics companies. According to the annual environmental reports of these companies, Canon has the highest eco-product sale contribution to its total sales in Japan (92.3%). Other electronics companies such as Fujitsu, Toshiba, and Matsushita Electric have their eco-product sales percentages of more than 50% of total sales. For Hitachi and NEC, the figures were less than 50%. These percentages, however, do not indicate which company is better than others in the field of eco-product development and production, since different companies have different evaluation criteria for eco-products. For instance, Canon has the highest sales value because its calculation method is based only on energy efficiency (ENERGY STAR®) criteria.
Table 4  Percentage of eco-product sales in total sales

<table>
<thead>
<tr>
<th>Company</th>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canon</td>
<td>2002</td>
<td>92.3</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>2002</td>
<td>66.0</td>
</tr>
<tr>
<td>Toshiba</td>
<td>2002</td>
<td>52.2</td>
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<td>Matsushita Electric</td>
<td>2003</td>
<td>50.9</td>
</tr>
<tr>
<td>Hitachi</td>
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</table>

3.4 Eco-product exhibitions in Japan

In addition to the development of eco-design tools and approaches, annual eco-product exhibitions have been organized since 1999 to promote the eco-design movement in Japan. The objectives are to encourage the transition from mass production and consumption to eco-products and revolutionizing consumer awareness of the use of eco-products. A number of interested parties such as local governments, educational institutions, corporations, and NGOs have participated in the annual exhibitions. More than 300 companies and organizations participated each year (Figure 15).

In addition, individuals from government authorities to private citizens, from top management to shopfloor workers, from elementary schoolchildren to college students across the country gather to exhibit their activities and products, exchange knowledge, and establish networks in workshops on green purchasing, environmental business, and education.

Approximately 400 corporations and organizations participated in the Eco-products Exhibition 2003. They exhibited a wide range of products and services, from consumer goods to fuel-cell equipment to materials for industry. A record 114,060 visitors, including ordinary consumers, green purchasing buyers, top executives of leading environment-oriented companies, and young students joined in the three-day exhibition. Along with the exhibition, a survey on customer demand and attitude toward eco-products was conducted. At Eco-products 2002, the survey results showed that more than 65% of visitors would try to buy eco-products whenever they could. Among them, 6% stated that they would be willing to buy eco-products even at a higher price, while the remaining respondents preferred to buy them at the same price as conventional products [14].

![Figure 15 Number of participating companies and participants in eco-product exhibitions in Japan. Source: JEMAI](image-url)
Authors
Hong Nguyen Xuan, Tomonori Honda, Ying Wang, and Ryoichi Yamamoto

References

Related Organizations List

Ecomaterials Center, National Institute for Materials Science (NIMS)
1-2-1 Sengen, Tsukuba, Ibaraki 305-0047, JAPAN
Tel: +81-29-859-2668 Fax: +81-29-859-2601
http://www.nims.go.jp/emc/

Ecomaterials Forum, The Society of Non-Traditional Technology (SNTT)
Toranomon Sakurada Dori Bldg. 1-2-10, Toranomon, Minato-ku, Tokyo 105-0001, JAPAN
Tel: +81-3-3503-4681 Fax: +81-3-3597-0535
http://www.sntt.or.jp/

Green Purchasing Network (GPN)
Cosmos Aoyama B2F, 5-53-67, Jingumae, Shibuya-ku, Tokyo 150-0001, JAPAN
Tel: +81-3-3406-5155 Fax: +81-3-3406-5190
http://www.gpn.jp/

Research Center for Life Cycle Assessment,
National Institute of Advanced Industrial Science and Technology (AIST)
16-3 Onogawa, Tsukuba, Ibaraki 305-8569, JAPAN
Tel: +81-29-61-8105 Fax: +81-29-61-8195
http://unit.aist.go.jp/lca-center/

SPEEED (Special Project on Eco Efficiency and Eco Design)
Fe-209, 4-6-1, Komaba, Meguro-ku, Tokyo 153-8505, JAPAN
Tel: +81- 3-5452-6098 ex.57780 Fax: +81- 3-5452-6305
E-mail: speeed17@iis.u-tokyo.ac.jp
http://www.iis.u-tokyo.ac.jp/shoureir/c2004/rc17/rc17.html

Yamamoto Lab., Institute of Industrial Science, University of Tokyo
Fe-207, 4-6-1, Komaba, Meguro-ku, Tokyo 153-8505, JAPAN
Tel: +81- 3-5452-6098 ex. 57781 Fax: +81- 3-5452-6305
http://www.iis.u-tokyo.ac.jp/english/index.html

Yasui Lab., Institute of Industrial Science, University of Tokyo
Fe-204, 4-6-1, Komaba, Meguro-ku, Tokyo 153-8505, JAPAN
Tel: +81-3-5452-6098 ex.58001 Fax: +81-3-5452-6643
http://www.iis.u-tokyo.ac.jp/english/index.html
1 Eco-materials

i Metals
ii Polymers
iii Natural Materials
iv Foams
v Ceramics and Glass
vi Composites
vii Others
Eco-materials No.0001
Metals | Electric Contact
---|---

**Relay Electric Contact Material: Cadmium-free**

Mitsubishi Materials C.M.I. Corporation
46-1 Senpuku, Susono-city, Shizuoka, 410-1116 JAPAN
Tel; 055-992-6111 Fax; 055-992-6137
E-mail;
URL;

Contact material ‘F Series’, Ag cadmium-free materials, offers anti-welding and anti-wearing capabilities for DC/AC relays, switching devices and other applications. Traditionally, materials containing cadmium were widely used, but thanks to added components and metallography, this product provides much more durable and reliable contact materials. Currently, the F-series is being well received in the car-mounted relay and consumer switching device markets.

Category:
- A3. Hazardous Substance
- B4. Higher Quality
- C3. Design and Material Selection

Products/Model :
F-800,F-830,F-300,F-200Series

---

Eco-materials No.0002
Metals | Lead-free Cutting Steel
---|---

**Lead-free cutting steel: Eco-friendly, designed for automobile parts**

AICHI STEEL CORPORATION
1, Wanowari, Arao-machi, Tokai-shi, Aichi-Pref, 476-8666 Japan
Tel; 052-603-9245 Fax; 052-603-1862
E-mail; nagatah@he.aichi-steel.co.jp
URL; http://www.aichi-steel.co.jp

It is pointed out that lead could harmfully affect the environment. The use of lead is restricted due to the recent need for protection of global environment. Aichi Steel developed lead-free cutting steel (Ecocut-Steel) that has machinability equivalent to that of lead cutting steel.

Category:
- A3. Hazardous Substance
- B5. Energy Saving
- C3. Design and Material Selection

Products/Model :
crankshaft made of Ecocut-Steel
**Non-lead free-cutting-steel for car / motorcycle crankshafts etc**

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

Category:
- A3. Hazardous Substance
- A4. Waste
- B1. Recyclability
- B3. Resource Saving
- C6. End-of-Life

Free-cutting steel containing lead was developed for use in crankshafts and other strong components of cars and motorcycles. However, environmental considerations have led to the need for free-cutting steel that does not contain lead. Sumitomo Metals and Sumitomo Metals (Kokura) Co., Ltd. have therefore developed a technology to control the shape of sulfides and can now offer a range of non-lead free-cutting steel products.

Products/Model:
Sumi Green S, T, X

---

**Lead-free steel sheet for car fuel tank**

Nippon Steel Corporation
2-6-3 Otemachi Chiyodaku Tokyo 100-8071 Japan
Tel; 03-3275-5144 Fax; 03-3275-5979
E-mail; kankyo@hq.nsc.co.jp
URL; http://www0.nsc.co.jp/kankyou/index.html

Category:
- A3. Hazardous Substance
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

Conventionally, lead-coated steel sheets have been used for car fuel tanks. Nippon Steel is now supplying a newly developed lead-free aluminum or tin-zinc coated steel sheet (Eco-Coat T) and hot-dip zinc-nickel coated steel sheet(Silver Zinc-NT). This eliminates the problem of lead in shredder dust, generated when cars are scrapped.
### Eco-materials No.0005

#### Lead-free steel sheet for fuel tank

**JFE Holdings, Inc.**

1-2, Marunouchi, 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan  
Tel: 03-3217-3912 Fax: 03-3214-9650  
E-mail;  

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

It is lead-free zinc base-coated steel sheet, which replace the conventional lead / tin coated steel sheet used for the fuel tank of car so as to reduce the usage of lead. It is characterized in unique organic coating for inside / outside surface. It excels in press formability, weldability, corrosion resistance, gasoline deterioration resistance.

![Example of application to a fuel tank](image)

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0006

#### “Alster,” aluminum plated sheet steel for fuel tank

**Nisshin Steel Co., Ltd.**

Shinkokusaibuilding 3-4-1, Marunouchi, Chiyoda-ku, Tokyo 100-8366, Japan  
Tel: 03-3216-5511 Fax: 03-3214-1895  
E-mail;  
URL: [http://www.nisshin-steel.co.jp/](http://www.nisshin-steel.co.jp/)

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
</tbody>
</table>

As aluminum plated sheet steel contains no lead, environment burden material, with high corrosion resistance against gasoline. It contributes to prevention of environmental pollution, without the mixture of lead into the shredder dust on car dismantlement, providing improvement of recyclability. (Up to now, “lead / tin plated sheet steel” has been used for the fuel tank.)

![Example of application to a fuel tank](image)

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Steel sheet coated with chromate-free film for home electrical appliances

**Nippon Steel Corporation**  
2-6-3 Otemachi Chiyodaku Tokyo 100-8071 Japan  
Tel; 03-3275-5144 Fax; 03-3275-5979  
E-mail; kankyo@hq.nsc.co.jp  
URL: http://www0.nsc.co.jp/kankyou/index.html

Conventionally, galvanized steel sheets are used in the manufacture of home electrical appliances such as refrigerators, washing machines, and air conditioners to prevent rust. However, the sheets are coated with a film containing trace amounts of chromic acid to prevent the zinc from being oxidized. Nippon Steel developed an eco-friendly resin coating, free of chromic acid, that protects the surface zinc against oxidation.

### Weather resistant steel

**JFE Holdings, Inc.**  
1-2, Marunouchi, 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan  
Tel; 03-3217-3912 Fax; 03-3214-9650  
E-mail;  

Weather resistant steel, which "controls rust by rust" is used for a wide range of field like construction or civil engineering, centering on bridges. It protects steel structures from rust, materializing longevity of 50-100 years without coating. The function is exerted through formation of hard rust with strong protection property on sheet surface. The protective rust has the same structure as iron ore, the raw material of iron and steel. We have developed a new weather-resistant chrome-free steel material proper for seashore zone.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
"JFE Eco Frontier series", chromate-free coated steel sheet

JFE Steel Corporation
2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100-0011 Japan
Tel; 03-3597-3734 Fax; 03-3597-3035
E-mail; http://www.jfe-steel.co.jp

In the EU countries and China, it is imposed to replace chromium(VI), lead, mercury and cadmium to their substitutes by June, 2006. JFE Steel has newly developed electro-galvanized steel sheet which does not contain chromium(VI) and chromate. The steel sheet is excellent in corrosion resistance, electric conductivity, fingerprint-proof, adhesion of coating material, lubricities, etc. The steel sheet is therefore widely adopted in the areas of interior panels of home electronic appliance and vending machine, interior goods of OA equipment and copying machine, and chassis of TV, VTR, Audio, etc.

Category:
● A3. Hazardous Substance
● B2. Longevity
● B6. Environmental Purification
● C3. Design and Material Selection

Products/Model:
JFE Eco Frontier series

Chromium-free coated-steel-sheet for automobile / appliances with rust-resistance / design / finger-print-resistance / others

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

The development of chromium-free treatment on various coated steel sheet becomes essential in recent years in order to comply with regulations for toxic substances. We have developed all kinds of chromium-free treatment on coated steel sheet.

Category:
● A3. Hazardous Substance
● A4. Waste
● B1. Recyclability
● B6. Environmental Purification
● C6. End-of-Life

Products/Model:
Tough-zinc Hyper NEO Sumi-zinc NEO coat T1 etc.
### Eco-materials No.0011

| Metals | Surface treated steel plate |

#### Steel plate for electronic devices without chromium (VI), SILVERTOP ECO

**Toyo Kohan Company, Limited**  
2-12, Yonbancho, Chiyoda-ku, Tokyo 102-8447 Japan  
Tel: 03-5211-6211 Fax: 03-5211-0181  
E-mail;  
URL: [http://www.toyokohan.co.jp/](http://www.toyokohan.co.jp/)

The surface treated steel plate is post-processed with unique non-chromium chemical treatment on its surface following to composite electrical zinc plating. The plate has beautiful surface, outstandingly smooth and antifriction characteristics, and fits for lead-free soldering as other similar products do. In addition, there is no environmental contamination caused by chromium (VI) when the product is disposed.

Products/Model:  
Silvertop Eco

### Eco-materials No.0012

| Metals | Laminated steel plate |

#### Environment-friendly laminated steel plate without vinyl chloride, FINETOP

**Toyo Kohan Company, Limited**  
2-12, Yonbancho, Chiyoda-ku, Tokyo 102-8447 Japan  
Tel: 03-5211-6211 Fax: 03-5211-0181  
E-mail;  
URL: [http://www.toyokohan.co.jp/](http://www.toyokohan.co.jp/)

The product is steel plate laminated with special polyester resin onto galvanized plate, which is used for household electric appliances, and steel plates for internal building materials. The product replaces conventional vinyl chloride steel plates, and produces no toxic gasses when burned by a fire or other accidents.

Products/Model:  
FINETOP
### Eco-materials No.0013

<table>
<thead>
<tr>
<th>Metals</th>
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</tr>
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<tr>
<td><strong>Eco-friendly construction method using thin-sheet steel for extra durability</strong></td>
<td></td>
</tr>
<tr>
<td>Nippon Steel Corporation</td>
<td></td>
</tr>
<tr>
<td>2-6-3 Otemachi Chiyodaku Tokyo 100-8071 Japan</td>
<td></td>
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<tr>
<td>Tel; 03-3275-5144 Fax; 03-3275-5979</td>
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</tr>
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<td>- A4. Waste</td>
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<tr>
<td>- B2. Longevity</td>
<td></td>
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<tr>
<td>- B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>- B5. Energy Saving</td>
<td></td>
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</tbody>
</table>

Nippon Steel Corporation developed a new construction method called "Nittetsu super frame" using thin-sheet steel for low-rise residential buildings. Offering extra durability, it involves the use of galvanized thin-sheet steel for the frame of wooden buildings constructed using the two-by-four system. The method involves adiabatic construction which involves packing the outside walls of the building with heat insulator. This provides more efficient heating and air-conditioning and saves energy. In addition, the use of recyclable steel products helps to conserve forest resources.

### Eco-materials No.0014

<table>
<thead>
<tr>
<th>Metals</th>
<th>High-tensile steel-plate with superior fatigue-resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High-Tensile Steel Plate for shipbuilding with fatigue-resistant properties</strong></td>
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<tr>
<td>Sumitomo Metal Industries, Ltd.</td>
<td></td>
</tr>
<tr>
<td>1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-4416-6111 Fax; 03-4416-6793</td>
<td></td>
</tr>
<tr>
<td>E-mail; <a href="mailto:chikyu-kan@sumitomometals.co.jp">chikyu-kan@sumitomometals.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>URL; <a href="http://www.sumitomometals.co.jp">http://www.sumitomometals.co.jp</a></td>
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<td>Category:</td>
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<td>- A5. Resource Consumption</td>
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<tr>
<td>- B2. Longevity</td>
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<tr>
<td>- B4. Higher Quality</td>
<td></td>
</tr>
<tr>
<td>- C5. Product Use, Maintenance and Repair</td>
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</table>

High-tensile steel plate (FCA steel plate) with superior fatigue-resistant properties developed by Sumitomo Metals has been selected as the material for the bottom-floor-plate of the 35,000 m3 LPG carrier in construction. FCA steel is the first material in the world to improve the fatigue-resistant properties of hull steel plate. It is a ground-breaking development in the materials field, and the use of FCA steel brings dramatic safety and reliability improvements to ship hulls.

Products/Model:  
Fatigue Crack Arrest Steel Plate
Eco-materials No.0015

<table>
<thead>
<tr>
<th>Metals</th>
<th>Stainless steel</th>
</tr>
</thead>
</table>

**Stainless steel with high corrosion resistance**

Nisshin Steel Co., Ltd.
Shinkokusaibuilding 3-4-1, Marunouchi, Chiyoda-ku, Tokyo 100-8366, Japan
Tel: 03-3216-5511 Fax: 03-3214-1895
E-mail; URL: http://www.nisshin-steel.co.jp/

It is a stainless steel with high corrosion resistance capable of application to the purposes of roofs and exterior of seashore environment. The product in question is a stainless steel capable of retaining a good appearance with the condition close to maintenance-free without a surface treatment. Moreover it has a smaller coefficient of thermal expansion than that of the existing stainless steel, making it possible to lengthen such as roof, contributing to reduction in the construction cost as well.

Category:  
- A1. Global Warming  
- B2. Longevity  
- B4. Higher Quality  
- C2. Material and Components Production  
- C5. Product Use, Maintenance and Repair

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Eco-materials No.0016

<table>
<thead>
<tr>
<th>Metals</th>
<th>Plated sheet steel</th>
</tr>
</thead>
</table>

**“ZAM,” hot-dipped sheet steel with high corrosion resistance**

Nisshin Steel Co., Ltd.
Shinkokusaibuilding 3-4-1, Marunouchi, Chiyoda-ku, Tokyo 100-8366, Japan
Tel: 03-3216-5511 Fax: 03-3214-1895
E-mail; URL: http://www.nisshin-steel.co.jp/

It is a Zn-Al-Mg system hot-dipped sheet steel with high corrosion resistance (Zn-6%Al-3%Mg). The corrosion resistance of the flat section is 10-20 times and 5-8 times as high as that of the conventional Zn system one and Zn-5%Al system one, respectively. At the same time, the corrosion resistance of cut end surface is higher than the conventional plated sheet steel. It contributes to the environment protection thanks to its services of reduction of waste / resource-saving / energy-saving due to the longevity provided by high corrosion resistance or the plating process-saving, which is supposed to succeed to the fabrication.

Category:  
- A1. Global Warming  
- B2. Longevity  
- C2. Material and Components Production

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Eco-materials No.0017

**Metals**

**Steel sheet**

---

**Electrical steel sheet (Silicon steel sheet)**

JFE Holdings, Inc.
1-2, Marunouchi, 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan
Tel; 03-3217-3912 Fax; 03-3214-9650
E-mail; URL; http://www.jfe-holdings.co.jp/environment/2003.html

Category:
- A1. Global Warming
- B2. Longevity
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

This sheet is a oriented electrical steel sheet having the world's highest magnetic flux density. Reduction of energy, noise, and size in electrical transformer can be realized by using this sheet. This sheet has been widely used for large-size transformer for power station, transformers for high-speed train, and other applications.

---

Eco-materials No.0018

**Metals**

**High-efficiency electric steel sheet**

---

**High-efficiency electric-steel-sheet for appliances/vehicles achieving high-magnetic-flux-density / low-iron-loss**

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi cho-kou, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

Category:
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

In order to improve energy efficiency of motors, Sumitomo Metals has developed non-oriented electric steel sheet with good machinability and high-efficiency. This steel has been applied to compressor motors in air conditioners. We are now strongly proposing to automotive companies to adopt our 27SX series of electric steel sheet for high-efficiency motors that delivers both high permeability and low iron loss in high frequency application. This adoption will result in improvement in automotive fuel economy and compliance with exhaust regulations.

---

Products/Model:
T27X series
Eco-materials No.0019
Metals
High-heat-emission steel sheet

High-heat-emission-steel-sheet for household appliances / OA products

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

Category:
● A5. Resource Consumption
● B2. Longevity
● B4. Higher Quality
● C5. Product Use, Maintenance and Repair

Sumitomo Metals started to work on high-emission steel sheet well in advance of other steelmakers. For ten years we have been supplying Sumitomo high-emission pre-painted steel sheet for the cover of stabilizers in fluorescent lamps to cope with their high heat emission. Sumitomo high-emission pre-painted steel sheet involved the application of special paint to cold-rolled steel sheet or galvanized steel sheet and its emissivity is 94%. It can also hold a temperature rise in the simulated cabinet to less than 60°C while regular zinc coated steel increases to 73°C in the same cabinet.

Eco-materials No.0020
Metals
High-temperature, high-strength boiler steel tube

Stainless steel boiler tube high-efficiency in powerhouse of power generation in powerhouse

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi Chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

Category:
● A1. Global Warming
● A5. Resource Consumption
● B3. Resource Saving
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

In the view point of improvement of the global environment, high temperature and high pressure power generation boilers (Ultra Super Critical boilers) have been developed in the world to increase the heat efficiency of boilers and reduce CO₂ emission. High strength and high corrosion resistant steel tubes and pipe are required for these USC (Ultra Super critical) boilers. SUPER304H, the authentic stainless steel tube with high-temperature strength for power generation boilers developed by Sumitomo Metals, has superior steam oxidation resistance and twice the strength of conventional materials at high temperatures. Type 347H stainless steel, due to the optimum addition of copper, niobium, nitrogen and other alloying elements and the developed thermo-mechanical tube production method.
Three-layer clad steel sheet for IH cooking-heater offering heat efficiency / weight-saving

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi Chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

Sumitomo Metals (Naoetsu) Ltd. has succeeded in developing a production process for thermo-sensitive clad steel using an alloy where temperature does not rise above a given level in electromagnetic induction heating. It has started to supply it as a dedicated base material for thermo-sensitive frying pans and deep fryers. The company has also developed a three-layer clad steel of copper, stainless steel and aluminum for induction heating thermoses and brought it to mass production. Not only is this steel superior to two-layer clad steel in terms of induction heating efficiency and heat transfer properties, but it is also more lightweight.

Products/Model:
Copper/Stainless/Aluminum Clad Sheet

“HILOPTM,” high-performance neodymium system sintered magnet

Hitachi Metals, Ltd.
Shinjyuku park tower 3-7-1, Nishishinjyuku, Shinjyuku-ku, Tokyo 163-1015, Japan
Tel; 03-5381-6955-6958 Fax; 03-5381-6959
E-mail; 
URL; http://www.hitachi-metals.co.jp/

In late years, the energy-saving and high efficiency gain recognition from the viewpoint of global environmental problems, the move to shift the wire wound motor to the motor with permanent magnet is under way. In particular, with reference to the home electric appliances, the electric automobile, the hybrid vehicle and so on, the magnetic motor attracts people's attention, with energy-saving and high efficiency expected. This magnet enables efficiency and downsizing of each motor, contributing to energy-saving.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0023**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Steel materials</th>
</tr>
</thead>
</table>

**High-strength steels for automotive transmissions and machines**

<table>
<thead>
<tr>
<th>DAIDO STEEL CO., LTD.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel; 03-5439-1273 Fax; 03-5439-6740</td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:t-kimura@ac.daido.co.jp">t-kimura@ac.daido.co.jp</a></td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>URL: <a href="http://www.daido.co.jp">http://www.daido.co.jp</a></td>
<td>● C2. Material and Components Production</td>
</tr>
</tbody>
</table>

Applying high-strength steel for driveline gears achieves lighter weight and long life. In addition the vehicle body weight can be reduced, which improves mileage and life of gears.

Products/Model: DSG Steel.

---

**Eco-materials No.0024**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Die iron and steel materials</th>
</tr>
</thead>
</table>

**Cold die materials with high-machinability and high-performance**

<table>
<thead>
<tr>
<th>DAIDO STEEL CO., LTD.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-35, 1-Chome, Konan, Minato-ku, Tokyo 108-8478 Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 03-5439-1273 Fax; 03-5439-6740</td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:t-kimura@ac.daido.co.jp">t-kimura@ac.daido.co.jp</a></td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>URL: <a href="http://www.daido.co.jp">http://www.daido.co.jp</a></td>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

This cold die steel overcomes the lack of hardness and low hardness in high temperature tempering, which were disadvantages in existing cold die steel. The best steel 62-63HRC, which has double-hardness or more, is produced by optimized alloy design with high temperature tampering. As a result, this steel is extremely high resistance to early crack, abrasion, and crack/distortion trouble during cutting wire.

Products/Model: DC53
**Eco-materials No.0025**

**Metals**

**Rooftop Greening Pallet**

---

### Easy to handle pallets for rooftop greening

Nippon Steel Corporation  
2-6-3 Otemachi Chiyodaku Tokyo 100-8071 Japan  
Tel; 03-3275-5144 Fax; 03-3275-5979  
E-mail; kankyo@hq.nsc.co.jp  
URL; http://www0.nsc.co.jp/kankyou/index.html

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

Unlike conventional rooftop greening methods in which earth is spread on the roof surface, this pallet method uses pre-planted greening pallets linked with joints. The pallets themselves are made of recyclable polypropylene and although they are lightweight, they are designed to be wind-proof. Limited maintenance is required and they provide a good heat-insulating effect in summer and heat-retention effect in winter. In addition to energy savings, they help to alleviate heat island phenomenon.

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**Eco-materials No.0026**

**Metals**

**Rare earth magnet**

---

### Energy saving conscious rare earth magnet designed for various motors

Shin-Etsu Chemical Co., Ltd.  
6-1, Ohtemachi 2-chome, Chiyoda-ku, Tokyo, 100-0004 Japan  
Tel; 03-3246-5091 Fax; 03-3246-5096  
E-mail; sec-pr@shinetsu.jp  
URL; http://www.shinetsu.co.jp

**Category:**  
- A1. Global Warming  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving

The rare earth magnet with world-highest magnetic properties is effective in realizing small-packaging and energy-saving of various devices including electronic components. This product is typically applied to hard disc drives of computers, various motors for factory and office equipment, while it is recently used for air compressors of air-conditioners and automobiles. Especially, the motors applied to air compressors are highly evaluated as new-type energy-saving motors, making a considerable contribution to global warming protection through energy saving and low emission of carbon dioxide.

Products/Model:  
Rare earth magnet
Eco-materials No.0027

Metal product with antibacterial function

KOBE STEEL, LTD.
1-5-5, Takatsukadai Nishi-ku, Kobe, Hyogo 651-2271 Japan
Tel: 078-992-5582  Fax: 078-992-5585
E-mail; www-admin@kobelco.co.jp
URL; http://www.kobelco.co.jp

We have developed our own antibacterial plating technology, which can be applied to various metal products such as stainless steel, aluminum, and copper alloy, as well as to some resin products. The plating not only shows high antibacterial effect under actual environments, but also retains mold/alga-proof functions. These characteristics last for a long period of time, and safety of the product has been also verified.

Eco-materials No.0028

Steel sheets useful for the body weight reduction of automobile

JFE Steel Corporation
2-3, Uchisa-iwai-cho 2-chome, Chiyoda-ku, Tokyo 100-0011 Japan
Tel: 03-3597-3734  Fax: 03-3597-3035
E-mail; http://www.jfe-steel.co.jp

High tensile strength steel makes the thickness of the plate thinner, because it is strong. As the steel plate for the automobile, it ensures the safety of the car body, and contributes to the prevention of the global warming through the improvement in the fuel consumption by the lightening of the car body. In order to receive using the high tensile strength steel plate, JFE Steel Co. assorted various materials for all grades which is excellent in stamping performance, weldability, fatigue characteristics and adhesion of the plating.
High-strength, dent resistant steel sheet for automotive exposed panel

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

In 1979 Sumitomo Metals developed the world’s first bake-hardenable high-strength steel sheet for automotive application. Bake-hardenable steel sheet harden through paint-baking process at 180C, exhibits excellent dent-resistance and is applied to automotive panel, door and hood. We have continued to develop various high-strength steel sheet, and are contributing to reduce vehicle weight by developing Sumi-dent Super with larger bake-hardenability and Ultra High-strength Steel Sheet.

Products/Model :
Sumi-dent Super

Pre-coated steel sheet which allows manufacturers to eliminate the painting process

Nippon Steel Corporation
2-6-3 Otemachi Chiyodaku Tokyo 100-8071 Japan
Tel; 03-3275-5144 Fax; 03-3275-5979
E-mail; kankyo@hq.nsc.co.jp
URL; http://www0.nsc.co.jp/kankyou/index.html

Nippon Steel's prepainted steel sheet (trademarked as Viewcoat) is used in washing machines, refrigerators and outdoor air conditioner units. Customers can specify their chosen color and this eliminates the painting process following fabrication and assembly. Pre-painted on a dedicated painting line, Viewcoat excels in paint film quality, minimizes paint loss and greatly reduces environmental impact.
"KIP21SX", sinter-hardening type alloy steel powder

For the conventional sintered materials, carburization heat treatment after sintering is usually conducted to improve its strength, and the material after sintering is reheated to about 900°C. The environment loading (fossil-fuel consumption, CO₂ discharge, etc) owing to this process is being estimated at about 20% of the whole manufacturing process of powder metal parts. "KIP21SX" powder developed by JFE Steel Co. can omit the heat treatment. Only by cooling at the speed of 30-40°C/min, the performance equal to that of the conventional material is obtained. Hence, it becomes possible that the environmental loading on the high-strength powder-metal parts manufacturing is reduced.

Products/Model : KIP 21SX

Resource-saving blanking technology for automobiles through assorted steel-sheet welding

Tailored welding blanking technology is used to join together pieces of steel sheet like a patchwork. They are then press-formed and applied to the car body. Conventionally, the thickness of stamped parts was the same throughout the whole panel, but this meant that in some places it was thicker than necessary. However, this technology allows the thickness of the pieces to differ and so reduces the weight of the car. Sumitomo Metals is implementing a new tailored welding blanking technology that allows welding along curves and diagonals in addition to perpendiculars, expanding the range of its applications.

Products/Model : Taylored Blank
Eco-materials No.0033

<table>
<thead>
<tr>
<th>Metals</th>
<th>Stainless steel</th>
</tr>
</thead>
</table>

**“U coat,” protective-film-less stainless steel sheet**

Nisshin Steel Co., Ltd.
Shinkokusaibuilding 3-4-1, Marunouchi, Chiyoda-ku, Tokyo 100-8366, Japan
Tel; 03-3216-5511 Fax; 03-3214-1895
E-mail; URL: http://www.nisshin-steel.co.jp/

It is a stainless steel sheet with special clear resin coat on the surface. Generally speaking, the metal roof is supposed to be coated with a protective film to prevent from scratches on molding, performed roll forming, with the film exfoliated after the construction. This product materialized the protective-film-less, eliminating the need for exfoliation (process saving), resulting in film incineration unnecessary and hence contributing to environment protection.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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Eco-materials No.0034

<table>
<thead>
<tr>
<th>Metals</th>
<th>Stainless steel</th>
</tr>
</thead>
</table>

**“NSS431DP-2,” heat-treatment omitted high-strength stainless steel**

Nisshin Steel Co., Ltd.
Shinkokusaibuilding 3-4-1, Marunouchi, Chiyoda-ku, Tokyo 100-8366, Japan
Tel; 03-3216-5511 Fax; 03-3214-1895
E-mail; URL: http://www.nisshin-steel.co.jp/

It is a high-strength stainless steel for vehicles with the machine part, the complex constitution of ferrite and martensite. This product contributes to energy saving without the need for the heat treatment by users, with workability and high intensity owing to the diploid structure of hard martensite and soft ferrite.

Example of deep-drawn NSS304ES

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0035

**Category:**
- A1. Global Warming
- B2. Longevity
- B4. Higher Quality
- B5. Energy Saving
- C2. Material and Components Production

**Super HBASE**

Hitachi Metals, Ltd.
Shinjyuku park tower 3-7-1, Nishishinjyuku, Shinjyuku-ku, Tokyo 163-1015, Japan
Tel; 03-5381-6955-6958 Fax; 03-5381-6959
E-mail; URL: http://www.hitachi-metals.co.jp/

From the viewpoint of earthquake resistance, important parts are the joints of foundation and column-beam connection part. Hitachi HBASE method is a new joining method used for the column base of steel-frame building. Furthermore, it enjoys a lot of merits such as superb earthquake resistance, substantial curtailment of construction period, cost reduction and space saving.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0036

**Category:**
- A5. Resource Consumption
- B2. Longevity
- B4. Higher Quality
- C4. Product Manufacture
- C5. Product Use, Maintenance and Repair

**High-performance die materials for 40HRC pre-hardened type plastics**

DAIDO STEEL CO., LTD.
6-35, 1-Chome, Konan, Minato-ku, Tokyo 108-8478 Japan
Tel; 03-5439-1273 Fax; 03-5439-6740
E-mail; t-kimura@ac.daido.co.jp
URL: http://www.daido.co.jp

This steel material is well-tempered at the optimal condition of 40HRC, so the materials can be used for diesinking without heating process. Grinding after processing is relatively easy because the technique of age hardening and special melting is employed. Additionally, mirror surface finishing and chemical etching are available. This material is good for goods requiring mirror finished surface.

Products/Model :
NAK80
### Eco-materials No.0037

<table>
<thead>
<tr>
<th>Metals</th>
<th>Laminated steel plate</th>
</tr>
</thead>
</table>

**Environment-friendly laminated steel plate for metal containers, Hi-Pet**

**Toyo Kohan Company, Limited**
2-12, Yonbancho, Chiyoda-ku, Tokyo 102-8447 Japan  
Tel: 03-5211-6211  Fax: 03-5211-0181  
E-mail;  
URL: [http://www.toyokohan.co.jp/](http://www.toyokohan.co.jp/)

The product is laminated steel plate with polyester resin after the steel surface is treated, which contributes to reducing environmental influence when metal cans are manufactured. More specifically, environmental influence on the atmosphere and waste water are reduced through elimination of painting and cleaning process, while no sludge is produced when metal cans are manufactured.

**Category:**
- A1. Global Warming  
- A4. Waste  
- B5. Energy Saving  
- C4. Product Manufacture

### Eco-materials No.0038

<table>
<thead>
<tr>
<th>Metals</th>
<th>High Yield Ratio Resin Mold</th>
</tr>
</thead>
</table>

**High-yield ratio mold: Reducing material loss**

**Tokai Rika Co., Ltd.**
3-260 Toyota, Oguchi-cho, Niwa-gun, Aichi, 480-0195 Japan  
Tel: 0587-95-5211  Fax;  
E-mail;  
URL: [http://www.tokai-rika.co.jp/](http://www.tokai-rika.co.jp/)

We developed a slimmer and shorter mold in order to improve the yield ratio of a spool runner occurring at resin molding. In addition, we reduced cooling time by using airflow for in-mold cooling. This reduced overall molding time, leading to a reduction of power consumption.

**Category:**
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving  
- C4. Product Manufacture

**Products/Model :**
- Hi-Pet

**Products/Model :**
- The high yield ratio mold
Eco-materials No.0039

Metals

Aluminum Die-cast Cylinder

Eco-friendly, all aluminum Yamaha DiASil Cylinder: High functionality and low-cost

YAMAHA MOTOR CO., LTD.
Shingai, Iwata, Shizuoka 438-8501 Japan
Tel: 0538-32-1100 Fax: 0538-37-4258
E-mail;
URL: http://www.yamaha-motor.co.jp/

Category:
- A4. Waste
- B1. Recyclability
- B4. Higher Quality
- C2. Material and Components Production
- C6. End-of-Life

The new Yamaha "DiASil Cylinder" is made using a process that brings together an ideal combination of material, manufacturing technology and environmental friendliness. The manufacturing technology is the recently developed Yamaha CF Aluminum Die-cast Technology, which allows production of an all-aluminum die-cast cylinder. The material used is a 20% silicon content aluminum alloy.

Products/Model:
DiASil Cylinder

Eco-materials No.0040

Metals

Steel sheet

Stainless steel sheet and tube for automotive exhaust systems

JFE Holdings, Inc.
1-2, Marunouchi, 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan
Tel: 03-3217-3912 Fax: 03-3214-9650
E-mail;

Category:
- A1. Global Warming
- A2. Air Pollution
- B5. Energy Saving
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Conventional exhaust manifold for automotive engines are made by casting. However, thanks to new hot rolling technology, a stainless steel having high formability for making light weight parts and excellent thermal resistance has been developed. We have been producing ultra-thin stainless foil (30 μm x 1000 mm) for thin metal honeycomb that features high thermal and oxidation resistance though our unique high-purity refining and high-speed wide metal rolling technology.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0041

<table>
<thead>
<tr>
<th>Metals</th>
<th>Aluminum Can</th>
</tr>
</thead>
</table>

#### Aluminum material for can stock made from used beverage cans

**The Furukawa Electric Co., Ltd.**

6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan  
Tel; Fax;  
E-mail: r-d@ho.furukawa.co.jp  
URL: http://www.furukawa.co.jp

**Category:**  
- A5. Resource Consumption  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C1. Material Extraction  
- C6. End-of-Life  

The use of can stock made from used beverage cans contributes to aluminum recycling.

### Eco-materials No.0042

<table>
<thead>
<tr>
<th>Metals</th>
<th>Resin coated aluminum sheet</th>
</tr>
</thead>
</table>

#### Functional resin-coated aluminum-sheet, not requiring lubricants and cleansers on stamping

**The Furukawa Electric Co., Ltd.**

6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan  
Tel; 03-5611-2466 Fax; 03-5611-2413  
E-mail: t.shii@unifus.co.jp  
URL: http://www.unifus.co.jp

**Category:**  
- A1. Global Warming  
- A3. Hazardous Substance  
- B4. Higher Quality  
- B6. Environmental Purification  
- C4. Product Manufacture

These functional resin coated aluminum sheets provide enhanced formability, corrosion resistance, scuff- and fingerprint-resistance, resistance to chemicals, electrical conductivity, ease of printing, and anti-bacterial and anti-mold properties. They are also self-lubricating, so that disposal of the lubricants and cleansers formerly used in the stamping process is eliminated.

**Products/Model:**  
Recycled Aluminum Can Stock

**Products/Model:**  
Functional resin-coated aluminum sheets "FUSCOAT"
### Eco-materials No.0043

**Eco-friendly solder for general electrical components**

Fujikura Ltd.

1-5-1 Kiba, Koto-ku, Tokyo, 135-8512 Japan  
Tel: 03-5605-1272  Fax: 03-5606-1549  
E-mail: sanden@info.fujikura.co.jp  
URL: http://www.fujikura.co.jp/

Lead-free Eco Solder is an eco-friendly solder that does not contain halogens such as chlorine or lead.

**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

### Eco-materials No.0044

**Aluminum Materials**

KOBE STEEL, LTD.

Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan  
Tel: 078-261-5105  Fax: 078-261-4745  
E-mail: Akanen@kobelco.jp  
URL: http://www.kobelco.co.jp/

Aluminum alloy has a potential to replace parts of automobile due to its lighter density. A high weld-ability aluminum alloy sheet has similar properties to cold-rolled steel sheet for panels such as the hood and fender. Structural aluminum alloy is used to reduce the thickness and weight of welded structural materials. A recent study reported that a high strength aluminum alloy for door beam that has the same or more shock absorption ability as 150 kilogram-class high strength steel sheet could reduce car weight by 30%. This material can help increase energy efficiency of automobile at the consumption stage.

**Category:**  
- A1. Global Warming  
- A5. Resource Consumption  
- B3. Resource Saving  
- B4. Higher Quality  
- C3. Design and Material Selection

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0045

**Metals**

<table>
<thead>
<tr>
<th><strong>Lubricative Anti-Corrosion Precoated Aluminum Materials</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KOBE STEEL, LTD.</strong></td>
</tr>
<tr>
<td>Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan</td>
</tr>
<tr>
<td>Tel: 078-261-5105 Fax: 078-261-4745 E-mail: <a href="mailto:Aakanen@kobelco.jp">Aakanen@kobelco.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.kobelco.co.jp/">http://www.kobelco.co.jp/</a></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

Lubricative anti-corrosion pre-coated aluminum sheet is produced by new coating technology to eliminate use of lubricant during the shape formation. The material has three layers. The core layer is aluminum sheet of about 0.1 to 1.0 mm. Pre-coated layers consist of corrosion resistant layer and lubricant layer of 1-2μm. After-treatment of this material such as cleaning is not necessary.

![Diagram of K5701 Coating](image_url)

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0046

**Metals**

<table>
<thead>
<tr>
<th><strong>Lead-Free Aluminum Alloy (KE6)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KOBE STEEL, LTD.</strong></td>
</tr>
<tr>
<td>Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan</td>
</tr>
<tr>
<td>Tel: 078-261-5105 Fax: 078-261-4745 E-mail: <a href="mailto:Aakanen@kobelco.jp">Aakanen@kobelco.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.kobelco.co.jp/">http://www.kobelco.co.jp/</a></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Kobe Ecology 6 (KE6) is a lead-free cutting aluminum alloy. This material is produced without any use of lead substance (a relatively highly toxic substance). The material has similar properties of steel that contains lead such as sharpness.

![Cross Section of Alumite Coated Aluminum](image_url)

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0047**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Beverage cans</th>
</tr>
</thead>
</table>

**Toyo Ultimate Can (TULC)**

**Toyo Seikan Group**  
1-3-1 Uchisaiwaicho, Chiyoda-ku, Tokyo 100-8522 Japan  
Tel; 03-3508-2158 Fax; 03-3503-5418  
E-mail;  
URL; http://www.toyo-seikan.co.jp/

**Category:**  
- A1. Global Warming  
- A4. Waste  
- B3. Resource Saving  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

TULC or Toyo Ultimate Can is a new type of two-piece beverage can that is produced by Toyo Seikan Group. The production of TULC could reduce CO2 emission to less than 1/3 (2.9kg compared to 9.3kg/can). It also completely eliminates waste water generation and ultimately decreases solid waste generated amount during the production (120kg compared to 40,000kg/month). This TULC also has remarkable recyclability compared to steel “drawn and walled ironed” can.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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**Eco-materials No.0048**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Coating alloy</th>
</tr>
</thead>
</table>

**Antibacterial Coating Materials**

**KOBE STEEL, LTD.**  
Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan  
Tel; 078-261-5105 Fax; 078-261-4745  
E-mail; Aakanen@kobelco.jp  
URL; http://www.kobelco.co.jp/

**Category:**  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

KENI FINE is a special alloy produced by new coating technology. KENI FINE is 10 times faster at controlling bacteria, mildew and seaweed growth than conventional products coated with silver and copper. Unlike other photo-catalysts, KENI FINE works in the dark as well. The new coating material can be applied on a wide variety of metals such as stainless steel, titanium, and aluminum. Use of this material will improve working and living environment.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0049**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Magnet</th>
</tr>
</thead>
</table>

**La-Co Magnets to replace Strontium Ferrite**

*Hitachi Metals, Ltd.*
3-7-1, Nishi-Shinjuku, Shinjuku-ku, Tokyo 163-1015, Japan
Tel: 03-5381-6955  Fax: 03-5381-6959
E-mail; URL: http://www.hitachi-metals.co.jp/index.html

These series enable the realization of high-residual magnetic flux density (Br) and high-intrinsic coercive force. Temperature coefficient of the intrinsic coercive force is 60%-70% less than that of conventional materials. These materials enable the production of magnets that are thinner than those produced with conventional materials. As a result, the material will help improve energy efficiency of electronic equipment. This material is used in air conditioners, refrigerator compressors, washing machines, and other electronic appliances.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*

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**Eco-materials No.0050**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Steel sheet</th>
</tr>
</thead>
</table>

**Ultra High Strength Steel Sheet**

*KOBE STEEL, LTD.*
Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan
Tel: 078-261-5105  Fax: 078-261-4745
E-mail; Aakanen@kobelco.jp
URL; http://www.kobelco.co.jp/

This ultra-high strength steel sheet enables reduction of weight of door impact beams in automobile by 15% in comparison to 100 kilogram-class press-formed beams. In addition, this material is formed many different types of shapes by press formation. It enables reduction of welding process and number of part needed. As a result, it helps increase energy efficiency of automobile at production and consumption stages.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*
**Eco-materials No.0051**

**Category**
- Steel sheet

**Laminated Steel Sheet for Decorative Use (ECOSTEEL®)**

**KOBE STEEL, LTD.**
Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan
Tel: 078-261-5105 Fax: 078-261-4745
E-mail: Aakanen@kobelco.jp
URL: http://www.kobelco.co.jp/

ECOSTEEL® is a steel sheet covered with a high-grade decorative layer. The steel sheet consists of a PEP sheet laminated onto electro-galvanized steel sheet providing interiors with a soothing, warm atmosphere and a classy feeling with the same texture of natural wood. The material has the advantages of both wood and steel. It is as strong and durable as steel and does not deform like wood. Use of this material will improve working and living environment.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*

**Eco-materials No.0052**

**Category**
- Steel sheet

**Chrome-Free Coated Steel Sheet (Zinkobella Greencote/GX )**

**KOBE STEEL, LTD.**
Shinko Building, 10-26, Wakinohamacho 2-chome, Chuo-ku, Kobe, Hyogo 651-8585, Japan
Tel: 078-261-5105 Fax: 078-261-4745
E-mail: Aakanen@kobelco.jp
URL: http://www.kobelco.co.jp/

This coated steel sheet consists of three layers, the core layer as steel sheet, zinc coating layer, and chromium-free coating layer. The material maintains high level of corrosion resistance. Use of toxic substances like chrome (VI) is completely eliminated during the production of the material. This material is used in chassis of audio/video equipment, machine parts, office automation equipment and various home appliances.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*
### Eco-materials No.0053

<table>
<thead>
<tr>
<th>Metals</th>
<th>High efficiency steel sheets for motors</th>
</tr>
</thead>
</table>

#### Flat rolled magnetic steel sheet and strip for high-efficiency motors

**Nippon Steel Corporation**  
2-6-3 Otemachi Chiyodaku Tokyo, 100-8071 Japan  
Tel; 03-3275-5144 Fax; 03-3275-5979  
E-mail; kankyo@hq.nsc.co.jp  
URL; http://www0.nsc.co.jp/kankyou/index.html

**Category:**  
- A1. Global Warming  
- A5. Resource Consumption  
- B4. Higher Quality  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

Since motors are increasingly required to be highly efficient in terms of energy saving, thin high-efficiency electrical steel sheets have applications in a variety of fields, such as motors used for hard disk drive units, motors for electric vehicles, and power generators for microgas turbines. Nippon Steel developed high-tensile thin electrical steel sheets for ultra high-speed motors and high-torque, high-formability thin electrical steel sheets for hard disk drive units.

![Image of steel sheets](image_url)

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### Eco-materials No.0054

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Resin</th>
</tr>
</thead>
</table>

#### Halogen-free flame retardant PBT/ABS resin, “Toraycon” & “Toyolac”

**Toray Industries, Inc.**  
Toray Bldg., 2-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8666 Japan  
Tel; 03-3245-5179 Fax; 03-3245-5459  
E-mail;  
URL; http://www.toray.co.jp

**Category:**  
- A3. Hazardous Substance

Toray has developed the world's first halogen-free flame retardant PBT grade. This grade is made without using any halogen based chemicals, yet has the same performance as conventional halogenated PBT. This in turn reduces environmental loads at the disposal stage. In the field of ABS resin (UL=V2) we sell flame retardant Toyolac®. This product does not contain any halogen based flame retardant. Due to its excellent recyclability and heat stability, we regard it as a standard flame retardant grade suitable for marketing worldwide.

![Image of flame retardant](image_url)
**Eco-materials No.0055**

**Polymers**

---

**Environment-conscious silicone designed for eco-friendly plastics/tires and heat-radiating materials**

Shin-Etsu Chemical Co., Ltd.
6-1, Otemachi 2-chome, Chiyoda-ku, Tokyo, 100-0004 Japan
Tel: 03-3246-5091 Fax: 03-3246-5096
E-mail: sec-pr@shinetsu.jp
URL: http://www.shinetsu.co.jp

Category:
- A1. Global Warming
- A2. Air Pollution
- B1. Recyclability
- B2. Longevity
- B5. Energy Saving

Eco-plastics mixed with silicone type fire-proofing agents, even without being mixed with other types of fire-proofing agent such as halogen and phosphor, show no less prominent fire-proofing effect. In addition, since its fire-proofing effect does not deteriorate even after repeated material recycle usages, the plastics are reusable for electronic equipment elements such as bodies of personal computers. Silicone for eco-friendly tires which is applied to modified rubber, on the other hand, contributes to improving fuel consumptions as well as to reducing carbon dioxide emission. Furthermore, silicone for heat-radiating materials is effective in reducing carbon dioxide emission through its energy-saving saving effect.

**Eco-materials No.0056**

**Polymers**

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**Eco-friendly adhesive tape without chloroethene for electrical insulation and packing**

Fujikura Ltd.
1-5-1 Kiba, Koto-ku, Tokyo, 135-8512 Japan
Tel: 03-5605-1272 Fax: 03-5606-1549
E-mail: sanden@info.fujikura.co.jp
URL: http://www.fujikura.co.jp/

Category:
- A4. Waste
- B1. Recyclability
- B6. Environmental Purification
- B7. Usage of Recycled Material
- C6. End-of-Life

‘Eco’ Adhesive Tape is made from halogen-free and lead-free materials. This eliminates the discharge of dioxin and lead into the environment.
Eco-materials No.0057

<table>
<thead>
<tr>
<th>Polymers</th>
<th>heat-shrink tube/heat-resistant tube</th>
</tr>
</thead>
</table>

**Eco-friendly tubes without RoHS-specified chemicals or PVC**

Sumitomo Electric Fine Polymer, INC.
1-950 Asashironishi, Kumatori-cho, Sennan-gun, Osaka, 590-0458 Japan
Tel: 0724-52-7192 Fax: 0724-52-7195
E-mail; URL: http://www.sei-sfp.co.jp

**Category:**
- A3. Hazardous Substance
- A4. Waste
- B4. Higher Quality
- C3. Design and Material Selection
- C6. End-of-Life

Products in the Eco-tube Series do not include substances that could harm the environment such as PVC (polyvinyl Chloride), specified bromine flame retardant or halogen. The Eco-tube Series includes the following three types:

- **Type I**: Tubes without halogen
- **Type II**: UL-conforming flame-proof tubes without PVC and specified bromine flame retardant
- **Type III**: Thin-walled tube without PVC and specified bromine flame retardant

Products/Model:
SUMITUBE F(Z) series, IRRAX TUBE RP4, etc

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Eco-materials No.0058

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Eco Light</th>
</tr>
</thead>
</table>

**Halogen-and-lead-free polymeric material for molded resin products**

Fujikura Ltd.
1-5-1 Kiba, Koto-ku, Tokyo 135-8512 Japan
Tel: 03-5606-1272 Fax: 03-5606-1549
E-mail; wwwadmin@fujikura.co.jp
URL: http://www.fujikura.co.jp/

**Category:**
- A3. Hazardous Substance
- B1. Recyclability
- C3. Design and Material Selection

- This product does not generate dioxin, halogen gas or other toxic substances if incinerated.
- It does contain lead and so eliminates concern about the elution of heavy metal if disposed of by landfill.
- It is recyclable and easy to recover separately from polyvinyl chloride using water because the specific gravity of its material is about 1.1 s.g., smaller than that of polyvinyl chloride (about 1.4 s.g).
- It uses polyolefin material, which can be dyed and is as flexible and as flame retardant as polyvinyl chloride.
- In the event of fire, it does not generate excessive smoke or toxic gases such as halogen.
### Eco-materials No.0059

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Polyurethane foam</th>
</tr>
</thead>
</table>

**Sophisticated raw material of polyurethane foam**

Sanyo Chemical Industries, Ltd.
11-1, Ichihashinomoto-cho, Higashiyama-ku, Kyoto-shi, Kyoto 605-0995, Japan
Tel: 075-541-4311 Fax: 075-551-2557
E-mail;
URL: http://www.sanyo-chemical.co.jp/top/jpn/index.htm

Polyurethane foam is widely used in our immediate surroundings. For example, flexible foam is mainly used for cushioning materials such as car seats, and rigid foam is used as heat insulating material in residence and cold storage. “Excel Flow Series”, which is cross-linkable polyol, can convert to high-strength full hard Polyurethane foam, and the weight of foam can be trimmed (low density). “Vicera Flow Series” is polyol with high hydrophobic nature shows superb durability under the condition of high humidity and heat. “Aruti Flow Series” is concentrated polymer polyol that is the best suited to adjust hardness of flexible foam.

Category:
- A3. Hazardous Substance
- B2. Longevity
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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### Eco-materials No.0060

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Epoxy Resin Molding Material</th>
</tr>
</thead>
</table>

**Epoxy Resin Molding Material for semiconductor, “Sumikon REME”**

Sumitomo Bakelite Co., Ltd.
Tennnosu Parkside Bldg., 2-5-8, Higashinagawa, Shinagawa-ku, Tokyo 140-0002, Japan
Tel: 03-5462-3472 Fax;
E-mail;
URL: http://www.sumibe.co.jp/index.html

“Sumikon REME” is epoxy resin molding material for semiconductor sealing without using any bromic and antimonials fire retardant, as well as being compatible with lead-free solder. This product has two series. One of them is “Sumikon REME-G700 series” for reliable use, and the other is “Sumikon REME-G600 series” for general-purpose packages.

Category:
- A3. Hazardous Substance
- B1. Recyclability
- C2. Material and Components Production

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Sumitomo Electric Fine Polymer, INC.
1-950 Asashironishi, Kumatori-cho, Sennan-gun, Osaka, 590-0458 Japan
Tel: 0724-52-7192  Fax: 0724-52-7195
E-mail;  URL: http://www.sei-sfp.co.jp

When connectors or bobbins are mounted or processed using lead-free solder, the resin can be deformed by high temperature. TERALINK features high heat resistance, which can tolerate lead-free solder mounting, by bridging the resin. Moreover, TERALINK is superior in antifriction, enabling resin replacements for metal parts. These features contribute to the weight reduction of automotive components, thus reducing the environment load by low fuel consumption.

Products/Model :
TERALINK

MITSUBISHI PLASTICS, INC.
5-2, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-0005 Japan
Tel: 03-3283-4182  Fax: 03-3214-5167
E-mail;  URL: http://www.mpi.co.jp

The material has noncrystalline polyester resin as its main component and does not use halogen group materials such as vinyl chloride. Therefore it doesn’t emit harmful gas on combustion. Furthermore, since the combustion calorific value is less than half that of polyethylene, it causes little damage to a combustion furnace. It exerts manufacturability as well as current vinyl chloride from the viewpoint of manufacturing property. In addition, it has better property in intensity and thermostability.

Products/Model :
Diafix
### Eco-materials No.0063

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Peritoneal dialysis solution bag</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peritoneal dialysis solution bag that is safe for incineration after use</strong></td>
<td></td>
</tr>
</tbody>
</table>

Terumo Corporation  
2-44-1, Hatagaya, shibuya-ku, Tokyo, 151-0072 Japan  
Tel; 03-3374-8111  
Fax; 03-3374-8399  
E-mail: Kankyou@terumo.co.jp  
URL; http://www.terumo.co.jp

- Category:  
  - A3. Hazardous Substance  
  - B6. Environmental Purification  
  - C6. End-of-Life

Peritoneal dialysis enables patients to receive dialysis therapy at home. In 1999, Terumo became the first company in Japan to switch from PVC to polypropylene for the manufacture of continuous ambulatory peritoneal dialysis (CAPD) bags. As well as using polypropylene, we made the film thinner and eliminated outer packaging on the drainage bag, reducing the weight of discarded products by 40%.

### Eco-materials No.0064

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Cosmeticsheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-vinyl chloride sheet</strong></td>
<td></td>
</tr>
</tbody>
</table>

Toppan Printing Co., Ltd.  
Izumi-cho 1, Kanda, Chiyoda-ku, Tokyo 101-0024, Japan  
Tel; 03-3835-5665  
Fax;  
E-mail;  
URL; http://www.toppan.co.jp/index_f.html

- Category:  
  - A3. Hazardous Substance  
  - B4. Higher Quality  
  - C5. Product Use, Maintenance and Repair

This is mirror-surface non-vinyl chloride sheet. This sheet is used for surface material for storage or kitchen door.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0065

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Base coat</th>
</tr>
</thead>
</table>

**Aqueous base coat for automobiles**

Kansai Paint Co., Ltd.  
3-6, Hushimi-cho, 4-chome, Chuo-ku, Osaka-shi, Osaka 541-8523 Japan  
Tel: 06-6203-5531  Fax: 06-6203-5018  
E-mail;  
URL: http://www.kansai.co.jp/mail/iken.html

Category:  
- A2. Air Pollution  
- A3. Hazardous Substance  
- B2. Longevity  
- C2. Material and Components Production  
- C5. Product Use, Maintenance and Repair

This base coat has been widely used to automotive coating. Because organic solvent is not used, there are no impacts on environment. In addition, this coat has high weatherability.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0066

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Paint</th>
</tr>
</thead>
</table>

**Eco-friendly paint for car repair**

Kansai Paint Co., Ltd.  
3-6, Hushimi-cho, 4-chome, Chuo-ku, Osaka-shi, Osaka 541-8523 Japan  
Tel: 06-6203-5531  Fax: 06-6203-5018  
E-mail;  
URL: http://www.kansai.co.jp/mail/iken.html

Category:  
- A2. Air Pollution  
- A3. Hazardous Substance  
- C2. Material and Components Production  
- C5. Product Use, Maintenance and Repair

This paint, which is targeting for car repair, features high-solid and high-flow without containing toluene and xylene. This paint conforms with the US VOC regulation. Time for base coating work can be eliminated because this paint is quick-drying and non-sand paint.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0067

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Paint system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Low-solvent painting system considering environmental conservation, “Techto Safety System”**

Kansai Paint Co., Ltd.
3-6, Hushi-cho, 4-chome, Chuo-ku, Osaka-shi, Osaka 541-8523 Japan  
Tel: 06-6203-5531  Fax: 06-6203-5018  
E-mail:  
URL: http://www.kansai.co.jp/mail/iken.html

<table>
<thead>
<tr>
<th>Category:</th>
<th></th>
</tr>
</thead>
</table>
|           | ● A2. Air Pollution  
|           | ● A3. Hazardous Substance  
|           | ● C2. Material and Components Production  
|           | ● C5. Product Use, Maintenance and Repair |

This painting system does not include the VOC regulated substances, heavy metals, endocrine disturbing chemicals. Moreover, this system features high anti-corrosion and paintwork (heavy duty coating), thus contributing to environmental conservation.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0068

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Ink</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**New Eco-mark support ink for offset printing machine**

Dainippon Ink And Chemicals, Incorporated  
3-7-20, Nihonbashi, Chuo-ku, Tokyo 103-8233 Japan  
Tel: 03-5203-7753  Fax: 03-3278-0253  
E-mail:  
URL: http://www.dic.co.jp/form.html

<table>
<thead>
<tr>
<th>Category:</th>
<th></th>
</tr>
</thead>
</table>
|           | ● A2. Air Pollution  
|           | ● A3. Hazardous Substance  
|           | ● B4. Higher Quality  
|           | ● C2. Material and Components Production  
|           | ● C5. Product Use, Maintenance and Repair |

This ink is an ink for offset printing machine that conforms to Japan’s new Eco mark. The new Eco Mark guidelines specify 45% as the maximum permissible content for petroleum-based solvents, which contain volatile organic compounds (VOCs). Generally, reduction of the solvent content of ink lengthens drying time. The Web World ADVAN, which we developed, features a new resin that eliminates the need for petroleum-based solvents while actually accelerating drying time.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0069**

**Eco-friendly aqueous paint**

Nippon Paint Co., Ltd.
2-1-2, Oyodokita, Kita-ku, Osaka-shi, Osaka 531-8511, Japan
Tel: 06-6455-9194 Fax;
E-mail; URL: http://www.nipponpaint.co.jp/inquiry/

This paint is an aqueous paint that copes with sick house syndrome. This paint features low VOC and ingredient without using formaldehyde, toluene, xylene, paradichlorobenzene, chlorpyrifos, and heavy metals including lead. The VOC release will be zero several days after painting.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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**Eco-materials No.0070**

**Cross-linkable monomer for painting resins: Waterborne coatings and emulsion**

Kyowa Hakko Chemical Co., LTD.
3-2-5, Nihonbashi-Muromachi, Chuo-ku, Tokyo, 103-0022 Japan
Tel: 03-3510-3561 Fax: 03-3510-3571
E-mail: makoto.gotou@kyowa.co.jp
URL: http://kyowachemical.co.jp

Waterborne emulsion coatings are being increasingly used instead of conventional solvent coatings, because of VOC regulation and other environmental issues, as well as indoor environmental considerations such as the prevention of sick house syndrome.

This cross-linkable monomer forms coatings that have a strong cross-linkable structure when a slight amount of the monomer is put into waterborne emulsion coatings and reacts with the coating while drying.

Products/Model :
Diacetone Acrylamide (DAAM)
### Eco-materials No.0071

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Ink</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-VOC ink</strong></td>
<td></td>
</tr>
<tr>
<td>Toppan Printing Co., Ltd.</td>
<td>Category:</td>
</tr>
<tr>
<td>4-14-12, Koishikawa, Bunkyo-ku, Tokyo 112-8501, Japan</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>Tel; 03-3817-2525 Fax; 03-3817-6825</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>URL; <a href="http://www.kyodoprinting.co.jp/kphome/welcome.html">http://www.kyodoprinting.co.jp/kphome/welcome.html</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

The ingredient of ink is changed from general bean oil to vegetable oil for 100%, which realizes complete elimination of VOC.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0072

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Bonded fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Polyester bonded fabric</strong></td>
<td></td>
</tr>
<tr>
<td>Kanebo, Ltd.</td>
<td>Category:</td>
</tr>
<tr>
<td>3-20-20, Kaigan, Minato-ku, Tokyo 108-8080, Japan</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>Tel; 03-5446-3002 Fax;</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>URL; <a href="http://www.kanebo.co.jp/index.htm">http://www.kanebo.co.jp/index.htm</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Formalin-free polyester heat insulator “Perfect Barrier” is the safe insulator for residential use that consists of bonded fabric recycled from discarded plastic bottles. After use, it can be reused. It doesn’t generate formaldehyde that is the cause of sick house syndrome because it doesn’t include adhesive at all. Besides, it can be cut easily with your hands without strewing dust, which ensures safe work.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0073

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Coating Material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coating material that enabled the use of aqueous developing solution</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Sumitomo Bakelite Co., Ltd.**  
Tennnosu Parkside Bldg., 2-5-8, Higashinagawa, Shinagawa-ku, Tokyo 140-0002, Japan  
Tel: 03-5462-3472  Fax:  
E-mail:  
URL: [http://www.sumibe.co.jp/index.html](http://www.sumibe.co.jp/index.html)

Along with the rapid increase of semiconductor memory capacity and the demand for higher-speed response, narrower circuit width and higher reliability are required. In response to this request, positive photosensitive wafer coating resin, “Sumirezin Excel RCRC8000” series was developed. This coating resin allowed using alkaline water solution as developing solution and pure water as rinse liquid. In consequence, it became unnecessary to use special solvent in semiconductor manufacturing. Besides, this product began to replace conventional plastic sealing as wafer level package, enabling to save resource and energy by curtailing a manufacturing process.

Category:  
- A3. Hazardous Substance  
- B3. Resource Saving  
- B5. Energy Saving  
- C2. Material and Components Production

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0074

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Paint</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paint: No release of VOC, measures for sick house syndrome</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Mitsubishi Chemical Corp.**  
33-8, Shiba 5-chome, Minato-ku, Tokyo 108-0015  
Tel: 03-6414-3730  Fax: 03-6414-3745  
E-mail: mccpr@cc.m-kagaku.co.jp  
URL: [http://www.m-kagaku.co.jp/index.htm](http://www.m-kagaku.co.jp/index.htm)

The paint is an adhesive that contains no VOC such as formaldehyde, toluene and xylene, a part of measures for sick house syndrome. Two types for film, wood and paper bond maintains the same bonding performance and durability as conventional products, a top level in the industry.

Category:  
- A3. Hazardous Substance  
- B4. Higher Quality

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0075**

**Polymers**  
**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- B3. Resource Saving  
- C4. Product Manufacture  
- C5. Product Use, Maintenance and Repair

**Waterless plate for printing companies, using no water/toxic solvent**

**Toray Industries, Inc.**  
8-1, Mihama 1-chome, Urayasu, Chiba 279-8555 Japan  
Tel: 047-350-6048 Fax: 047-350-6071  
E-mail: Yukinobu_Uchida@nts.toray.co.jp  
URL: http://www.waterless-print.com/index.php

Conventional printing process applies theory that water repels ink in order to generate images, thus using a lot of water (mixed with toxic substances such as IPA). On the other hand, "waterless printing" applies characteristics of silicon to repel water. The silicon parts used for printing are not attached with ink, which allows printing with no water used. In addition, with "Toray Waterless Plate," printing board is produced by water-development method which produces no waste fluid to be recovered, thereby considerably reducing amount of chemical agent being used and waste fluid.

**Products/Model:**  
Toray Waterless Plate

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**Eco-materials No.0076**

**Polymers**  
**Superplasticizer**  
**Category:**  
- A3. Hazardous Substance  
- B4. Higher Quality  
- C3. Design and Material Selection  
- C4. Product Manufacture  
- C5. Product Use, Maintenance and Repair

**Eco-friendly powder type COA FLOW NF-100 for cement mortar**

**Taiheiyo Cement Corporation**  
St. Luke’s Tower, 8-1, Akashi-cho, Chuo-ku, Tokyo, 104-8518 JAPAN  
Tel: 03-6226-9020 Fax: 03-6226-9150  
E-mail; http://www.taiheiyo-cement.co.jp

This specially designed polycarboxylic acid superplasticizer has high cement dispersion and small delay of setting time. A powder-type superplasticizer, it can be safe for human body as well as environment since it does not contain formalin.
### Eco-materials No.0077

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Para-linked aramid fiber</th>
</tr>
</thead>
</table>

#### High-strength and heat-resistant fiber for automotive friction material

**Teijin Limited**  
2-1-1, Uchisaiwai-cho, Chiyoda-ku, Tokyo, 100-8585 Japan  
Tel: 03-3506-4194 Fax: 03-3506-4127  
E-mail: ekoha@teijin.co.jp  
URL: http://www.teijin-eco.com  

TWARON®, a para-linked aramid fiber, possesses high strength and excellent heat resistance. It is attracting attention for use in frictional materials for use in vehicle components such as disc pads, break linings and clutch facings as a substitute for asbestos.

**Category:**  
- A3. Hazardous Substance  
- B4. Higher Quality  
- C3. Design and Material Selection  
- C5. Product Use, Maintenance and Repair

---

### Eco-materials No.0078

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Vinyl chloride</th>
</tr>
</thead>
</table>

#### Energy-saving conscious vinyl chloride resin for sashes and tubes application

**Shin-Etsu Chemical Co., Ltd.**  
6-1, Otemachi 2-chome, Chiyoda-ku, Tokyo, 100-0004 Japan  
Tel: 03-3246-5091 Fax: 03-3246-5096  
E-mail: sec-pr@shinetsu.jp  
URL: http://www.shinetsu.co.jp

Since the ratio of petroleum use is lower in the vinyl chloride resin (salt 57%, petroleum 43%) than conventional plastics, it poses lower environmental burden in contrast to commodity plastics under LCA standard. Chlorinated vinyl sash, for example, shows higher thermal insulation than other materials, which allows energy and power saving of air-conditioner as well as significant reduction of carbon dioxide. Chlorinated tube, on the other hand, shows high duarability, basically with longer life-span than other materials.

**Category:**  
- A1. Global Warming  
- A5. Resource Consumption  
- B2. Longevity  
- C4. Product Manufacture  
- C5. Product Use, Maintenance and Repair

---

Products/Model:  
TWARON R  
Polyvinyl chloride
Eco-materials No.0079

Polymers | Stretchable fabric

DIAFLORA®, stretchable fabric permitting weight-saving / ultra-thin-modification of urethane foam

Toyobo Co., Ltd.
2-8 Dojimahama 2-chome, Kita-ku, Osaka, 530-8230 Japan
Tel: 06-6348-3417 Fax: 06-6348-3393
E-mail; kankyo@ho.toyobo.co.jp
URL; http://www.toyobo.co.jp

Category:
- A5. Resource Consumption
- B1. Recyclability
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

DIAFLORA® is a stretchable fabric having the advantage of PELPRENE® and PET yarn. The combination brings outstanding characteristics to the fabric, which includes elasticity recoverability, strength and excellent design. DIAFLORA® is superior to urethane foam in various function such as moisture recovery, more lightweight and more environmentally friendly.

Products/Model:
Office Chairs Made by DIAFLORA®

Eco-materials No.0080

Polymers | Polycarbonatediol (PCD)

Nature conservation-oriented polyurethane resin materials for artificial leather

Ube Industries, Ltd.
Seavans North Bldg., 1-2-1 Shibaura, Minato-ku, Tokyo 105-8449 Japan
Tel: 03-5419-6175 Fax: 03-5419-6255
E-mail; fine@ube-ind.co.jp
URL: http://www.ube-ind.co.jp

Category:
- A2. Air Pollution
- A5. Resource Consumption
- B2. Longevity
- B4. Higher Quality
- C1. Material Extraction

Polyurethanes produced from polycarbonatediol (PCD) are superior to the ones from polyetherdiol or polyesterdiol in heat, hydrolytic, oil, and weather resistance and have a smooth texture. This polyurethane resin is used to produce artificial leather which provides a high quality equivalent to natural leather products and thereby helps to conserve natural resources.

Products/Model:
UH-CARB (ETERNACOLL® UH),
UHC-CARB (ETERNACOLL® UHC),
UC-CARB (ETERNACOLL® UC),
UM-CARB (ETERNACOLL® UM)
Hitachi Metals, Ltd. has developed a polyethylene piping system with an excellent recyclability in stead of the conventional PVC piping. The product has superb earthquake resistance, corrosion resistance, workability and high reliability, with the developed electrofusion joint system for gas pipe.

“LANDY”-series products contribute the prevention of global warming. Their raw material is mainly carbon-neutral, bio-base polymer which decomposes easily in an alkaline atmosphere, and therefore the resource recycling of the product is possible. Moreover, the products may not damage the incinerator in which they are burned, because the calorie of the combustion is only half of that of the usually used resign.
**Eco-materials No.0083**

**Polymers** | Recycled polyester resin/fiber
---|---

**“Ecosensor” Polyester-resin/fiber made by chemical recycling for quality textiles**

ASAHI KASEI FIBERS CORPORATION  
Shin-Daibiru Bldg., 2-6, Dojimahama, 1-chome, Kita-ku, Osaka 530-8205, Japan  
Tel; 06-6347-3511 Fax; 06-6347-3513  
E-mail; URL: http://www.ak-fibers.jp

This quality fiber is made possible by the chemical recycling process of Asahi Kasei Fibers, which breaks down the polymers of used polyester products to their two constituent monomers and then separates, purifies, and polymerizes them to produce pure polyester polymer.

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving  
- B7. Usage of Recycled Material

Products/Model:  
Ecosensor

---

**Eco-materials No.0084**

**Polymers** | Interior Trimming PP Resin Unification
---|---

**Car interior trim PP resin unification: Recyclable**

Fuji Heavy Industries Ltd.  
1-7-2 Nishishinjuku, Shinjuku-ku, Tokyo Japan  
Tel: 03-3347-2111 Fax;  
E-mail; URL: http://www.fhi.co.jp/index.html

The unification of each interior part material also makes its waste same material. In some cases, this can eliminate or minimize traditional waste materials. In addition, this system enables easy reuse of reprocessed materials even when spent parts from unified materials are collected.

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B1. Recyclability  
- C3. Design and Material Selection  
- C6. End-of-Life

Products/Model:  
Unifying PP grade of interior trimming parts
# Eco-materials No.0085

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Plastic Palette</th>
</tr>
</thead>
</table>

## Recycled plastic palette made from insulating cover waste

**Fujikura Ltd.**  
1-5-1 Kiba, Koto-ku, Tokyo 135-8512 Japan  
Tel: 03-5606-1237 Fax: 03-5606-1541  
E-mail: yoshitom@fujikura.co.jp  
URL: http://www.fujikura.co.jp/  

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

In the past, insulating plastic covers used at the electric company's construction site were disposed of as industrial waste. However, they are now reprocessed and palletized to make plastic pallets, used for the storage and transportation of construction company equipment. Thus, this process has opened the door to the recycling of waste from insulating covers made from polyethylene or polypropylene.

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# Eco-materials No.0086

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Recycled polyethylene pipe waste</th>
</tr>
</thead>
</table>

## Pellet made from recycled polyethylene pipe waste

**SAIBU GAS CO., LTD.**  
1-17-1, Chiyoda, Hakata-ku, Fukuoka-city, 812-0044 Japan  
Tel: 092-633-2235 Fax: 092-633-2289  
E-mail: s_kuriyama@saibugas.co.jp  
URL: http://www.saibugas.co.jp/  

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Our company introduces a recycling system for polyethylene pipe waste from gas pipe construction. We reclaim polyethylene pipe waste and deliver it to recycling companies. It is then pelletized to produce recycled products such as stationery. The recycling system reduces waste and saves resources.
**Eco-materials No.0087**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Pavement material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Freeze-preventing “Rubit pavement”</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sumitomo Rubber Industries, Ltd.</strong></td>
<td></td>
</tr>
<tr>
<td>6-9, Wakihama-cho, 3-chome, Chuo-ku, Kobe-shi, Hyogo 651-0072, Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 078-265-3000 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.srigroup.co.jp/ecopedia/index.html">http://www.srigroup.co.jp/ecopedia/index.html</a></td>
<td></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
<td></td>
</tr>
<tr>
<td>● A4. Waste</td>
<td></td>
</tr>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
<tr>
<td>It is “Rubit pavement,” which prevents freeze by recycled rubber and unique asphalt. It comes under the spotlight as a new road in snow-covered cold district. Exploiting a superior characteristic in such as freeze-preventing efficiency or increased slipping-resistance, bearing fruit in Japanese nationwide snow-covered cold regions from Hokkaido, Tohoku down. “Rubit pavement” adopts an original technology that the rubber of waste tire is crumbled to mix into unique asphalt, contributing to tire-recycling.</td>
<td></td>
</tr>
</tbody>
</table>

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-materials No.0088**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fiber made from recycled PET plastic bottles, “Bell Recycle”</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Kanebo, Ltd.</strong></td>
<td></td>
</tr>
<tr>
<td>3-20-20, Kaigan, Minato-ku, Tokyo 108-8080, Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-5446-3002 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.kanebo.co.jp/index.htm">http://www.kanebo.co.jp/index.htm</a></td>
<td></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
<td></td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
<tr>
<td>Recycling plastic products is one of significant policies to preserve global environment. In that context, our fiber “Bell Recycle” is a valuable product because it uses recycled PET plastic bottles as its raw material. “Bell Recycle”, which is the blend of polyester made from recycled PET plastic bottles and cotton wool, can be widely used for various kinds of uniforms.</td>
<td></td>
</tr>
</tbody>
</table>

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0089**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Ink</th>
</tr>
</thead>
</table>

**Recyclable vegetable oil ink for offset printing**

Kyodo Printing Co., Ltd.
izumi-cho 1, Kanda, Chiyoda-ku, Tokyo 101-0024, Japan
Tel; 03-3835-5665 Fax;
E-mail;
URL: http://www.toppan.co.jp/index_f.html

This is ink made of recycled vegetable oil refined from edible waste oil disposed from school lunch facilities and food-service industry.

Category:
- ● A3. Hazardous Substance
- ● A4. Waste
- ● B1. Recyclability
- ● B7. Usage of Recycled Material
- ● C6. End-of-Life

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-materials No.0090**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Cellulose-fiber manufactured by cuproammonium technique</th>
</tr>
</thead>
</table>

**“Bemberg,” made from unutilized material (cotton linter)**

ASAHI KASEI FIBERS CORPORATION
2-6, Dojimahama,1-chome, Kita-ku, Osaka 530-8205 Japan
Tel; 06-6347-3600 Fax; 06-6347-3635
E-mail;
URL: http://www.ak-bemberg.com

Bemberg is a recycled cellulosic fiber made from cotton linter. Cotton linter is collected from cotton, annual plant, and is an environmentally-friendly material. As well as being a recycled cellulosic fiber it is biodegradable and a natural environment-friendly ecology material. It is certified as an Eco-label product by Japan Environment Association.

Category:
- ● A4. Waste
- ● A5. Resource Consumption
- ● B6. Environmental Purification
- ● C1. Material Extraction
- ● C6. End-of-Life

Products/Model :
Bemberg
### Eco-materials No.0091

**Polymers**  
**Cellulosic non-woven made by cuproammonium-technique**

**Non-woven fabric with the use of unutilized material (cotton linter)**

**ASAHI KASEI FIBERS CORPORATION**  
2-6, Dojimahama,1-chome, Kita-ku, Osaka 530-8205 Japan  
Tel: 06-6347-3390  Fax: 06-6347-3387  
E-mail;  
URL: http://www.bemliese.com

Bemliese® consists of cotton linter which is generally wasted. Cotton linter are short fibers covering the cotton seed. As the material of Bemliese® is pure cellulose, it biodegrades quickly and incinerates with very low levels of gas emission.

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### Eco-materials No.0092

**Polymers**  
**Biodegradable Plastic**

**Daicel Chemical Industries, Ltd.**

**Daicel Chemical Industries, Ltd.**  
2-18-1, Konan, Minato-ku, Tokyo, 108-8230 Japan  
Tel: 03-6711-8164  Fax: 03-6711-8168  
E-mail: ta_murakami@daicel.co.jp  
URL: http://www.daicel.co.jp/celgreen/

CELGREEN is a biodegradable plastic. It creates biomass through a natural reducing system (degraded by microbes in soil, seawater, rivers and lakes) or composting treatment after use, ultimately decomposing into carbon dioxide and water. This makes it extremely environmentally-friendly. Incineration heat and carbon dioxide generated on incineration is the same as that of polyethylene and the effect on the environment is extremely low compared with general-purpose plastic products.

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**Eco-materials No.0093**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Fibers</th>
</tr>
</thead>
</table>

**“Ecodea” Polylactic Acid Fibers**

Toray Industries, Inc.
Toray Bldg., 2-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8666 Japan
Tel: 03-3245-5179 Fax: 03-3245-5459
E-mail; URL: http://www.toray.co.jp

Poly lactide (PLA) is a biodegradable polymer manufactured by polymerizing the lactic acid obtained from fermenting the starch of corn, the world's most common type of grain. It is a genuinely environmentally friendly material suitable for use in the 21st century since it uses recyclable natural resources as raw materials, requires no petrochemicals, and can be easily returned to the environment after use.

**Eco-materials No.0094**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Cosmetics</th>
</tr>
</thead>
</table>

**Biodegradation cosmetics**

Yamanouchi Pharmaceutical Co., Ltd.
2-3-11, Motomachi, Nihonbashi, Chuo-ku, Tokyo 103-8411, Japan
Tel: 03-3244-3143 Fax;
E-mail; URL: http://www.yamanouchi.com/jp/

The Minon Series is weak-acid and natural soaps that feature biodegradation and low impacts on rivers when disposed from homes. Also, these soaps have few impacts on living beings. This soap has advantages in low impacts on environment after being disposed from homes.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0095**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Acrylic Powder with plastisol</th>
</tr>
</thead>
</table>

DIANALR LP is an acrylic powder used for plastisol that saves energy during the coating process and has minimal environmental impact, even on incineration.

Mitsubishi Rayon Co., Ltd.
6-41, Konan 1-Chome, Minato-ku, Tokyo, 108-8506 Japan
speciality chemicals department A
Tel; 03-5495-3098  Fax; 03-5495-3216
E-mail; URL: http://www.mrc.co.jp/

This acrylic powder has a variety of applications such as car undercoats or carpet tile backing material. It is an environmentally-friendly material since it offers better coating performance than existing products even at lower processing temperature and has minimal environmental impact even on incineration.

Category:
- A2. Air Pollution
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C4. Product Manufacture

Products/Model:
DIANALR LP

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**Eco-materials No.0096**

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Medicine</th>
</tr>
</thead>
</table>

**Medicine packages featuring low environmental load**

Sankyo Co., Ltd.
5-1, Motomachi, 3-chome, Nihonbashi, Chuo-ku, Tokyo 103-8426, Japan
Tel: 03-5255-7111  Fax;
E-mail;
URL: http://www.sankyo.co.jp/

We have been promoting Reduce, Reuse, and Recycle for medical packages. We are using recycling paper with 50-60% recycling rate as the material for paper packages. Moreover, we are using 100% recycling paper for cases. For transparent packages (PTP sheet), vinyl chloride is used conventionally but we changed it to polypropylene, which features low environmental impacts.

Category:
- A3. Hazardous Substance
- A4. Waste
- B1. Recyclability
- C6. End-of-Life

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0097

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Hand Soap</th>
</tr>
</thead>
</table>

**Medicated hand soap (refill)**

Kose Corporation  
3-6-2, Nihonbashi, Chuo-ku, Tokyo 103-8251, Japan  
Tel; 03-3273-1675 Fax;  
E-mail;  
URL: https://www.kose.co.jp/office/form_m.html

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B1. Recyclability  
- B3. Resource Saving  
- C1. Material Extraction

This medicated hand soap employed a standing pouch as a refill. As a container can be used repeatedly, it doesn’t come to waste after it is used only once.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0098

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Medicine</th>
</tr>
</thead>
</table>

**Eco-friendly medicine packages**

Daiichi Pharmaceutical Co., Ltd.  
3-14-10, Nihonbashi, Chuo-ku, Tokyo 103-8234, Japan  
Tel; 03-3273-7114 Fax; 03-3272-7348  
E-mail;  
URL: http://www.daiichipharm.co.jp/index2.html

**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- B1. Recyclability  
- C6. End-of-Life

For medicine packages, we are contributing to environment by reducing materials, utilizing recycled materials, avoiding harmful materials, promoting waste separation, using easy-to-crash materials. We are using a plastic bottle for contrast media, which is lighter and recycleable than a glass bottle. Also, we are changing the PTP sheet to polypropylene.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0099**

**Polymers**

**Medicine**

**PTP package made of polypropylene**

Chugai Pharmaceutical Co., Ltd.
2-1-9, Kyobashi, Chuo-ku, Tokyo 104-8301, Japan
Tel: 03-3273-0881 Fax: 03-3281-6607
E-mail;
URL: http://www.chugai-pharm.co.jp/hc/chugai_top.jsp

We have changes packaging from heat-seal to PTP. We are also making reduction of vinyl chloride. To enhance energy saving, we are reducing packaging materials.

Category:
- A3. Hazardous Substance
- A4. Waste
- B1. Recyclability
- C6. End-of-Life

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**Eco-materials No.0100**

**Polymers**

**Medicine**

**Eco-friendly medicine packages**

Fujisawa Pharmaceutical Co., Ltd.
3-4-7, Doshu-cho, Chuo-ku, Osaka-shi, Osaka 541-8514, Japan
Tel: 06-6206-7858 Fax;
E-mail;
URL: http://www.fujisawa.co.jp/

Disposing medicine packages is one of major environmental impacts of medicine. We are conducting material integration from the viewpoint of reduction of vinyl chloride, package simplification, and waste separation.

For cephalosporin drip infusion kits, we reduced materials, integrated materials into non-chloride plastics, and size reduction.

Category:
- A3. Hazardous Substance
- A4. Waste
- B1. Recyclability
- C6. End-of-Life

---

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0101

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Biodegradable plastic</th>
</tr>
</thead>
</table>

#### LACEA™ (Biodegradable Plastic)

**Mitsui Chemicals Corporation**

Shiodome City Center, 5-2, Higashi-Shimbashi 1-chome, Minato-ku, Tokyo 105-7117

Tel: 03-6253-2100 Fax: 03-6253-4245

E-mail; URL: http://www.mitsui-chem.co.jp/index.htm

**Description:**
- **LACEA™** is a biodegradable poly-lactic plastic resin produced from lactic acid. This polymer material is produced by fermenting glucose obtained from corn and potatoes, and sucrose obtained from sugarcane and beets. The incineration of LACEA™ acid does not increase the amount of carbon dioxide in the air because the carbon source being burned has already been absorbed by plant. A study by SRI, a consulting company in the USA, reported that the total consumption of fossil resources when poly lactic acid is produced and finally disposed is 30% less than when PP is used. The LACEA is currently used for packaging containers, agricultural and civil engineering materials, compost bags, and cards. This plastic is certified for Japan’s Green Plastic Certification. It also meet the requirements of Germany’s compostable material standards.

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### Eco-materials No.0102

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Coated fertilisers</th>
</tr>
</thead>
</table>

#### Long™ coated fertilizer and Ecolong™ environmentally degradable coated fertilizer

**Asashi Kasei Corporation**

Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan

Tel: 03-3507-2060 Fax: 03-3507-2495

E-mail; URL; http://www.asahi-kasei.co.jp/

**Description:**
- These fertilizers coated with a new type coating material are made by readily bio-degradable and photolysis resin. Use of this coated fertilizer will enhance the effectiveness of chemical fertilizer to reduce residual amount of applied chemicals. In addition, the coated layer of fertilizers is readily biodegradable. As a result, the bioaccumulation of polymer coating material will be eliminated.

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### Eco-materials No.0103

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Decorative pannel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prearmour</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Dai Nippon Printing Co., Ltd. | Category:  
- A3. Hazardous Substance  
- B4. Higher Quality  
- C5. Product Use, Maintenance and Repair |

Prearmour is an environmentally conscious decorative paneling that does not contain any of the 12 designated VOCs which cause "Sick house" syndrome. The product is unique in that it has a rigid surface to prevent scratch during transportation. In addition, for the purpose of design and to cover up the uneven surface of the paneling, a design is printed onto the surface of the paneling.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0104

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Dioxin adsorbant film</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suiaru-Power Dioxin-Absorbent film</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Sumitomo Chemical Co., Ltd. | Category:  
- A3. Hazardous Substance  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair |

Suiaru-Power dioxin absorbent film is a new complex resin film that can absorb heavy metals and such poisonous gases as the dioxins produced at garbage incineration facilities. Garbage bags made from this film have been approved by local government bodies. In addition, the development of other product applications, such as kitchen-use water drainage garbage bags and functional papers, is under way.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0105**

**Polymers** | **Heat resistant resin**
---|---

**ARLEN™**

**Mitsui Chemicals Corporation**
Shiodome City Center, 5-2, Higashi-Shimbashi 1-chome, Minato-ku, Tokyo 105-7117
Tel: 03-6253-2100 Fax: 03-6253-4245
E-mail; URL: http://www.mitsui-chem.co.jp/index.htm

Category:
- A3. Hazardous Substance
- B4. Higher Quality
- C3. Design and Material Selection

This semi aromatic poly-amide material is for use with lead-free solder in the manufacturing of electronic parts. Melting point of lead-free solder is normally higher than existing lead solder. The reflow temperature for soldering electronic parts to substrates, therefore, has to be higher than before. As a result, there is a need for heat-resistant resins that can withstand temperatures higher than those previously used as a base material for circuit board and electronic parts. This resin has excellent rigidity and a high melting point (320°C), equivalent to that of super engineering plastic, and can be used under reflow conditions with lead-free solder.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-materials No.0106**

**Polymers** | **Inorganic barrier film**
---|---

**IB Film**

**Dai Nippon Printing Co., Ltd.**
1-1, Ichigaya Kagacho 1-chome Shinjuku-ku, Tokyo 162-8001, Japan
Tel: 03-5225-8480 Fax: 03-5225-8489
E-mail; info@mail.dnp.co.jp
URL: http://www.dnp.co.jp/

Category:
- A3. Hazardous Substance
- C3. Design and Material Selection
- C6. End-of-Life

This inorganic barrier film for packaging is free of chlorine resin, which is one of the sources of dioxin emissions. This product has been used for food packages that require barriers and liquid soups, and for small bags for liquid seasoning.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0107

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Membrane separation</th>
</tr>
</thead>
</table>

#### Eutec™ oil-water separators

**Asashi Kasei Corporation**  
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan  
Tel; 03-3507-2060 Fax; 03-3507-2495  
E-mail; URL; http://www.asahi-kasei.co.jp/

*Category:*  
- A3. Hazardous Substance  
- B4. Higher Quality  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

Eutec™ oil-water separator is made of ultra-fine-fiber membranes which are produced by Asahi Kasei non-woven fabric technology. This separator can be used to remove water from either production oil at petroleum refineries, or lubricant and hydraulic oil, or from distillation-recovered hydrophobic solvents such as fluorocarbons. It can also be used to remove oil from either cooling water at ethylene production plants, or ship bilge water; or aqueous cleaning agents in part cleaning lines.

---

### Eco-materials No.0108

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Membrane separation</th>
</tr>
</thead>
</table>

#### Acclima™ Biological Membrane Carrier

**Asashi Kasei Corporation**  
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan  
Tel; 03-3507-2060 Fax; 03-3507-2495  
E-mail; URL; http://www.asahi-kasei.co.jp/

*Category:*  
- A3. Hazardous Substance  
- B4. Higher Quality  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

Acclima™ membrane carrier is made of Saran™ fiber. When this membrane carrier is used, microorganisms in the water will adhere to a carrier, where they will form a biological membrane. Contaminants will be decomposed by the microorganisms when it is brought into contact with the membrane.
### Eco-materials No.0109

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Non woven fabric</th>
</tr>
</thead>
</table>

#### Non-woven Fabric for Sanitary Articles

**Mitsui Chemicals Corporation**

Shiodome City Center, 5-2, Higashi-Shimbashi 1-chome, Minato-ku, Tokyo 105-7117
Tel; 03-6253-2100 Fax; 03-6253-4245
E-mail; URL: http://www.mitsui-chem.co.jp/index.htm

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
</tr>
</tbody>
</table>

This thinner non-woven fabric is used in paper diaper covers. This material could reduce the raw material energy consumption during the production or manufacture stage. Actual achievements reported by the company indicated that raw material consumption would reduce 40% compared to conventional material. Similarly, waste generation also reduce approximately 40%, while energy consumption is less than 50% compared to previous production process.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0110

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Plastic</th>
</tr>
</thead>
</table>

#### PP mixed with wood powder, bamboo, corn starch, etc

**Mitsui Chemicals Corporation**

Shiodome City Center, 5-2, Higashi-Shimbashi 1-chome, Minato-ku, Tokyo 105-7117
Tel; 03-6253-2100 Fax; 03-6253-4245
E-mail; URL: http://www.mitsui-chem.co.jp/index.htm

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
</tr>
</tbody>
</table>

These various poly-propylene (PP) materials are produced by mixing poly-propylene with various waste materials for more effective use of resources. At the moment, three types of mixed PP material available. The first type is PP mixed with wood powder to reduce use of wood as a building material. The second type is PP mixed with bamboo for egg containers as a substitute for paper. The third type is PP mixed with corn starch to be used in lunch boxes in convenience stores. Use of these materials will enhance resource efficiency.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0111

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Plastic card</th>
</tr>
</thead>
</table>

**Ecofit Card (P-type)**

Dai Nippon Printing Co., Ltd.
1-1, Ichigaya Kagacho 1-chome Shinjuku-ku, Tokyo 162-8001, Japan
Tel; 03-5225-8480 Fax; 03-5225-8489
E-mail: info@mail.dnp.co.jp
URL: http://www.dnp.co.jp/

- **Category:**
  - A3. Hazardous Substance
  - C3. Design and Material Selection
  - C6. End-of-Life

Ecofit Card (P-type) is made of non halogen flame retardant plastic. Halogen flame retardants might transform to dioxin during the incineration of discarded cards. Incineration of the Eco-fit card, thus, would not release such substance to environment. This card has excellent mechanical strength and chemical resistance.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0112

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Plastic card</th>
</tr>
</thead>
</table>

**Ecofit Card (B-type)**

Dai Nippon Printing Co., Ltd.
1-1, Ichigaya Kagacho 1-chome Shinjuku-ku, Tokyo 162-8001, Japan
Tel; 03-5225-8480 Fax; 03-5225-8489
E-mail: info@mail.dnp.co.jp
URL: http://www.dnp.co.jp/

- **Category:**
  - A3. Hazardous Substance
  - C3. Design and Material Selection
  - C6. End-of-Life

The card itself is made from agricultural products, such as corn, rape seed, and soybean. These sources are renewable, environmentally-friendly, and biodegradable. These organics could easily break down when exposed to natural microbes in the soil, sea, rivers, lakes and marshes.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
<table>
<thead>
<tr>
<th>Eco-materials No.0113</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymers</td>
<td>Plastic resin</td>
</tr>
<tr>
<td><strong>HI-ZEX™ for thinner bottles</strong></td>
<td></td>
</tr>
<tr>
<td>Shiodome City Center, 5-2, Higashi-Shimbashi 1-chome, Minato-ku, Tokyo 105-7117</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-6253-2100 Fax; 03-6253-4245</td>
<td></td>
</tr>
<tr>
<td>E-mail; URL; <a href="http://www.mitsui-chem.co.jp/index.htm">http://www.mitsui-chem.co.jp/index.htm</a></td>
<td></td>
</tr>
<tr>
<td>HI-ZEX™ is a high density poly ethylene (HDPE) resin. Its high performance properties enable reduction of thickness of bottles. This material could reduce container weight by 15% compared to existing HDPE bottles while maintains performance qualities, including rigidity and strength. Reduction of container weight would reduce environmental impacts during the transportation of containers.</td>
<td></td>
</tr>
</tbody>
</table>

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

<table>
<thead>
<tr>
<th>Eco-materials No.0114</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymers</td>
<td>Plastic resin</td>
</tr>
<tr>
<td><strong>EVIOLUE™ for packaging material</strong></td>
<td></td>
</tr>
<tr>
<td>Shiodome City Center, 5-2, Higashi-Shimbashi 1-chome, Minato-ku, Tokyo 105-7117</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-6253-2100 Fax; 03-6253-4245</td>
<td></td>
</tr>
<tr>
<td>E-mail; URL; <a href="http://www.mitsui-chem.co.jp/index.htm">http://www.mitsui-chem.co.jp/index.htm</a></td>
<td></td>
</tr>
<tr>
<td>EVIOLUE™ is a linear low density poly-ethylene resin produced by vapor-phase process. This polymer material is proved to reduce the thickness of bottles by 20-30% compared to existing products while maintaining the strength at the same level. Reduction of container weight would reduce environmental impacts during the transportation of containers.</td>
<td></td>
</tr>
</tbody>
</table>

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0115

<table>
<thead>
<tr>
<th>Category</th>
<th>Polymeric Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plastic resin</td>
</tr>
</tbody>
</table>

#### Sumitomo Chemical Co., Ltd.

Sumitomo Chemical Co., Ltd.
27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8260, Japan
Tel: 03-5543-5500 Fax: 03-5543-5901
E-mail;
URL: http://www.sumitomo-chem.co.jp/

Sumitomo TPE is a poly-olefin thermoplastic resin that is lightweight, excellent heat resistance, good weatherability, and chemical resistance and moldability. This special plastic is recyclable and easy to dispose of by incineration. The resin is currently experiencing a rapid increase in demand from such industries as automotive manufacturers for vehicle interior parts.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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### Eco-materials No.0116

<table>
<thead>
<tr>
<th>Category</th>
<th>Polymer Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Polymer powder</td>
</tr>
</tbody>
</table>

#### Suntec™ PAK coating powder

Asashi Kasei Corporation
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan
Tel: 03-3507-2060 Fax: 03-3507-2495
E-mail;
URL: http://www.asahi-kasei.co.jp/

This polymer coating powder is made of polyethylene. Use of this powder will eliminate 100% use of organic solvent and reduce atmospheric emission. This powder is used to coat pipes, fences, fan guards.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0117

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Purging agent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asaclean™ purging agent for plastic molding machines</strong></td>
<td></td>
</tr>
<tr>
<td>Asashi Kasei Corporation</td>
<td></td>
</tr>
<tr>
<td>Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan</td>
<td></td>
</tr>
<tr>
<td>Tel: 03-3507-2060 Fax: 03-3507-2495</td>
<td></td>
</tr>
<tr>
<td>E-mail:</td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.asahi-kasei.co.jp/">http://www.asahi-kasei.co.jp/</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category:</td>
</tr>
<tr>
<td></td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td></td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td></td>
<td>● C2. Material and Components Production</td>
</tr>
</tbody>
</table>

This highly effective purging agent is used to clean plastic molding machines. Five available types of purging agents include standard type (U), type UP for solely PP like color change, type E for transparent resins, type EX for deposit removal, and type UE for extrusion. These agents can be operated at the range of temperature of 180 ℃ -360 ℃. These agents could reduce about 74% of cleaning and operating cost compared to current method.

---

### Eco-materials No.0118

<table>
<thead>
<tr>
<th>Polymers</th>
<th>EA Toner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EA Toner with reduced CO₂ emission in manufacturing / working process</strong></td>
<td></td>
</tr>
<tr>
<td>Fuji Xerox. Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>2-17-22 Akasaka, Minato-ku, Tokyo, 107-0052 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-5573-2882 Fax; 03-5573-2883</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:kazuo.suzuki@fujixerox.co.jp">kazuo.suzuki@fujixerox.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.fujixerox.co.jp/">http://www.fujixerox.co.jp/</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category:</td>
</tr>
<tr>
<td></td>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td></td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td></td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td></td>
<td>● B5. Energy Saving</td>
</tr>
</tbody>
</table>

In contrast to conventional powder-based toners, EA toner is formed through a chemical process by mixing, coalescing and then heating pigment and latex particles in a solution. With this method, uniform particles with a size of 5.8 micrometers each (average particle diameter) are manufactured with reduced CO₂ emission in the manufacturing process, while achieving higher print quality.

The manufacturing process differs from ordinary powder-based toners in that the size of pigment and latex particles is increased rather than minimized, making it possible to cut CO₂ emissions by 35%. This allows the shape of the particles to be controlled with precision, thus enabling images to be more efficiently transferred to paper. The amount of toner used is also reduced by 37%.

As the toner is oil-free, it applies thinly and evenly. As a result, it is easier to annotate and use self-adhesive notes, while also improving the clarity of fine lines. In addition, photos and graphics appear much more natural because glossiness is reduced.
**Eco-materials No.0119**

<table>
<thead>
<tr>
<th>Natural Materials</th>
<th>Magnesium Stearate</th>
</tr>
</thead>
</table>

**Energy-saving Magnesium stearate for resin/foods/cosmetics made from vegetable fat/oil**

Shinagawa Chemical Industry Co., Ltd.
4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan
Tel: 046-285-0826  Fax: 046-285-1703
E-mail: info@shinagawa-chem.co.jp
URL: http://www.shinagawa-chem.co.jp

Category:
- A2. Air Pollution
- A4. Waste
- A5. Resource Consumption
- B5. Energy Saving
- C4. Product Manufacture

This Eco Magnesium Stearate based on vegetable oil reduces the environmental burden. It is energy-saving and waste-free and uses original manufacturing technology.

Products/Model:
Magnesium Stearate • SAK-MS

---

**Eco-materials No.0120**

<table>
<thead>
<tr>
<th>Natural Materials</th>
<th>Zinc stearate</th>
</tr>
</thead>
</table>

**Energy-saving Zinc Stearate for resin/foods/cosmetics made from vegetable fat/oil**

Shinagawa Chemical Industry Co., Ltd.
4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan
Tel: 046-285-0826  Fax: 046-285-1703
E-mail: info@shinagawa-chem.co.jp
URL: http://www.shinagawa-chem.co.jp

Category:
- A2. Air Pollution
- A4. Waste
- A5. Resource Consumption
- B5. Energy Saving
- C4. Product Manufacture

This Eco Zinc Stearate based on vegetable oil reduces the environmental burden. It is energy-saving and waste-free and uses original manufacturing technology.

Products/Model:
Zinc Stearate • SAK-ZS
### Eco-materials No.0121

**Natural Materials** | **Calcium stearate**
---|---

**Energy-saving calcium stearate for resin/foods/cosmetics made from vegetable fat/oil**

Shinagawa Chemical Industry Co., Ltd.

4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan

Tel; 046-285-0826 Fax; 046-285-1703

E-mail; info@shinagawa-chem.co.jp

URL; http://www.shinagawa-chem.co.jp

Environmental-friendly Eco Calcium Stearate is based on vegetable oil. It is energy-saving and waste-free and is made with original manufacturing technology.

**Products/Model :**

Calcium Stearate • SAK-CS

---

### Eco-materials No.0122

**Natural Materials** | **Plant vitalizer**
---|---

**Plant vitalizing liquid for agricultural use using natural materials**

Showa Denko K.K.

13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan

Tel; 044-329-0739 Fax; 044-329-0791

E-mail;

URL; http://www/sdk.co.jp

A solution of 7% chitosan (a naturally derived high polymer made from chitin, found in crab shells) dissolved in liquid organic acid to promote plant growth.

When sprayed onto stems and leaves of crops, this liquid vitalizes enzymes (such as chitinase) that the crops originally possessed, thereby strengthening their immunity to disease. As a result, it promotes growth by increasing sugar content.

**Products/Model :**

Chitosar

---
Eco-materials No.0123

Natural Materials | Material for Adhesive Label

**Adhesive label made of plant-derived degradable plastic and self-adhesive**

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713 Fax: 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL: http://www.lintec.co.jp

“BIOLA” employed plant-derived biodegradable plastic film (polyactic acid)* as surface medium and newly developed plant-deprived (natural rubber related) adhesive as sticker. It contributes to the conservation of exhaustible fossil fuel as it contains no petroleum. It reduces environmental burden after disposal due to the degradable adhesive film, fewer carbon dioxide emission and heat in use, and less risk of generating hazardous substances when it is incinerated.

*Polyactic acid: it is obtained by polymerize poly-lactic acid that is the product of fermentation of starch extracted from corn or sweet corn.

Products/Model:
BIOLA:White(LM131K),Clear(LM171K)

---

Eco-materials No.0124

Natural Materials | Paper

**Paper that uses wood comes from well-managed forests**

MITSUBISHI PAPER MILLS LIMITED
Shin Nisseki Bldg. 3-4-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005 Japan
Tel: 03-3213-3763 Fax: 03-3213-3818
E-mail; katsura_toru@mpm.co.jp
URL: http://www.mpm.co.jp/

At least 30% of the wood fiber used in this product line comes from well-managed forests, independently certified in accordance with the rules of the Forest Stewardship Council. Those forests are certified to ensure they comply with sustainable practice and principles in terms of social, economic, and environmental aspects. Using this kind of paper leads to promote proper forest management.

Products/Model:
Peal coat FSC
**Eco-materials No.0125**

**Plastic for carbon-neutral vehicle using plant sources**

**Toyota Motor Corporation**

1, Toyota-cho, Toyota-shi, Aichi, 471-8571
Tel; 0565-28-2121 Fax;
E-mail;
URL: http://www.toyota.co.jp

This plastic can be used as a vehicle component, by improving polylactic acid produced from phytomaterial such as sugar cane or maize. Thanks to its plant sources, it is said to be ‘carbon neutral’ and helps to conserve oil resources when compared with current resins, rendering CO2 circulate even on incineration.

Category:
- A1. Global Warming
- A5. Resource Consumption
- B1. Recyclability
- B3. Resource Saving
- C6. End-of-Life

**Eco-materials No.0126**

**Surface-activating agent with high biodegradability and little environmental influence**

**Showa Denko K.K.**

13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan
Tel; 044-329-0739 Fax; 044-329-0791
E-mail;
URL: http://www.sdk.co.jp

Surfactin sodium salt, known as a peptide biosurfactant produced by microorganisms. It has a high level of surface-activating performance and an extremely low level of stimulation effects for a surface activator, as well as strong emulsification capabilities.

In addition, since it shows high biodegradability, it has little environmental impact, making it suitable for cosmetics.

Category:
- A4. Waste
- B4. Higher Quality
- C1. Material Extraction
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life
### Eco-materials No.0127

**Natural Materials** | **Fiber**
---|---

**Paper yarn OJO: Biodegradable fiber for dresses and interior partitions**

<table>
<thead>
<tr>
<th>Oji Fiber Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-9-8 Ginza Chuo-ku Tokyo, 104-0061 Japan</td>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>Tel; 03-5565-9261 Fax; 03-3248-8022</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:h-shiraishi@ojifiber.co.jp">h-shiraishi@ojifiber.co.jp</a></td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>URL; <a href="http://www.ojifiber.co.jp">http://www.ojifiber.co.jp</a></td>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Manila hemp from Ecuador, which is used in OJO paper yarn, grows rapidly given a hot climate and high humidity and can be harvested after around three years. It is low cost and has less environmental impact. It absorbs more CO2 emissions, generates no hazardous substances even when burned and is biodegradable.

### Eco-materials No.0128

**Natural Materials** | **Simple Packing of Optical Fiber Cable**
---|---

**Eco-friendly simple packing of Optical Fiber Cable**

<table>
<thead>
<tr>
<th>Fujikura Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5-1 Kiba, Koto-ku, Tokyo 135-8512 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel; 03-5606-1030 Fax; 03-5606-1502</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:f-eco@fujikura.co.jp">f-eco@fujikura.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>URL; <a href="http://www.fujikura.co.jp/">http://www.fujikura.co.jp/</a></td>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

In the past, Optical Fiber Cable was packed by means of nailing battens around a cable drum to protect it during transportation. However, once used, these battens turned into waste, so we looked at developing a simple packing method without the use of battens. As a result, we achieved a dramatic reduction in lumber consumption by simplifying packing for Optical Fiber Cable and other measures.

Products/Model: simple packing of for Cable
Eco-materials No.0129

Natural Materials | Planting bed

Eco-friendly unit-type planting bed for rooftop/wall surface

Hazama Corporation
2-5-8 Kita-Aoyama Minatoku Tokyo, 1078658 Japan
Tel; 03-3405-1124 Fax; 03-3405-1814
E-mail; info@hazama.co.jp
URL; http://www.hazama.co.jp

This palm mat unit-type planting bed uses recycled product from the organic waste of palm shell, so it does not release toxic substances on disposal. This plays an important role in creating a recycling-oriented society. City environments can be improved with rooftop/wall surface replanting using the mat since it helps with heat island phenomenon, air purification and reduces rainwater flow. It can be used to improve landscapes and create novel space. Heat insulation performance of structures is improved through replanting of rooftops/wall surfaces, contributing to energy-saving. Wall surfaces replanted with palm mat also benefit from its sound insulation effect.

Category:
- A4. Waste
- B3. Resource Saving
- B5. Energy Saving
- B7. Usage of Recycled Material
- C5. Product Use, Maintenance and Repair

---

Eco-materials No.0130

Natural Materials | Cleaning cloth

Bemberg™ and Bemliese™ regenerated cellulose

Asashi Kasei Corporation
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan
Tel; 03-3507-2060 Fax; 03-3507-2496
E-mail;
URL; http://www.asahi-kasei.co.jp/

This cellulose fiber is produced from cotton linter. The material consists of three advantage properties including high liquid absorbance, super heat resistance, and minimal static electricity generation. The test result reported that this material could degrade about 80% in two months. Thus disposal of this material at the end of life would not cause any major negative impacts on the environment.

Category:
- A5. Resource Consumption
- B4. Higher Quality
- B7. Usage of Recycled Material
- C6. End-of-Life

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0131

<table>
<thead>
<tr>
<th>Natural Materials</th>
<th>Ink</th>
</tr>
</thead>
</table>

**Environmentally conscious ink (Soy bean oil ink)**

Dai Nippon Printing Co., Ltd.
1-1, Ichigaya Kagacho 1-chome Shinjuku-ku, Tokyo 162-8001, Japan  
Tel: 03-5225-8480 Fax: 03-5225-8489  
E-mail: info@mail.dnp.co.jp  
URL: http://www.dnp.co.jp/

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
</table>
| ● A2. Air Pollution  
| ● A3. Hazardous Substance  
| ● C3. Design and Material Selection |

Most printing inks contain petroleum solvents which are aromatic or infinite resources. Recent development of printing ink has shifted focus on renewable resource such as soybean oil ink. The use of renewable resource for ink would enable the conservation of non-renewable materials. In addition, this soybean oil ink is readily degradable.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

---

### Eco-materials No.0132

<table>
<thead>
<tr>
<th>Natural Materials</th>
<th>Paper</th>
</tr>
</thead>
</table>

**Banana Paper**

Banana Paper Project
Office Banana Project 710, 1-35, Hiroo 1-chome, Shibuya-ku, Tokyo 150-0012, Japan  
Tel: 03-3400-4440 Fax: 03-3400-3456  
E-mail: info@bananaproyect.com  
URL: http://www.bananaproyect.com/jp/top/index.html

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
</table>
| ● A5. Resource Consumption  
| ● B3. Resource Saving  
| ● C1. Material Extraction  
| ● C6. End-of-Life |

Banana papers are made by the fibers which are plucked off from banana stems. No chemical is used during the pulp and paper making processes. This is the unique paper making method in the world. In Japan, the Association of SAITAMA KENAF is promoting this beautiful banana paper for fork-art. With the current technology and "KAMIZO" machine, about 30 kilograms of pulp can be made a day. In addition, 1 tone of banana waste could produce about 1,200 A4 size pages.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0133

#### Natural Materials | Functional polyactic resin

**Non-toluene functional polyactic resin for color printing ink, adhesives**

| Toyobo Co., Ltd. | Category:
| 2-8 Dojimahama 2-chome, Kita-ku, Osaka, 530-8230 Japan | ● A5. Resource Consumption
| Tel; 06-6348-3417 Fax; 06-6348-3393 | ● B6. Environmental Purification
| E-mail; kankyo@ho.toyobo.co.jp | ● C1. Material Extraction
| URL; http://www.toyobo.co.jp | ● C4. Product Manufacture
| | ● C6. End-of-Life

Vlyoeol® is a functional biodegradable resin with lactic acid as a main material. It has potential for aerobic resolution (composting treatment). Alkali solubilization treatment of anaerobic resolution (methane fermentation) is possible.

![Image](https://via.placeholder.com/150)

**Products/Model:**

Vlyoeol®

### Eco-materials No.0134

#### Natural Materials | Asphalt Agent

**Asphalt Agents (emulsifiers & anti-stripping agents) that saves energy in asphalting**

| Kao Corporation | Category:
| 1-3, Bunka 2-chome, Sumida-ku, Tokyo, 131-8501 Japan | ● A5. Resource Consumption
| Tel; 03-5630-7700 Fax; 03-5630-7889 | ● B5. Energy Saving
| E-mail; chemical@kao.co.jp | ● C6. End-of-Life
| URL; http://chemical.kao.co.jp/e/ | |

GRIPPER series is an anti-stripping agent with no solvent and is used as an additive for hot-mixed asphalt. The DIAMIN and FARMIN series are emulsifiers. GRIPPER enabled permeable pavement, enhancing durability and contributing to water resource preservation by allowing water to infiltrate asphalt pavement. DIAMIN and FARMIN allow asphalt to be laid at an ordinary temperature, unlike conventional technology which requires a high temperature for melting and flattening. Thus, they are effective in energy saving and enhanced workability. Both agents are made from natural fat and oil.

**Products/Model:**

DIAMIN RRT, R-86,FARMIN ST-7, GRIPPER 4131
Eco-materials No.0135

Foams  Expanded plastic adiabator

Freon-gas-free sophisticated phenolic foam construction insulation

ASAHI KASEI CONSTRUCTION MATERIALS CORPORATION
5-5, Shibadaimon 2-Chome, Minato-ku, Tokyo 105-0012, Japan
Tel: 03-5473-5321 Fax: 03-5473-5325
E-mail; http://www.asahikasei-kenzai.com

The foaming technology was accomplished by the use of combustible hydrocarbon system gas securing the flame resistance of the product. Due to no use of Freon gas as a foaming gas at all, thus it contributes to prevention of destruction of ozone layer and global warming. Furthermore, we realized high heat insulation performance, which is well over that of the conventional products (by 1.5-2 times). It is the product with long-lasting adiabacity, significantly administering to high athermalize (energy-saving) of the structures.

Category:
● A1. Global Warming
● B3. Resource Saving
● B4. Higher Quality
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

Products/Model:
NEOMA™ FOAM

Eco-materials No.0136

Foams  Non-fluorocarbon coolant

Non-fluorocarbon coolant as a substitute for fluorocarbon

Showa Denko K.K.
13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan
Tel: 03-5470-3752 Fax: 03-3437-6647
E-mail; http://www.sdk.co.jp

Non-fluorocarbons (hydrocarbon) are becoming increasingly popular as coolants in place of alternative fluorocarbons (Hydro Fluoro Carbons), and are also being increasingly used as foaming agents in heat insulation. Isobutene is now used as a non-fluorocarbon coolant.

Category:
● A1. Global Warming
● B4. Higher Quality
● C2. Material and Components Production
● C3. Design and Material Selection
● C6. End-of-Life
Eco-materials No.0137

Foams

Material for Reflector

Foamed sheet for reflector with high reflectance

The Furukawa Electric Co., Ltd.
6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan
Tel; 03-3286-3458 Fax; 03-3286-3472
E-mail; mr735221@mr.furukawa.co.jp
URL; http://www.furukawa.co.jp

Category:
● A1. Global Warming
● A5. Resource Consumption
● B5. Energy Saving
● C3. Design and Material Selection
● C5. Product Use, Maintenance and Repair

Furukawa Electric is the first in the world to succeed in the commercial-scale production and marketing of white sheets made of extra-fine foamed polyethylene tetra-phthalate (PET). Bubble diameter is so small that optical performance is outstanding, with a total reflectivity of 99% or more. It has a variety of applications such as reducing the number of fluorescent tubes used for advertisement lighting.

Products/Model :
High-Reflectivity Foamed Sheet・MCPET

Eco-materials No.0138

Foams

Insulation foam

Neoma™ foam

Asahi Kasei Corporation
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan
Tel; 03-3507-2060 Fax; 03-3507-2495
E-mail;
URL; http://www.asahi-kasei.co.jp/

Category:
● A1. Global Warming
● A2. Air Pollution
● B4. Higher Quality
● C2. Material and Components Production

The Neoma™ is relatively high insulation performance phenolic foam. In addition, Neoma™ features outstanding flame resistance for safety aspect. During foam formation, no fluorocarbons, which cause ozone depletion and global warming, would be released to environment. Recent market survey indicated a strong and growing demand for this type of insulation materials in Japan.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0139**

<table>
<thead>
<tr>
<th>Foams</th>
<th>Packaging materials</th>
</tr>
</thead>
</table>

### Aspac Sarasara™ R

**Asahi Kasei Corporation**  
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan  
Tel; 03-3507-2060 Fax; 03-3507-2495  
E-mail; URL: http://www.asahi-kasei.co.jp/

**Category:**  
- A1. Global Warming  
- A5. Resource Consumption  
- B3. Resource Saving  
- B7. Usage of Recycled Material  
- C6. End-of-Life

This material is made of 100% recycled material. The material enables light weight and low bulk density to reduce environmental impacts at distribution stage of other products. It is proved to be resistant to vibration settling and static compression. The life cycle assessment of 1 kg of this foam indicated that total green house gases emission was 0.307 kg (CO₂ equivalent), energy consumption was 8.4 MJ/kg, acidification was 0.67g/kg of SO₂ equivalent, and ozone depletion potential was zero.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-materials No.0140**

<table>
<thead>
<tr>
<th>Ceramics and Glass</th>
<th>Optical glass</th>
</tr>
</thead>
</table>

### Optical glass (eco-glass) for optical apparatus without harmful lead and arsenic

**NIKON CORPORATION**  
Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-8331 Japan  
Tel; 03-3214-5311 Fax;  
E-mail; URL: http://www.nikon.co.jp

**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- C2. Material and Components Production  
- C3. Design and Material Selection  
- C4. Product Manufacture

There are more than 100 types of optical glass and, in the past, NIKON used huge amounts of lead as a primary ingredient for about half of these optical glasses, while a small amount of arsenic was used in most types. However, we have now developed many types of optical glass without using these two elements, since they have the risk of damaging to the environment, in particular among most of ingredient used for optical glass, being referred to Ecoglass. We have secured optical performance solely with ecoglass for most optical apparatus through appropriate optical design.

Products/Model:  
Optical Glass
### Eco-materials No.0141

<table>
<thead>
<tr>
<th>Ceramics and Glass</th>
<th>Glass Tubing</th>
</tr>
</thead>
</table>

#### Lead-free Glass Tubing for Lighting

**Nippon Electric Glass Co., Ltd.**
7-1 Seiran, 2-chome, Otsu-shi, Shiga, 520-8639 Japan
Tel; 077-537-1700 Fax; 077-537-8639
E-mail;
URL: [http://www.neg.co.jp](http://www.neg.co.jp)

Lead-free glass tubing which mimics the functions and features of glass produced with lead.
Especially the orange-colored glass is used for car turn-signal flashers, but contains no cadmium.

Products/Model:
Glass tubing for lighting

---

### Eco-materials No.0142

<table>
<thead>
<tr>
<th>Ceramics and Glass</th>
<th>Glass Powder</th>
</tr>
</thead>
</table>

#### Lead-free Glass Powder for Low Temperature Cofired Ceramics

**Nippon Electric Glass Co., Ltd.**
7-1 Seiran, 2-chome, Otsu-shi, Shiga, 520-8639 Japan
Tel; 077-537-1700 Fax; 077-537-8639
E-mail;
URL: [http://www.neg.co.jp](http://www.neg.co.jp)

The product is a lead-free composite powder material that can be fired with a precious metal conductor and forms multilayer ceramic substrates.
Lead/borosilicate glass was traditionally used for the circuit, but has been replaced by lead-free glass.

Products/Model:
Lead free powder glass for low temperature cofired ceramics
### Eco-materials No.0143

**Ceramics and Glass**  |  **Glass**
--- | ---

**Barium-free glass substrate for PDP (plasma display panels)**

Nippon Sheet Glass Co., Ltd.
2-1-7, Kaigan, Minato-ku, Tokyo, 105-8552 JAPAN
Tel; 03-5443-9500 Fax;  
E-mail;  
URL; http://www.nsg.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● A3. Hazardous Substance</td>
<td></td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
<td></td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
<td></td>
</tr>
</tbody>
</table>

VINGT ET UN is a barium-free glass substrate for plasma display panels. Compared with existing materials on sale, it has many excellent properties such as lightweight and high electrical resistance. This means it is less easily broken and suffers less silver stain. Although Barium is a useful element with the required properties for PDP and melting behavior, its use is regulated by the Japanese Pollutant Release and Transfer Register. "VINGT ET UN" does not only satisfy the required properties, but is also environmentally friendly.

**Products/Model :**  
VINGT ET UN

---

### Eco-materials No.0144

**Ceramics and Glass**  |  **Optical glass**
--- | ---

**Environment-friendly optical glass**

Hoya Corporation  
2-7-5, Nakaochiai, Shinjyuku-ku, Tokyo 161-8525  
Tel; 03-3952-1162 Fax;  
E-mail;  
URL; http://www.hoya.co.jp/japanese/index.cfm

<table>
<thead>
<tr>
<th>Category:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● A3. Hazardous Substance</td>
<td></td>
</tr>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
</tbody>
</table>

It is a lead/arsenic-free optical glass, being referred to as “E-glass.” Lead is replaced with titanium and arsenic is left free or replaced with antimony. Even after taking it to users, it decreases environment burden of water and waste on the grinding / polishing stage as an “environment-friendly optical glass.”

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0145**

**Ceramics and Glass** | **Silicone**
---|---

**Silicone for eco-friendly plastic**

Shin-Etsu Chemical Co., Ltd.
2-6-1, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel; 03-3246-5091 Fax;
E-mail;
URL: http://www.shinetsu.co.jp/index.shtml

Applying silicone to the property modification of resin has been promoted in different fields. “Eco-Polica” (co-manufactured by NEC Corporation and Sumitomo Dow Limited) is one of the typical applications of silicone to modify resin. In this case, silicon flame retardant was added to eco-friendly plastic used for a front cover of LCD monitor and PC body. “Eco-Polica” added with a new silicon flame retardant attained more flame retardancy than conventional plastic added with toxic materials such as halogen (bromine) and phosphorous, and additionally, enhanced impact strength. Besides these advantages, material recyle is possible because “Eco-Polica” can be recovered and reused after use. Thus, it can be said that this is appropriate product from the perspective of promoting recycle-oriented society.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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**Eco-materials No.0146**

**Ceramics and Glass** | **Fire Retardant Additive**
---|---

**Fine-Mag and Echo-Mag using magnesium hydride without halogen**

AIR WATER INC.
20-16, Higashi-Shinsaibashi 1-chome, Chuo-ku, Osaka, 542-0083 Japan
Tel; 06-6252-5411 Fax; 06-6252-3965
E-mail;
URL: http://www.awi.co.jp/

These fire retardant additives provide magnesium hydride with a unique catalytic effect and crystalline form. They don’t generate dioxin and other toxic gases during combustion because they don’t contain halogen compounds.

Products/Model:
FINEMAG® ECHOMAG®
### Eco-materials No.0147

<table>
<thead>
<tr>
<th>Ceramics and Glass</th>
<th>Etching gas</th>
</tr>
</thead>
</table>

#### Dry etching gas to help prevent global warming

<table>
<thead>
<tr>
<th>Showa Denko K.K.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan</td>
<td>Category:</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>URL: <a href="http://www.sdk.co.jp">http://www.sdk.co.jp</a></td>
<td>● C3. Design and Material Selection</td>
</tr>
<tr>
<td></td>
<td>● C4. Product Manufacture</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Purified FC-2316 is a next-generation dry etching gas developed for use in the refining process for leading-edge ultrafine semiconductor devices, and its global-warming potential (GWP) is extremely low.

---

### Eco-materials No.0148

<table>
<thead>
<tr>
<th>Ceramics and Glass</th>
<th>“Weather Act” treatment</th>
</tr>
</thead>
</table>

#### Corrosion resistant surface-coating for steel bridges etc

<table>
<thead>
<tr>
<th>Sumitomo Metal Industries, Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel: 03-4416-6111  Fax: 03-4416-6793</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:chikyu-kan@sumitomometals.co.jp">chikyu-kan@sumitomometals.co.jp</a></td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>URL: <a href="http://www.sumitomometals.co.jp">http://www.sumitomometals.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
</tbody>
</table>

Weather Act is a surface treatment technology that generates an early layer of rust with protective properties against atmospheric corrosion on the weather-resistant steel surfaces used in land-based steel structures. This technology contributes to minimization of maintenance by generating an early protective layer of rust that inhibits corrosion, loose scale and flaky rust. It improves halotolerance, resolving problems observed when weather-resistant steel is used exposing and expanding the usable range of weather-resistant steel.

---

Products/Model :
Weather-act Surface Treatment
### Eco-materials No.0149

**Ceramics and Glass**  
**Solar cells**

#### High-purity silicon for solar cells

**JFE Holdings, Inc.**  
1-2, Marunouchi, 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan  
Tel: 03-3217-3912  Fax: 03-3214-9650  
E-mail;  

We have developed the technology to mass-produce silicon from melted metal silicon through metallurgical refining process. The purity we can obtain is as high as 99.9999% or more. The conversion efficiency when it is processed into solar cells reaches 14 to 16%, which is the same level as the solar cells made of semiconductor-grade material.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-materials No.0150

**Ceramics and Glass**  
**Plug**

#### Small-size long-reach iridium plug

**NGK SPARK PLUG CO., LTD.**  
14-18, Takatsuji-cho, Mizuho-ku, Nagoya-shi, Aichi 467-8525, Japan  
Tel: 052-872-5980  Fax: 052-872-5942  
E-mail;  
URL: [http://www.ngkntk.co.jp/menu.html](http://www.ngkntk.co.jp/menu.html)

This is a small-size plug aiming size and weight reduction and cooling function improvement (high output) in an engine. By using this plug, engine performance improvement such as high output and anti-knock performance has realized. In addition, the designing margin for cylinder head increased.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-materials No.0151**

**Ceramics and Glass**  |  **Sensor**
---|---

**Hydrogen leak sensor for fuel cells**

NGK SPARK PLUG CO., LTD.
14-18, Takatsuji-cho, Mizuho-ku, Nagoya-shi, Aichi 467-8525, Japan
Tel: 052-872-5980 Fax: 052-872-5942
E-mail; URL: http://www.ngkntk.co.jp/menu.html

This is a hydrogen leak sensor for fuel cells. By using this sensor, safer operation of fuel cell system can be maintained. Because of functions of monitoring of hydrogen gas and quick response to low-concentration gas, a safe fuel cell design can be achieved. This sensor is expected to be widely used for fuel-cell vehicles and home fuel cells.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*

---

**Eco-materials No.0152**

**Ceramics and Glass**  |  **Battery Electrolyte**
---|---

**Electrolyte for aluminum electrolytic condenser and electric double layer capacitor**

Sanyo Chemical Industries, Ltd.
11-1, Nomoto-cho, Hitotsubashi, Higashiyama-ku, Kyoto-shi, Kyoto 605-0995, Japan
Tel: 075-541-4311 Fax: 075-551-2557
E-mail; URL: http://www.sanyo-chemical.co.jp/top/jpn/index.htm

Condenser is an essential component for electric and electronic devices, of which function is to cut down on noise as well as to store electricity and control electric current. Electrolyte for aluminum electrolytic condenser, “Sun Elecs Series” is much more conductive than conventional electrolyte and highly heat resistant, which allows to live long and exhibit high performance. “Power Elecs series” is the electric double layer capacitor that attracts attention as new storage element.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*
### Eco-materials No.0153

**Ceramics and Glass**

**Photocatalyst Coating Material**

**Folium, photocatalyst coating material applied at ambient temperature by itself**

<table>
<thead>
<tr>
<th>KAWASAKI HEAVY INDUSTRIES, LTD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1 Kawasaki-Cho, Akashi City, 673-8666 Japan</td>
</tr>
<tr>
<td>Tel: 078-921-1612 Fax: 078-921-1615</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:folium@ati.khi.co.jp">folium@ati.khi.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.khi.co.jp/folium">http://www.khi.co.jp/folium</a></td>
</tr>
</tbody>
</table>

**Category:**
- A1. Global Warming
- A3. Hazardous Substance
- B5. Energy Saving
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Folium has three main functions. (i) Protection against stains
(ii) Decomposition of bacteria and odor (iii) Decomposition of toxic components.

Folium starts to rapidly lower the formaldehyde concentration soon after ultraviolet irradiation, approaching close to zero in about 20 minutes.

### Eco-materials No.0154

**Ceramics and Glass**

**Photocatalyst masterbatch**

**Resin master batch with titanium oxide photocatalyst**

<table>
<thead>
<tr>
<th>Showa Denko K.K.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan</td>
</tr>
<tr>
<td>Tel: 044-329-0728 Fax: 044-329-0791</td>
</tr>
<tr>
<td>E-mail:</td>
</tr>
<tr>
<td>URL: <a href="http://www.sdk.co.jp">http://www.sdk.co.jp</a></td>
</tr>
</tbody>
</table>

**Category:**
- A3. Hazardous Substance
- B4. Higher Quality
- B6. Environmental Purification
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

Since titanium oxide can resolve organic substances when exposed to light, it is used for many purposes such as deodorization, dirt resolution, and sterilization.

This product, Nanoallomer, is a resin master batch, which contains a high density of the photocatalyst titanium. By adding nanoallomer to form the resin at the production process, resin products with a photocatalyst function can be produced. These products are used mainly for several resin products, films and construction components.
**Eco-materials No.0155**

**Ceramics and Glass** | **Filter**
---|---

### Particulate removal filter for diesel exhaust gas

**NGK Insulators, Ltd.**
2-56, Suda-cho, Mizuho-ku, Nagoya-shi, Aichi 467-8530, Japan
Tel; 052-872-7171 Fax;
E-mail; 
URL; http://www.ngk.co.jp/

Diesel engine particulate filter is a filter to remove particulate matter contained in diesel exhaust gas. This filter is made of ceramics featuring one-side closing mechanism of honeycombs and filtering function in ceramics wall, thus realizing more than 90% particulate matter removal. The accumulated particle material is burnt so that the particulate collecting function of the filter can be maintained.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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**Eco-materials No.0156**

**Ceramics and Glass** | **Zirconia powder**
---|---

### Functional materials and environmental protection Eco-friendly functional materials

**Tosoh Corporation**
3-8-2, Shiba, Minato-ku, Tokyo 105-8623, Japan
Tel; 03-5427-5170 Fax; 03-5427-5217
E-mail; zirconia@tosoh.co.jp
URL; http://www.tosoh.com/zirconia

Zirconia (YSZ) exhibits superior mechanical properties, such as high strength and flexibility. YSZ represents a technological breakthrough in surpassing the strength limitations of traditional fine ceramics. Oxygen-ion conductivity means that YSZ can be used in a wide range of eco-friendly products, such as solid oxide fuel, as well as oxygen and NOx sensors used in the automotive field.
Eco-materials No.0157

Ceramics and Glass | PM collecting filter

Ceramic filter for diesel engines with reduction of PM (particulate-matter) included in exhaust gas from car

DENSO CORPORATION
1-1, Showa-cho, Kariya, Aichi 448-8661 Japan
Tel: 0566-25-5733 Fax: 0566-25-4525
E-mail: kankyo@she.denso.co.jp
URL: http://www.denso.co.jp

Category:
● A2. Air Pollution
● B6. Environmental Purification
● C5. Product Use, Maintenance and Repair

DPF is a ceramic filter to purify exhaust gas after efficient combustion through the common rail system of a diesel engine. The wall, with thousands of hollows of about 30µ in diameter, is painted with catalyst and PM (particulate-matter) collected on the exhaust gas passage pipe is burned and eliminated. The surface area with thousands of hollows formed by fine formation technology is Incomplete sentence.

Products/Model:
DPF

---

Eco-materials No.0158

Ceramics and Glass | Ceramic honeycomb carrier

“Cera-cat,” ceramic honeycomb carrier

Hitachi Metals, Ltd.
Shinjyuku park tower 3-7-1, Nishishinjyuku, Shinjyuku-ku, Tokyo 163-1015, Japan
Tel: 03-5381-6955-6958 Fax: 03-5381-6959
E-mail;
URL: http://www.hitachi-metals.co.jp/

Category:
● A1. Global Warming
● A2. Air Pollution
● B5. Energy Saving
● B6. Environmental Purification

This is a ceramic honeycomb carrier for the catalyst carrier for exhaust emission control or the heat reservoir for energy saving. It is a faveolate structure with a number of through-holes framed by thin-walls, the performance of which depends upon the cell structure and the material property. When it comes to the materials available at a high temperature, the notables are alumina (Al2O3), mullite (3Al2O3 · 2SiO2) and cordierite (2MgO · 2Al2O3 · 5SiO2).

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
<table>
<thead>
<tr>
<th>Eco-materials No.0159</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ceramics and Glass</strong></td>
</tr>
<tr>
<td><strong>Chemically recycled Ammonia for industrial use</strong></td>
</tr>
<tr>
<td><strong>Showa Denko K.K.</strong></td>
</tr>
<tr>
<td>13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan</td>
</tr>
<tr>
<td>Tel: 044-329-0768 Fax: 044-329-0798</td>
</tr>
<tr>
<td>E-mail; URL: <a href="http://www.sdk.co.jp">http://www.sdk.co.jp</a></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A4. Waste</td>
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<tr>
<td>● A5. Resource Consumption</td>
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<tr>
<td>● B7. Usage of Recycled Material</td>
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<tr>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

Waste plastic, such as plastic packages, is collected from homes and plants in and around Kawasaki City. These waste plastics are crushed, gasified, and modified into synthesis gas to produce ammonia.

Products/Model :
ECOANN

<table>
<thead>
<tr>
<th>Eco-materials No.0160</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ceramics and Glass</strong></td>
</tr>
<tr>
<td><strong>Marine block</strong></td>
</tr>
<tr>
<td><strong>JFE Holdings, Inc.</strong></td>
</tr>
<tr>
<td>1-2, Marunouchi, 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan</td>
</tr>
<tr>
<td>Tel: 03-3217-3912 Fax: 03-3214-9650</td>
</tr>
<tr>
<td>E-mail; URL: <a href="http://www.jfe-holdings.co.jp/environment/2003.html">http://www.jfe-holdings.co.jp/environment/2003.html</a></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
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<tr>
<td>● A1. Global Warming</td>
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<tr>
<td>● A4. Waste</td>
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<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

The slag which accounts for roughly 90% of iron manufacturing by-products is carbonic acid solidificated in large-scale by CO2 absorbing technique in order to be better suited for seaweed bed and fish-breeding ground. The marine block serves an environmental improvement on a mass global scale.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Eco-materials No.0161

Ceramics and Glass	Cement

Blast furnace cement

Sumitomo Osaka Cement Co., Ltd.  
6-28, Rokuban-cho, Choyoda-ku, Tokyo 102-8465, Japan  
Tel; 03-5211-4505 Fax;  
E-mail;  
URL: http://www.soc.co.jp/index.html

Category:  
● A4. Waste  
● A5. Resource Consumption  
● B1. Recyclability  
● B7. Usage of Recycled Material  
● C6. End-of-Life

We have been pursuing our procurement activities of materials that reduce environmental load. "Blast furnace cement" is a product made from blast furnace slag generated in iron and steel industry. This cement features environmental friendliness.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Eco-materials No.0162

Ceramics and Glass	Cement

Fly ash cement

Sumitomo Osaka Cement Co., Ltd.  
6-28, Rokuban-cho, Choyoda-ku, Tokyo 102-8465 Japan  
Tel; 03-5211-4505 Fax;  
E-mail;  
URL: http://www.soc.co.jp/index.html

Category:  
● A4. Waste  
● A5. Resource Consumption  
● B1. Recyclability  
● B7. Usage of Recycled Material  
● C6. End-of-Life

We have been pursuing our procurement activities of materials that reduce environmental load. “Fly ash cement” is a product made from ash generated in thermal power plants. This cement features environmental friendliness.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Eco-materials No.0163
Ceramics and Glass  Green sand

“Green sand,” ferronickel slag

Sumitomo Metal Mining Co., Ltd.
Shinbashi Sumitomo building 5-11-3, Shinbashi, Minato-ku, Tokyo 105-8716
Tel: 03-3436-7701 Fax: 03-3436-7738
E-mail;
URL: http://www.smm.co.jp/main.html

Ferronickel slag (trade name: “Green sand”) six times as many as the ferronickel itself is duplicated in the manufacturing process of ferronickel capable of being the raw material of stainless steel. This slag (vitreous gritty material with magnesium oxide and silica, which are duplicated in the smelting process, in major proportion) can be auxiliary materials for steel smelting, and otherwise, utilized as artificial aggregate in stead of natural river sand or sea sand, contributing to economization of the natural resources.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Eco-materials No.0164
Ceramics and Glass  Artificial zeolite

Eco-friendly Circulash for environmental, civil engineering and construction fields offering high performance of plus ion exchange, absorption/catalytic function

CHUBU ELECTRIC POWER CO., INC.
1 Toshi-cho, Higashi-ku, Nagoya 461-8680 Japan
Tel: 052-973-3617 Fax: 052-973-2187
E-mail;
URL: http://www.chuden.co.jp/otoiawase/index.html

Around 8.8 million tons of coal ash is generated each year by coal combustion. (2001 figure).
While 80% of this is used efficiently as a raw material for cement, there is still wastage. Converting this into artificial zeolite is a new high value added use for coal ash. Artificial zeolite enjoys absorption effect for a variety of substances. It contributes towards environmental protection while making efficient use of coal ash.

Products/Model :
Circulash
Substitution of aggregate made from coal ash for natural aggregate

Kajima Corporation
2-7, Motoakasaka 1-chome, Minato-ku, Tokyo, 107-8388 Japan
Tel: 03-3404-3311 Fax: 03-3470-1444
E-mail; http://www.kajima.co.jp/

Technologies to deal with coal ash discharged from thermal power plants are important. Jlite was developed as an artificial aggregate using shale powder, which melts at approximately 1100°C (requiring less energy) and coal ash, making use of the lightweight characteristic of the aggregate in concrete. As a result, the development of a concrete aggregate using coal ash in large quantity realized the expectation of manufacturing capability of the artificial aggregate on existing artificial lightweight aggregate manufacturing plant. Jlite was comparable to JIS A 5002 specifications on the artificial lightweight aggregate.

Products/Model:
Jlite

New “Colorbestos”

Kubota Corporation
1-2-47 Shikitsu-higashi, Naniwa-ku, Osaka 556-8601, Japan
Tel: 06-6648-2111 Fax: 06-6648-2444
E-mail; http://www.kubota.co.jp/

This new “Colorbestos” is environmentally-friendly material, using Kubota’s unique “hyper-dry manufacturing method”. Use of this material enables to realize “zero asbestos”, “weather resistance improvement” and “coping with recycling”. The material can improve basic performances such as waterproof, windproof and aseismatic of roof. It also can enhance the design of house and building such as shape and various colors.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0167

**Composites** | **Cleaner**
--- | ---

**Aqueous Cleaner for precision components with fewer effluent treatment burdens**

Kao Corporation  
1-3, Bunka 2-chome, Sumida-ku, Tokyo, 131-8501 Japan  
Tel: 03-5630-7700 Fax: 03-5630-7889  
E-mail: chemical@kao.co.jp  
URL: http://chemical.kao.co.jp/e/

Category:  
- A1. Global Warming  
- B4. Higher Quality  
- C4. Product Manufacture

The cleaning ability of "CLEANTHROUGH" surpasses that of solvents, even though it is water-based. Use of "CLEANTHROUGH" contributes to the improved function of electronics and other manufactured products. It has high detergency, yet has minimum negative effect on parts and materials. In addition, it can reduce the wastewater treatment burden that has been a problem with conventional aqueous cleaners, due to its low foaming and non-flammability.

Products/Model:  
CLEANTHROUGH 50HS, LC-840

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### Eco-materials No.0168

**Composites** | **Solder and Soldering apparatus**
--- | ---

**ECO-SOLDER for lead-free soldering**

Senju Metal Industry Co., Ltd.  
23 Senjuhasido-cho, Adachi-ku, Tokyo, 120-8555 Japan  
Tel: 03-3888-5152 Fax: 03-3870-3032  
E-mail: ykai@senju-m.co.jp  
URL: http://www.senju-m.co.jp/

Category:  
- A3. Hazardous Substance  
- B1. Recyclability  
- B4. Higher Quality  
- B6. Environmental Purification  
- C4. Product Manufacture

Basing upon the company's motto of “Supplying the best products with the most innovative technology”, we are engaged in the research and the development on the lead-free solder in order to reduce the use of lead that is harmful to the environment of our globe. Our field covers the advanced solder and flux materials, the various soldering apparatus including a N2-reflow type oven for lead-free soldering, and the state-of-the-art technology on soldering. We propose “ECO SOLDERING SOLUTION” from a global point of view.

Products/Model:  
ECO SOLDER Series For Lead-Free
Eco-materials No.0169

Composites                  Marking Material

“LAG Mother Green”, large-sized sheet for digital-printing

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713 Fax: 03-3868-7741
E-mail: ar-kumakura@post.lintec.co.jp
URL: http://www.lintec.co.jp

Category:
- A2. Air Pollution
- B3. Resource Saving
- B6. Environmental Purification
- C3. Design and Material Selection
- C4. Product Manufacture

As a substitute material of the PVC film material that is the main material of sign/display business area, “LAG Mother Green” that is applicable to a large format printer is lined up. Moreover, the materials applicable to various soft-solvent ink-jet printers which suppress the use quantity of organic solvent are arranged.

Products/Model:
LAG (Lintec Advanced Graphics) Mother Green

Eco-materials No.0170

Composites                  Complex stabiliser for PVC cable coating

Heavy-metal-free complex stabiliser for PVC coating of electric wire

Shinagawa Chemical Industry Co., Ltd.
4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan
Tel: 046-285-0826 Fax: 046-285-1703
E-mail: info@shinagawa-chem.co.jp
URL: http://www.shinagawa-chem.co.jp

Category:
- A3. Hazardous Substance
- A4. Waste
- C2. Material and Components Production
- C4. Product Manufacture
- C6. End-of-Life

This environmentally-friendly complex stabiliser for the PVC coating of electric wire offers the same or better-performance as current products containing harmful heavy metals. It is based on vegetable oil metallic salt without using harmful metals (lead, cadmium).

Products/Model:
Stabiliser for PVC Wire and Cable • SCI-EZ
### Eco-materials No.0171

<table>
<thead>
<tr>
<th>Composites</th>
<th>Complex stabilizer for PVC joint</th>
</tr>
</thead>
</table>

**Heavy-metal-free complex stabilizer for PVC joint**

Shinagawa Chemical Industry Co., Ltd.  
4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan  
Tel: 046-285-0826  Fax: 046-285-1703  
E-mail: info@shinagawa-chem.co.jp  
URL: http://www.shinagawa-chem.co.jp

**Category:**  
- ● A3. Hazardous Substance  
- ● A4. Waste  
- ● C4. Product Manufacture  
- ● C2. Material and Components Production  
- ● C6. End-of-Life

This environmentally-friendly complex stabiliser for PVC joint offers the same or better performance than current products that contain harmful heavy metals. It is based on vegetable oil metallic salt without using harmful metals (lead, cadmium).

**Products/Model:**  
- Stabiliser for PVC fitting • SCI-FTZ

### Eco-materials No.0172

<table>
<thead>
<tr>
<th>Composites</th>
<th>Complex stabilizer for PVC pipe</th>
</tr>
</thead>
</table>

**Heavy-metal-free complex stabilizer for PVC pipe**

Shinagawa Chemical Industry Co., Ltd.  
4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan  
Tel: 046-285-0826  Fax: 046-285-1703  
E-mail: info@shinagawa-chem.co.jp  
URL: http://www.shinagawa-chem.co.jp

**Category:**  
- ● A3. Hazardous Substance  
- ● A4. Waste  
- ● C4. Product Manufacture  
- ● C6. End-of-Life

This environmentally-friendly complex stabiliser for PVC pipe offers the same or better performance than current products which contain harmful heavy metals. It is based on vegetable oil metallic salt without using harmful metals (lead, cadmium).

**Products/Model:**  
- Stabiliser for PVC pipe • SCI-PZ
Eco-materials No.0173

Composites

Complex stabilizer for PVC profile-extrusion

Heavy-metal-free complex stabilizer for PVC profile extrusion

Shinagawa Chemical Industry Co., Ltd.
4058 Nakatsu Aiko-gun Kanagawa Pref. 243-0303 Japan
Tel; 046-285-0826  Fax; 046-285-1703
E-mail; info@shinagawa-chem.co.jp
URL; http://www.shinagawa-chem.co.jp

Category:
● A3. Hazardous Substance
● A4. Waste
● C2. Material and Components Production
● C4. Product Manufacture
● C6. End-of-Life

This environmentally-friendly complex stabiliser for PVC profile extrusion offers the same or better performance than current products which contain harmful heavy metals. It is based on vegetable oil metal salt without using harmful metals (lead, cadmium).

Products/Model :
Stabiliser for PVC profile • SCI-RZ

Eco-materials No.0174

Composites

High performance thermoplastic composite material

“Quick Form®” organic solvent-free high-performance thermoplastic composite materials

Toyobo Co., Ltd.
2-8 Dojimahama 2-chome, Kita-ku, Osaka, 530-8230 Japan
Tel; 06-6348-3417  Fax; 06-6348-3393
E-mail; kankyoh@ho.toyobo.co.jp
URL; http://www.toyobo.co.jp

Category:
● A3. Hazardous Substance
● A4. Waste
● B4. Higher Quality
● B5. Energy Saving
● C6. End-of-Life

“Quick Form®” is high performance thermoplastic composite material made of continuous glass fiber and thermoplastic resin, produced by TOYOBÔ’s original impregnating process. Glass fibers are evenly distributed while their content is raised to an unprecedentedly high level by our unique manufacturing technology.

TOYOBÔ has been developing various kind of application taking the advantage of its high strength, modulus and impact resistance, putting importance on “safety”, “lightness” and “environmental friendly” as its keyword.

Products/Model :
QUICK Form®
# Halogen-free PCB Material suitable for lead-free soldering

**Matsushita Electric Works, Ltd.**

1048, Kadoma, Osaka 571-8686 Japan  
Tel; 06-6909-8518 Fax; 06-6909-5827  
E-mail;  
URL: http://www.mew.co.jp

The material achieves flame-retardancy UL94V-0 without raising dioxin concerns during combustion. In addition, it does not contain antimony, which is regarded as a water pollutant. The material has excellent heat resistance, conduction reliability and offers the same performance as general FR-4. It also supports lead-free soldering and is used globally for digital home appliances and communication equipment applications.

**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- B4. Higher Quality

**Products/Model:**  
Laminate: R-1566, Prepreg : R-1551

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# Semiconductor encapsulant ECOM-E-series - bromine-free, antimony-free and lead-free

**Matsushita Electric Works, Ltd.**

1048, Kadoma, Osaka 571-8686 Japan  
Tel; 06-6909-8517 Fax; 06-6909-5827  
E-mail;  
URL: http://www.mew.co.jp

This encapsulant exhibits superior environmental features, reliability and is also anti-flammable. It does not contain bromine that generates dioxin at combustion or antimony which is to be monitored as a water pollutant. Since it features high performance in reflow tolerance and supports lead-free soldering, this encapsulant is being used in IC and LSI.

**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- B4. Higher Quality  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

**Products/Model:**  
CV8210, CV8710, etc
**Eco-materials No.0177**

**Composites**

**Incorporated rubber (Material for improved tire performance)**

The Yokohama Rubber Co., Ltd.
5-36-11, Shinbashı, Minato-ku, Tokyo 105-8685, Japan
Tel; 03-5400-4531 Fax;
E-mail;
URL: http://www.yrc-pressroom.jp/env/

Category:
- A1. Global Warming
- B2. Longevity
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

The rolling resistance can be decreased by blending silica to rubber reinforcement, however, silica is hard to evenly mingle with rubber, leaving a problem as to blending technique. Yokohama Gum has established a technology to blend what silica is mingled with carbon (reinforcement) in advance to rubber (patent taken), materializing compatibility of the conflicting performances of strong grip and fuel-efficient (Incorporated rubber 1). Furthermore, we designed the tire longevity and improvement of handling ability, heat quantity of rubber is increased due to downsizing of silica and carbon, improvement of grip, silica increase in weight, silica is bonded to carbon with higher binding force. (Incorporated rubber II)

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-materials No.0178**

**Composites**

**Carbon compound material for separating fuel cell components**

Showa Denko K.K.
13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan
Tel; 0261-22-0185 Fax; 0261-22-6442
E-mail;
URL: http://www.sdk.co.jp

Category:
- A1. Global Warming
- A2. Air Pollution
- B5. Energy Saving
- C2. Material and Components Production
- C3. Design and Material Selection

SG carbon is a carbon compound material made from ultra thin carbon fibers, graphite dust, and glass carbon with our original manufacturing technologies. The product offers high air tightness as well as large package sizes and high strengths which are not available in existing glassy carbons.

Based on our past achievement in separating fuel cell components of phosphoric acid form, we are now working on fuel cell materials of solid high molecular form in order to expand our contribution to the field of fuel cells which can provide clean energy.

Products/Model:
SG carbon
Eco-materials No.0179

Composites

Natural fiber

Composite material incorporating zeolite within natural fiber

RENGO CO., LTD. CENTRAL LABORATORY
186-1, 4-Chome, Ohhiraki, Fukushima-ku, Osaka 553-0007, Japan
Tel; 06-6465-5067 Fax; 06-6465-0220
E-mail: lab@rengeo.co.jp
URL; http://www.rengo.co.jp/index.htm

Category:
- A2. Air Pollution
- A5. Resource Consumption
- B4. Higher Quality
- B6. Environmental Purification

“Cellgaia” is an excellent fiber made from plants and clay. Zeolite, a mineral which absorbs harmful gas or unpleasant odors, is artificially synthesized and settled in the pulp, which can be used as a raw material for paper. We are pushing ahead with research in different fields such as the creation of various filters to clean the air or purify drinking water since it has an antibacterial and fungicide effect and can render viruses inactive. The product has been already put to practical use as packaging material to protect electronic components, art objects and expensive kimonos from damage or discoloration.
- It uses natural resources
- It does not discharge harmful substances on manufacture or disposal
- Manufacturing does not involve major energy use

Products/Model:
Cellgaia

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Eco-materials No.0180

Composites

Activated carbon for eliminating lead

Filtering material (activated carbon) for water purifier to eliminate soluble lead from lead pipes

Kuraray Chemical Co., Ltd.
4342 Tsurumi, Bizen-city, Okayama-pref, 705-0025 JAPAN
Tel; 0869-65-8331 Fax; 0869-65-8341
E-mail;
URL: http://www.kuraray-co.jp

Category:
- A3. Hazardous Substance
- B2. Longevity
- B4. Higher Quality
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Although the regulation to limit soluble lead density to a maximum of 0.01mg/L has been enforced since 2003, lead water supply pipes are still widely used for residential houses, requiring the use of a water purifier. This product (which uses activated carbon to eliminate lead) has been developed as a filtering material for water purifiers. By combining lead eliminating materials and activated carbon, the product can eliminate offensive odors/toxic substances and lead substances.

Products/Model:
Kuraray Carbon APG
Multilayer paperboard recycled from photographic paper support

MITUBISHI PAPER MILLS LIMITED
Shin Nisseei Bldg, 3-4-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005 Japan
Tel; Fax;
E-mail; URL: http://www.e-mpm.com/products/po/index.html

We reused sub-standard both-side laminated paper generated in the production process of photographic paper support of Mitsubishi Paper Mills Ltd. Those laminated papers are piled up and pressed on heating, and in the event converted to multilayer paperboard. It is applicable to material for different displays, signboards, and construction materials as the alternative for conventional plastic board. After use, it can be treated as paper, so it is environment friendly board in terms of today’s waste treatment measures.

Category:
- A1. Global Warming
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C4. Product Manufacture

Eco-materials No.0182

Composite material of paper and resin for injection blow molding

MITUBISHI PAPER MILLS LIMITED
Shin Nisseei Bldg, 3-4-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005 Japan
Tel; Fax;
E-mail; URL: http://www.e-mpm.com/products/po/index.html

This is paper/resin pellet for injection blow molding made by mixing and kneading shred of both-side laminated paper, which is generated in the production process of photographic paper support of Mitsubishi Paper Mills Ltd. It is applicable to all sorts of molding materials as alternative plastic. After use, it can be treated as paper, so it is environment friendly board in terms of today’s waste countermeasures.

Category:
- A1. Global Warming
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C4. Product Manufacture
Environment-friendly synthetic pheromonal agent against agricultural pests

This product is made from the same substance as that released from insects, having totally different preventive and exterminating effects on pests compared to conventional insecticides and agricultural chemicals. Since this product is ultra-low toxic and works against only specific insects, it has significantly low influence on such useful insects as natural enemies of the destructive insects. The product is biodegradable with quick speed under natural environment, of which resolving elements are only water and carbon dioxide, thereby posing little possibility to cause environmental contaminations.

Deinking Agent that facilitates the removal of ink from waste paper

“DI-series” Deinking agents have been developed based on understanding surface chemistry and fatty oil chemistry. They allow wastepaper to be recycled to high quality deinking pulp. Kao has operations worldwide to help mills to select the best deinking chemistry for their grades of wastepaper. They improve not only the quality of deinking pulp, but also the quality of white water and enhance the reusability of water, which is vital to the pulp industry. In addition, use of the agents contributes to the preservation of forest resources as well as offering resource and energy savings in the paper manufacturing process.
### Eco-materials No.0185

**Interior material for housing made from wood refuse**

<table>
<thead>
<tr>
<th>Composites</th>
<th>Wood alternative material</th>
</tr>
</thead>
</table>

**Misawa Homes Co., Ltd.**  
2-4-5, Takaido Higashi, Suginami-ku, Tokyo, 168-8533 Japan  
Tel: 03-3247-2104 Fax: 03-5370-7306  
E-mail: kankyo@misawa.co.jp  
URL: http://www.misawa.co.jp/

M-Wood is a wood alternative. Offcuts are scraped into wood chip, blended with resin, pushed out and molded into shape. This innovative material is warpage/skew-free with a color and texture exactly like real wood. It is waterproof and has a flexible workability. It is suitable for interior use and can be used for window frames and stair rails. It can be recycled as wood chip, contributing to the conservation of the environment and a reduction in garbage.

Category:  
- A4. Waste  
- A5. Resource Consumption  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C4. Product Manufacture

---

### Eco-materials No.0186

**New timber made from architectural waste of woods for houses and buildings**

<table>
<thead>
<tr>
<th>Composites</th>
<th>Glued-laminated timber for pillar and beam</th>
</tr>
</thead>
</table>

**Sekisui Chemical Co., Ltd.**  
Housing Company URBAN INFRASTRUCTURE & ENVIRONMENTAL PRODUCTS HEADQUARTERS  
2-2, Kamichoshi-cho, Kamitoba, Minami-ku, Kyoto, 601-8105 Japan  
Tel: 075-662-8525 Fax: 075-662-8585  
E-mail: karukaya001@seksui.jp  
URL: http://www.seksui.co.jp/

This product is a timber for pillars and beams made from architectural waste of woods. The current waste recycling rate is about 40%, which means that about 60% of the waste is burned or used for landfill. Using this timber could increase the recycling rate of architectural waste of woods.

Category:  
- A4. Waste  
- B1. Recyclability  
- C2. Material and Components Production

---

Products/Model:  
M-Wood  
Rew REW
### Eco-materials No.0187

**Composites** | **Sound absorbing board**
---|---

**Eco-friendly sound absorbing board for railways, roads, and outdoor equipment**

**Taisei Corporation**  
344-1 Nase-cho, Totsuka-ku, Yokohama, 245-0051 Japan  
Tel: 045-814-7258  
Fax: 045-814-7255  
E-mail: koichi.nagase@sakura.taisei.co.jp  
URL: http://www.taisei.co.jp

| Category:  
| B1. Recyclability  
| B3. Resource Saving  
| B5. Energy Saving  
| B6. Environmental Purification  
| B7. Usage of Recycled Material |

Tepsam sound-absorbing board is made from crushed polystyrene foam. This is processed through 120°C heat treatment to create a light and rigid grained aggregate. Following this, blast furnace cement base (procured as green material) is coated on the aggregate. The board measures 750mm(W) × 500mm(L) × 35mm(D). As well as being used as a single plate, this board can be typically used as a set of four plates (750mm × 2000mm × 50mm) for railways or roads. In railway applications, the wheel rotating sound generated between wheel and rail or screech when passing a curb are effectively absorbed. Since this board contains cement, it has higher durability, fire-resistance, and water-resistance than rock-wool and resin sound-absorbing boards, which are conventionally used.

Products/Model:  
Tepsam sound absorbing board

### Eco-materials No.0188

**Composites** | **Graphite materials**
---|---

**Carbofit**

**Hitachi Chemical Co., Ltd.**  
Shinjuku-Mitsui Building, 1-1, Nishi-Shinjuku 2-chome, Shinjuku-ku, Tokyo 163-0449, Japan  
Tel: 03-5381-2214  
Fax: 03-3346-3115  
E-mail: csr@hitachi-chem.co.jp  
URL: http://www.hitachi-chem.co.jp

| Category:  
| A3. Hazardous Substance  
| B4. Higher Quality  
| C5. Product Use, Maintenance and Repair  
| C6. End-of-Life |

Carbofit is an asbestos-free graphite material composed mainly of flexible graphite particles. It is produced by giving special chemical treatment to natural graphite. With this excellent heat resistance and sealing performance, CARBOFIT is broadly used in automotive engine gaskets and industrial packaging.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-materials No.0189

**Category:**
- Others
- Interior Material

**Eokaratz: interior material controlling humidity with forces of nature**

<table>
<thead>
<tr>
<th>INAX Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1, Koiehonmachi, Tokoname, Aichi, 479-8585 Japan</td>
</tr>
<tr>
<td>Tel: Fax:</td>
</tr>
<tr>
<td>E-mail:</td>
</tr>
<tr>
<td>URL: <a href="http://inax.co.jp/">http://inax.co.jp/</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
</tbody>
</table>

“Eokaratz” automatically controls humidity of a room where it is used by absorbing moisture in the air when it gets humid and giving off moisture when it gets dry. It also has the function of absorbing VOC that would cause sick house syndrome, providing much better environment for our health. This is the first product approved as the construction material decreasing formaldehyde concentration in the domestic industry. In addition, we have reduced energy consumption and CO₂ emission with the low-temperature firing and recycled glass waste and other waste material.

Products/Model: ECOKARAT, ECO-303/R etc

---

### Eco-materials No.0190

**Category:**
- Others
- Pavement Block

**Soil ceramics made of recyclable materials**

<table>
<thead>
<tr>
<th>INAX Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1, Koiehonmachi, Tokoname, Aichi 479-8585 Japan</td>
</tr>
<tr>
<td>Tel: Fax:</td>
</tr>
<tr>
<td>E-mail:</td>
</tr>
<tr>
<td>URL: <a href="http://inax.co.jp/">http://inax.co.jp/</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
</tbody>
</table>

These are blocks that are made from quarrying abolishment clay and others. These blocks are symbiosis materials which can be recycled and return to the soil after the use. Moreover, more than 50% energy-saving for cement and 80% for ceramics at production are realized because of high-pressure steam curing process with no burning. These blocks contribute to energy-saving and low environmental load.

Products/Model: SOIL CERAMICS, SOIL-300SB/12E etc
## Eco-materials No.0191

<table>
<thead>
<tr>
<th>Electrolyte for lithium-ion secondary battery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Kanto Denka Kogyo Co., Ltd.
1-2-1 Marunouchi, Chiyoda-ku, Tokyo, 100-0005 JAPAN
Tel: 03-3216-4570 Fax: 03-3216-4581
E-mail; URL: http://www.kantodenka.co.jp

The product, which does not include environmentally-regulated substances, can be used in batteries of cell phones, notebook PCs, digital still cameras, video cameras, and other products. As electrolyte for lithium-ion secondary battery (battery constituent) which can be recharged, it promotes recycling of resources and power.

Products/Model:
LiPF₆

## Eco-materials No.0192

<table>
<thead>
<tr>
<th>Eco-friendly Sealing material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

NITTO DENKO CORPORATION
1-1-2, Shimohozumi, Ibaraki, Osaka 567-8680 Japan
Tel: 072-622-2981 Fax: 072-626-1505
E-mail; URL: http://www.nitto.co.jp

This is a halogen-free, phosphorous-free foam sealing material for electronics. Foam sealing material is what is put in the gap for dust-proof, impingement protection, vibration isolation. Previously, halogen group flame retardants were used where high flame resistance (UL94HF-1) is required. SCF offers high flame resistance (UL94HF-1) without the use of harmful substances and also uses thermoplastic resin of high purity. The bubble diameter is as short as 80 micrometer, providing a downsized/weight-saving approach.

Products/Model:
SCF(Super Clean Foam)
### Eco-materials No.0193

<table>
<thead>
<tr>
<th>Others</th>
<th>Raw Material for re-freezing oil</th>
</tr>
</thead>
</table>

**Eco-friendly raw material for re-freezing oil and for air conditioning refrigerant**

<table>
<thead>
<tr>
<th>Kyowa Hakko Chemical Co., LTD.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-2-5, Nihonbashi-Muromachi, Chuo-ku, Tokyo, 103-0022 Japan</td>
<td>● A1. Waste</td>
</tr>
<tr>
<td>Tel; 03-3510-3561 Fax; 03-3510-3571</td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:makoto.gotou@kyowa.co.jp">makoto.gotou@kyowa.co.jp</a></td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>URL; <a href="http://www.kyowachemical.co.jp">http://www.kyowachemical.co.jp</a></td>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFC) have not been produced since 1995 and will not be used after 2020. Air conditioning equipment manufacturers are moving from conventional air conditioners to eco-friendly alternative-CFC (new refrigerant) air conditioning equipment, ahead of other industries. This organic acid is used for re-freezing oils and is compatible with the new refrigerant.

Products/Model :
Isononanoic acid

---

### Eco-materials No.0194

<table>
<thead>
<tr>
<th>Others</th>
<th>Chemical admixture for concrete</th>
</tr>
</thead>
</table>

**Chemical admixture for concrete “Cellucrete H” for preventing water contamination**

<table>
<thead>
<tr>
<th>Daicel Chemial Industries, Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel; 03-6711-8241 Fax; 03-6711-8248</td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B4. Higher Quality</td>
</tr>
</tbody>
</table>

Provided that concrete is installed underwater in the same manner as above ground, ingredients segregate quickly. It is not merely that there is insufficient intensity, but animal life the creatures suffers due to water contamination around sites where strong alkali cement ingredients are segregated.

However, the mixture of Cellucrete H into concrete produces indissociable concrete even in water.

The cement ingredient does not disperse in this way, thus avoiding ambient water contamination.

Products/Model :
CELCREAT-H
Read-F Fluorine and Arsenic Adsorbent

Asashi Kasei Corporation
Hibiya-Mitsui Building 1-2 Yurakucho 1-chome, Chiyoda-ku Tokyo 100-8440, Japan
Tel; 03-3507-2060 Fax; 03-3507-2495
E-mail; URL: http://www.asahi-kasei.co.jp/

Read-F was produced by Shin Nihon Salt Company. This material could efficiently remove fluorine and arsenic from water by adsorption. The fluorine adsorption is applied in treatment of waste water from semiconductor production and thermal power generation. This material is now in use over 50 places for fluorine adsorption. Arsenic adsorption application, featuring extreme ease-of-use by simply passing water through a column filled with the adsorbent, is helping to protect health in Japan and overseas by removing arsenic from groundwater to produce safe drinking water.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Eco-materials No.0196

SlurMix®: Eco-friendly, designed for and cement industry

AMITA CORPORATION
Shuwa Sanbancho Bldg., 28 Sanban-cho, Chiyoda-ku, Tokyo, 102-0075 Japan
Tel; 03-5215-8255 Fax; 03-5215-8256
E-mail; info@amita-net.co.jp
URL: http://www.amita-net.co.jp/

AMITA has developed an easy-to-handle auxiliary fuel called SlurMix for the cement and steel industry, made by compounding and homogenizing certain types of waste oils, oil-containing sludge and waste solvents, all by-products which previously could only be disposed through incineration. The residue remaining after combustion of SlurMix can be used as a raw material in manufacturing cement. SlurMix has about 4,500 kcal/kg of calorific value so that it could be an alternative fuel of coal which leads reduction of greenhouse gas emission and saving natural resources.

This means that SlurMix ultimately results in zero waste product-it realizes 100% recyclability.

Products/Model:
SlurMix®
Eco-materials No.0197

Others | High-octane gasoline

Environmentally-friendly high-octane gasoline for general users

Nippon Oil Corporation
3-12, Nishi Shimbashi 1-chome, Minato-ku, Tokyo 105-8412 Japan
Tel; 03-3502-9180 Fax; 03-3502-9367
E-mail;
URL: http://www.neos.co.jp/

Category:
• A2. Air Pollution
• B5. Energy Saving
• C5. Product Use, Maintenance and Repair

• Since ENEOS Vigo is sulfur-free gasoline (10 ppm or less sulfur content), the emissions such as carbon monoxide, hydrocarbon, nitrogen oxide are reduced up to 10-20% of those of high sulfur gasoline (35-80 ppm sulfur content). This means with ENEOS Vigo emission-purifying-catalyst is less likely to be deteriorated by sulfur.
• By adding a friction modifier, the gasoline consumption ratio and accelerating performance are improved by a maximum of 3% and 5% respectively compared with those of conventional high-octane gasoline without friction modifier.

Products/Model :
ENEOS Vigo

Eco-materials No.0198

Others | Reverse Osmosis Membrane Module

Energy-saving Reverse Osmosis Membrane Module for ultrapure water

NITTO DENKO CORPORATION
1-1-2, Shimohozumi, Ibaraki, Osaka 567-8680 Japan
Tel; 072-622-2981 Fax; 072-626-1505
E-mail;
URL: http://www.nitto.com

Category:
• A5. Resource Consumption
• B4. Higher Quality
• B5. Energy Saving
• B6. Environmental Purification
• C5. Product Use, Maintenance and Repair

This Reverse Osmosis Membrane is used to produce ultrapure water from river water or groundwater for industrial use, drinking water and agricultural water. It eliminates impurities like salinity contained in water with hollow on the surface. The “ES series” can create clean water using around half of the energy required by current products. It was developed to produce ultrapure water vital to the manufacture of semiconductors. The membrane is 0.6 micrometer thick, with a number of surface ribs of 0.4 micrometer high which double the surface area. This allows the water to be produced with less pressure than was previously needed.

Products/Model :
ES-20 D8
**Eco-materials No.0199**

<table>
<thead>
<tr>
<th>Others</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecology Yupo: Recycled product, proper print and workability</strong></td>
<td></td>
</tr>
</tbody>
</table>

Mitsubishi Chemical Corp.
33-8, Shiba 5-chome, Minato-ku, Tokyo 108-0017
Tel; 03-6414-3730 Fax; 03-6414-3745
E-mail; mccpr@cc.m-kagaku.co.jp
URL; http://www.m-kagaku.co.jp/index.htm

**Category:**
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material

A new product “Ecology Yupo” is a product recycled from spent synthetic paper, made from old paper of synthetic paper “Yupo.” This product was developed as a new product, a thick type used for outdoor signboards, and has the same proper print performance and workability as conventional products. The new product comes from a recycling technology for old paper of Yupo generated and classified from printing companies and consists of 50% or more of recycled materials.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
2 Eco-components

i  Construction Components
ii Electrical and Electronic Components
iii Semiconductor Manufacturing Devices
iv Machine Parts
v Automobile Parts
vi Packaging
vii Others
**Eco-components No.0001**

<table>
<thead>
<tr>
<th>Construction Components</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrosion Resistant House Structure</strong></td>
<td></td>
</tr>
</tbody>
</table>

Sekisui Chemical Co., Ltd. Housing Company  
3-17 Toranomon 2-chome Minatoku, Tokyo, 105-8450 Japan  
Tel; Fax;  
E-mail;  
URL: http://www.sekisuiheim.com

Category:  
- A1. Global Warming  
- A4. Waste  
- B2. Longevity  
- C1. Material Extraction  
- C5. Product Use, Maintenance and Repair

Zu-Al-Mg hot dipped steel materials ensure long-lasting house structures, offering two to three times higher corrosion resistance than conventional pure galvanized steel. This enhanced corrosion resistance can extend the life of houses and contributes to the reduction of environmental impact through energy conservation and resource saving.

---

**Eco-components No.0002**

<table>
<thead>
<tr>
<th>Construction Components</th>
<th>Roofing Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrosion resistant House Roofing Materials</strong></td>
<td></td>
</tr>
</tbody>
</table>

Sekisui Chemical Co., Ltd. Housing Company  
3-17 Toranomon 2-chome Minatoku, Tokyo, 105-8450 Japan  
Tel; Fax;  
E-mail;  
URL: http://www.sekisuiheim.com

Category:  
- A1. Global Warming  
- A4. Waste  
- B2. Longevity  
- C1. Material Extraction  
- C5. Product Use, Maintenance and Repair

This roofing material, SUS445, has the highest corrosion resistance of stainless materials and so ensures long-lasting house roofs. This can extend the life of houses and contributes to a reduction of environmental impact thanks to energy conservation and resource savings.
## Eco-components No.0003

**Construction Components** | **Exterior Wall Materials**
--- | ---

### Weather resistant House Exterior Wall Material

**Sekisui Chemical Co., Ltd. Housing Company**

3-17 Toranomon 2-chome Minatoku, Tokyo, 105-8450 Japan  
Tel; Fax; E-mail; URL: http://www.sekisuiheim.com

- Category:  
  - A1. Global Warming  
  - A4. Waste  
  - B2. Longevity  
  - C1. Material Extraction  
  - C5. Product Use, Maintenance and Repair

A UV-absorbent clear finish coat provides a coated film for exterior walls. This prevents deterioration of the pigmented layer under the film and substantially improves its weather resistance. The new film needs repainted less frequency than conventional films, providing both energy and resource savings.

---

## Eco-components No.0004

**Construction Components** | **Interior and exterior building materials**
--- | ---

### Alcelite: Interior/exterior building materials from reproduced aluminum/discarded glass

**Obayashi Corporation, Technical Research Institute**

640, Shimokiyoto 4-chome, Kiyoshe-shi, Tokyo, 204-8558 Japan  
Tel; 0424-95-0970 Fax; 0424-95-0908  
E-mail; URL: http://www.obayashi.co.jp/

- Category:  
  - A4. Waste  
  - B1. Recyclability  
  - B3. Resource Saving  
  - B7. Usage of Recycled Material  
  - C3. Design and Material Selection

Alcelite is an interior and exterior finishing material that uses a glass balloon as the primary material. It is made from reproduced aluminum and discarded glass. Its raw materials include recycled products and, in addition, aluminum can be extracted through fusion by heating after use, allowing it to be re-used.

---

Products/Model:  
ALCELITE × G type
### Eco-components No.0005

**Temporary curtain absorbing and decomposing formaldehyde**

Kumagai Gumi Co., Ltd.
2-1, Tsukudo-cho, Shinjuku-ku, Tokyo 162-8557, Japan
Tel; 03-3260-2111  Fax;
E-mail;
URL; http://www.kumagaigumi.co.jp/main.html

This is temporary curing curtain absorbing and decomposing formaldehyde, which is the main cause of “sick house syndrome” as a result of remarkable improvement in absorbing speed and capacity, just hanging it as a shade curtain in a room enabled to reduce formaldehyde concentration for a day to 1/2-1/3 of the initial concentration. In addition, this curtain can be disposed of as combustibles because the base material and the absorbent are made from paper and natural minerals, respectively, not generating any hazardous substances when it is incinerated.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*

### Eco-components No.0006

**Woody building material for interior**

Sankyo Aluminium Industry Co., Ltd.
70 Hayakawa, Takaoka-shi, Toyama 933-8610, Japan
Tel; 0766-20-2550  Fax;
E-mail;
URL; http://www.sankyoalumi.co.jp/

It is woody building material for interior with harmful substances decreased. The MDF (Medium Density Fiberboard) from thinned wood with low formaldehyde or the particleboard are used for the core or the backing. An environment-friendly resin face sheet is adopted for face panel.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*
**Eco-components No.0007**

**Construction Components**  |  **Sash**

**Aluminum-resin combined sash**

<table>
<thead>
<tr>
<th>Sankyo Aluminium Industry Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 Hayakawa, Takaoka-shi, Toyama 933-8610, Japan</td>
</tr>
<tr>
<td>Tel: 0766-20-2550  Fax;</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL: <a href="http://www.sankyoalumi.co.jp/">http://www.sankyoalumi.co.jp/</a></td>
</tr>
</tbody>
</table>

*Category:*
- A3. Hazardous Substance
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

It is an aluminum-resin-combined sash, which has materialized superb adiabaticity, dew-retardation property and durability by the combination of aluminum on the outdoor side and resin on the indoor side. ABS resin is used, taking account of the environment.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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**Eco-components No.0008**

**Construction Components**  |  **Foamed polystyrene**

**Styropor JFN: Substantial reduction of VOC, wide applications**

<table>
<thead>
<tr>
<th>Mitsubishi Chemical Corp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-8, Shiba 5-chome, Minato-ku, Tokyo 108-0016</td>
</tr>
<tr>
<td>Tel; 03-6414-3730  Fax; 03-6414-3745</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:mccpr@cc.m-kagaku.co.jp">mccpr@cc.m-kagaku.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.m-kagaku.co.jp/index.htm">http://www.m-kagaku.co.jp/index.htm</a></td>
</tr>
</tbody>
</table>

*Category:*
- A3. Hazardous Substance

Foamed polystyrene, molded foamed polystyrene bead, is widely used as building materials such as insulations and tatami mat cores. The product reduced its content of VOC such as xylene, ethylbenzene and styrene monomer causing sick house syndrome, by about 90%. JFN maintains the same excellent strength, heat conduction and workability as conventional products through an original resin design.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-components No.0009**

**FRP Form: Eco-friendly, more accurate finish**

**Nishimatsu Construction Co., Ltd.**
1-20-10, Toranomon, Minato-ku, Tokyo 105-8401, Japan
Tel: 03-3502-0232 Fax;
E-mail;
URL: http://www.nishimatsu.co.jp/eng/

Category:
● A5. Resource Consumption
● B1. Recyclability
● B4. Higher Quality
● C2. Material and Components Production

An FRP form is converted more often than a wood form (composite panel) and eco-friendly. In addition, good concrete can be placed due to that the form provides more accurate finish and that the semi-opaque form allows observation of concrete flow.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-components No.0010**

**“Siporex,“ autoclaved lightweight concrete (ALC)**

**Sumitomo Metal Mining Co., Ltd.**
Shinbashi Sumitomo building 5-11-3, Shinbashi, Minato-ku,
Tokyo 105-8716
Tel: 03-3436-7701 Fax: 03-3436-7738
E-mail;
URL: http://www.smm.co.jp/main.html

Category:
● A5. Resource Consumption
● B3. Resource Saving
● B5. Energy Saving
● B7. Usage of Recycled Material
● C1. Material Extraction

The autoclaved lightweight concrete is a building material which excels in fire resistance, adiabaticity and workability. The primary components are silica, cement and quick lime.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
## Eco-components No.0011

<table>
<thead>
<tr>
<th>Construction Components</th>
<th>Solar cell</th>
</tr>
</thead>
</table>

### “Ecolony”

**Kubota Corporation**  
1-2-47 Shikatsu-higashi, Naniwa-ku, Osaka 556-8601, Japan  
Tel: 06-6648-2111  Fax: 06-6648-2444  
E-mail:  
URL: [http://www.m-kagaku.co.jp/index.htm](http://www.m-kagaku.co.jp/index.htm)

“Ecolony” is a high-performance roofing material transforming solar power into electric power. Energy Payback Time, a period of time in which energy is recovered, of “Ecolony” is 2.1 years, one of the shortest periods in various kinds of photovoltaic power generation systems. In some housing complexes, “Ecolony” was used in all the houses. This creates environment-friendly towns or eco-towns. Use of this material enables the utilization of solar energy as a green energy source.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

## Eco-components No.0012

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>IC Package</th>
</tr>
</thead>
</table>

### Environment-frienly IC package with high reliability & quality

**SHINKO ELECTRIC INDUSTRIES CO., LTD.**  
80, OSHIMADA-MACHI, NAGANO-SHI, 381-2287 JAPAN  
Tel; 026-283-1000  Fax; 026-284-8861  
E-mail; [sales_web@shinko.co.jp](mailto:sales_web@shinko.co.jp)  
URL; [http://www.shinko.co.jp](http://www.shinko.co.jp)

As for IC package, there are some technical variations such as Leadframe(L/F), BGA and FC-XGA able to respond to the development of chips with higher density and smaller size, which use metal and organic materials, and CSP and WLP aimed at ultra small package. They are used in PC and portable terminal equipment. We contribute to decrease global environmental burden with the improvement of material design as well as energy saving measures in the production process of package and the reduction of waste materials. Specifically, we have taken measures to use more environment-friendly materials such as reducing the use of metal, resin, and lead solder with the trend of making thinner and smaller package and miniaturizing terminals in response to density growth, and introducing highly heat resistant materials using palladium Plating, lead-free and halogen-free.

Products/Model :  
IC package
**Eco-components No.0013**

**Hybrid IC for communication control with transmission to lead-free solder**

Fujitsu General Limited  
1116, Suenaga, Takatsu-ku, Kawasaki-shi, Kanagawa  
213-8502, Japan  
Tel: 044-866-1111 Fax: 044-861-7860  
E-mail;  
URL: http://www.fujitsugeneral.co.jp/

**FUJITSU has newly developed a model with IC for communication control, which connects the indoor equipment and the outdoor equipment of such as air-conditioner, transmitted to lead-free solder. We are facing the changeover from lead solder to lead-free solder including the procurement of the corresponding member.**

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

---

**Eco-components No.0014**

**Cyan/lead-free ultra small size chip monolithic ceramic capacitor**

Murata Manufacturing Company Ltd.  
26-10, Tenjin 2-chome, Nagaokakyo-shi Kyoto 617-8555 Japan  
Tel: 075-955-6786 Fax: 075-958-2219  
E-mail; env@murata.co.jp  
URL: http://www.murata.co.jp/

**As the device size reduced and device functions diversify, the technology of high-density packaging and mounting are further required especially for mobile electronic devices. Under such circumstances, Murata, who has developed a capacitor with the 0603 size (0.6 mm X 0.3 mm), has continued studies on processing technologies with higher precision as well as on thinner lamination for dielectrics. As a result, Murata has successfully developed a chip monolithic ceramic capacitor with the 0402 size (0.4 mm X 0.2 mm).**

Products/Model :  
Chip Monolithic Ceramic Capacitors
Eco-components No.0015

Electrical and Electronic Components

Chip multilayer ceramic PTC thermistor

**PTC thermistor with no organic solvent and small production energy**

Murata Manufacturing Company Ltd.
26-10, Tenjin 2-chome, Nagaokakyo-shi, Kyoto 617-8555 Japan
Tel: 075-955-6786 Fax: 075-958-2219
E-mail: env@murata.co.jp
URL: http://www.murata.co.jp/

Murata has successfully developed ceramic PTC thermistor (POSISTER®) with chip multilayer structure for the first time in the world. With the developed technology, since September of 2003, Murata has started a mass production of PTC thermistor for excess electric current protection. As a product with capabilities with 0.2Ω of resistance and 0.5 A of inactive current (surrounding temperature is 50°C), Murata has realized the world smallest size, as small as the 2012 size (2.0mm × 1.25mm × 0.9mm). (POSISTER® is Murata's registered trademark)

Products/Model :
Chip Multilayer Ceramic PTC Thermistor

---

Eco-components No.0016

Electrical and Electronic Components

4mm square isolator

**4mm square isolator**

Hitachi Metals, Ltd.
Shinjyuku park tower 3-7-1, Nishishinjyuku, Shinjyuku-ku, Tokyo 163-1015, Japan
Tel: 03-5381-6955 Fax: 03-5381-6959
E-mail;
URL: http://www.hitachi-metals.co.jp/

It has been developed with an aim at W-CDMA of the global standard specifications, which is used for radio communication instrument such as cellular phone. Hitachi Metals, Ltd. has downsized the conventional product of 5mm square × 2mm into 4mm square × 17mm, roughly by 45% in volume. Based on high-precision resin case, high performance ferrite magnet and low loss garnet, optimum magnetic circuit design and low-loss high-dielectric substrate are adopted, keeping the performance as same as the conventional one. Besides, the same power resistance performance as the conventional ones is materialized through Hitachi Metals’ proprietary heat dissipation design. The weight is 0.11g, attaining the weight-saving by 45% compared to the conventional 2kg.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
## Eco-components No.0017

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Cushioning material</th>
</tr>
</thead>
</table>

### Non-polluting cushioning material

**Hoya Corporation**  
2-7-5, Nakaochial, Shinjyuku-ku, Tokyo 161-8525  
Tel; 03-3952-1162 Fax;  
E-mail;  
URL: http://www.hoya.co.jp/japanese/index.cfm  

Category:  
- A3. Hazardous Substance  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- C6. End-of-Life

HOYA Corp. has shifted the package cushioning material for large-sized mask from expanded polystyrene to non-polluting material from flour. We went through the impact test and transportation test, leading to 100% application as to the large-sized mask. The conventional disposable packaging materials have thus been decreased by 50%, allowing disposal of this new non-polluting cushioning material as a domestic waste by users.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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## Eco-components No.0018

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Transparent ceramics</th>
</tr>
</thead>
</table>

### Optical element without environmental influential substances by reducing production energy

**Murata Manufacturing Company Ltd.**  
26-10, Tenjin 2-chome, Nagaokakyuo-shi Kyoto 617-8555 Japan  
Tel; 075-955-6786 Fax; 075-958-2219  
E-mail; env@murata.co.jp  
URL: http://www.murata.co.jp/  

Category:  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B6. Environmental Purification  
- C3. Design and Material Selection  
- C4. Product Manufacture

Glass with excellent optical performance usually includes lead. Murata, with its own technologies (such as firing technology, processing technology, and material designing technology) accumulated through ceramics, has successfully developed lead-free transparent ceramics. The ceramics have as high transmittance as optical glass, higher refractive index (2.08) than optical glass, and excellent optical characteristics with no double refraction, thus attracting high expectation as a new material of optical element for which further downsizing and thinner lamination are required.

Products/Model:  
Transparent Ceramics
### Eco-components No.0019

**“Miniature Signal Relay E-series”, the products designed by LCA**

**NEC TOKIN Corporation**

7-1 Koriyama 6-Chome, Taihaku-ku, Sendai, Miyagi 982-8510 Japan
Tel: 022-308-0014 Fax: 022-308-1155
E-mail; URL: http://www.nec-tokin.com/

- Category:
  - A3. Hazardous Substance
  - B3. Resource Saving
  - B4. Higher Quality
  - C3. Design and Material Selection
  - C6. End-of-Life

Basing upon the results of the Life Cycle Assessment (LCA) that we have conducted, we are targeting on the development of the Pb-free, Sb-free and halogen-free products. Lead (Pb) is a component of solder and antimony (Sb) and halogen are components of flame-retardant. By using replacing these materials, the production of lead-free products was achieved. The contents of antimony and halogen were also reduced by more than 30% in comparison with our company’s previous products.

Products/Model :
Miniature Signal Relay EC2,ED2,EE2,EF2 Series

---

### Eco-components No.0020

**“Miniature Signal-Relay”, designed for protection of the environment.**

**NEC TOKIN Corporation**

7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan
Tel: 022-308-0014 Fax: 022-308-1155
E-mail; URL: http://www.nec-tokin.com/

- Category:
  - A3. Hazardous Substance
  - B3. Resource Saving
  - B4. Higher Quality
  - C3. Design and Material Selection
  - C6. End-of-Life

Miniature Signal-Relay (Model:UA2,UB2,UC2,UD2) is the product that was developed by means of the Life Cycle Assessment (LCA). The elimination of lead that comes from solder and at that of antimony and halogen that come from the flame retardant has been achieved. These are harmful elements to the environment.

Products/Model :
Miniature Signal Relay UA2,UB2,UC2,UD2 Series
### Eco-components No.0021

**Electrical and Electronic Components**  |  **Power Relay**
---|---

**“Miniature Power-Relay”, designed for the protection of the environment.**

**NEC TOKIN Corporation**  
7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan  
Tel; 022-308-0014  Fax; 022-308-1155  
E-mail;  
URL; http://www.nec-tokin.com/

- Category:
  - A3. Hazardous Substance
  - B3. Resource Saving
  - B4. Higher Quality
  - C3. Design and Material Selection
  - C6. End-of-Life

Miniature Power Relay (Model: ET1, ET2) is the product that was developed by means of the Life Cycle Assessment (LCA). The environmental load of the product was evaluated according to the method of the LCA. The elimination of lead and cadmium has been achieved. These are harmful elements to the environment.

**Products/Model:**  
Miniature Power Relay ET1, ET2 Series

---

### Eco-components No.0022

**Electrical and Electronic Components**  |  **Power Relay**
---|---

**“Miniature Power Relay”, used for the electronic device of automobile.**

**NEC TOKIN Corporation**  
7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan  
Tel; 022-308-0014  Fax; 022-308-1155  
E-mail;  
URL; http://www.nec-tokin.com/

- Category:
  - A3. Hazardous Substance
  - B3. Resource Saving
  - B4. Higher Quality
  - C3. Design and Material Selection
  - C6. End-of-Life

As a result of using a recycled plastic of higher flame-retardant grade, the elimination of antimony and halogen has been achieved with a lower consumption of oil resources. The elimination of cadmium and lead was already achieved. Twenty five percent of the volume and 15% of the weight was reduced in comparison with the values of the previous product of our company.

**Products/Model:**  
Miniature Power Relay EX1,EX2 Series

---
**Eco-components No.0023**

**Electrical and Electronic Components**

**Tantalum Condenser**

**“Tantalum Chip Capacitors”, lead-free electric condenser.**

**NEC TOKIN Corporation**

7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan

Tel: 022-308-0014 Fax: 022-308-1155

E-mail; URL: http://www.nec-tokin.com/

Tantalum condenser is the condenser that contains a film of tantalum oxide as dielectric material, and has the excellent feature of small-size, large-capacity and long-life. But, in the previous production method, the terminal part was soldered with a lead-solder that is not good to the environment. "Tantalum Chip Capacitor (E/SV-series product)" is made by using lead-free solder; hence it can reduce the environmental load due to condenser.

**Category:**

- A3. Hazardous Substance
- B3. Resource Saving
- B4. Higher Quality
- C3. Design and Material Selection
- C6. End-of-Life

Products/Model :

Tantalum Chip Capacitors E/SV Series

---

**Eco-components No.0024**

**Electrical and Electronic Components**

**Tantalum Condenser**

**“Neo Capacitor”, lead-free electric condenser.**

**NEC TOKIN Corporation**

7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan

Tel: 022-308-0014 E-mail; 022-308-1155

E-mail; URL: http://www.nec-tokin.com/

“Neo Capacitor” is a condenser in which a high-conductive polymer is used as dielectrics. “Neo Capacitor (PS/L, PS/G)” is made by using lead-free solder; hence it can reduce the environmental load due to condenser.

**Category:**

- A3. Hazardous Substance
- B3. Resource Saving
- B4. Higher Quality
- C3. Design and Material Selection
- C6. End-of-Life

Products/Model :

NeoCapacitorTM PS/L,PS/G Series
### Eco-components No.0025

**Category**: Electrical and Electronic Components | Electric double layer Condenser

**“SUPER CAPACITOR”, for the protection of the environment**

NEC TOKIN Corporation  
7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan  
Tel; 022-308-0014 Fax; 022-308-1155  
E-mail;  
URL: http://www.nec-tokin.com/

“SUPER CAPACITOR” is an electric double layer capacitor. It is unnecessary to be exchanged like a battery, because the life owing to the cycle of charge and discharge is not restricted in principle. It may therefore realize the easy maintenance of the electric power source of apparatus. By not using PVC and flame retardant containing bromide and chloride, “halogen-free” has been achieved. It does not also involve environment load substances such as lead, cadmium, etc and so there is no influence to the environment in the disposal.

**Products/Model**: Super Capacitor


### Eco-components No.0026

**Category**: Electrical and Electronic Components | Noise suppression Sheet

**“BUSTERAID HF2”, halogen-free noise suppression sheet.**

NEC TOKIN Corporation  
7-1 Koriyama 6-chome, Taihaku-ku, Sendai, Miyagi, 982-8510 Japan  
Tel; 022-308-0014 Fax; 022-308-1155  
E-mail;  
URL: http://www.nec-tokin.com/

“BUSTERAID HF2” is a noise suppression sheet that can solve the problem due to heat and that due to electromagnetic interference simultaneously. The sheet is usable at the temperature up to 400 K. The sheet is halogen-free and consists of the resign not containing chlorine and the flame-retardant not containing bromine. Flame resistance of the sheet is equivalent to UL94-VO. For the electronic equipment to which “BUSTERAID HF2” is attached, the suppression of the increase in power consumption can be expected, as well as the prevention of the incorrect action owing to noise. It is therefore useful for designing of an energy-saving type apparatus. Furthermore, “BUSTERAID HF2” does not contain the substances that destroy the ozone layer and also RoHS substances such as lead, cadmium, etc.

**Products/Model**: Flex-Suppressor Type HF2
**Eco-components No.0027**

**Category**

- A1. Global Warming
- A5. Resource Consumption
- B3. Resource Saving
- B4. Higher Quality

**LCD monitor with parts count and weight decreased**

**Eizo Nanao Corporation**

153, Kashiwano, Matsutou, Ishikawa 924-8566, Japan
Tel: 076-275-4121 Fax: 076-275-4125
E-mail; URL: http://www.eizo-nanao.com/

NANAO Corp. has implemented new structural development in order to decrease parts count and weight in the LCD monitor. Following the study on the structure with a view to decreasing parts count or weight in regard to the conventional models, we have succeeded in decreasing the parts count and the product weight of L367, the LCD monitor of 15 type, by 20% and 15%, respectively. Furthermore, the structure is applied for the ensuing development.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

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**Eco-components No.0028**

**Category**

- A1. Global Warming
- B5. Energy Saving
- C6. End-of-Life

**Remote control receiving optical module of low consumption type**

**Rohm Co., Ltd.**

21, Seiin Mizosaki-cho, Ukyou-ku, Kyoto 615-8585, Japan
Tel: 075-311-2121 Fax: 075-315-0172
E-mail; URL: http://www.rohm.co.jp/index-j.html

The light-receiving module must be constantly supplied through with power, so as to turn on the power by pushing a switch on the remote control. The remote control receiving optical module in question is realizing low voltage operation from 2.7V, on top of which the industry's topside low-power-consumption as low as 300μA, one fifth of the conventional models. The remote control receiving optical module is mounted on every household apparatus and what is crucial is that it should be low power consumption.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-components No.0029
Electrical and Electronic Components | Thermal head
---|---
**Thermal head for mobile printer**

Rohm Co., Ltd.  
21, Seiin Miosaki-cho, Ukyou-ku, Kyoto 615-8585, Japan  
Tel; 075-311-2121  Fax; 075-315-0172  
E-mail;  
URL; http://www.rohm.co.jp/index-j.html

Category:  
● A1. Global Warming  
● B2. Longevity  
● B5. Energy Saving  
● C5. Product Use, Maintenance and Repair

It is a thermal head for the mobile printer, which contributes to energy-saving. It allows longevity of the battery by 20% compared to the conventional models.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0030
Electrical and Electronic Components | Power-supply
---|---
**Power-supply for small base transceiver station (BTS) for communication**

Shindengen Electric Manufacturing Co., Ltd.  
10-13, Minami-cho, Hannou, Saitama 357-8585, Japan  
Tel; 03-3279-4431  Fax; 03-3279-6478  
E-mail;  
URL; http://www.shindengen.co.jp/top_j/index.html

Category:  
● A1. Global Warming  
● B4. Higher Quality  
● B5. Energy Saving  
● C5. Product Use, Maintenance and Repair

It is a power-supply unit for small base transceiver station (BTS) for communication with high efficiency accomplished. The picture shows a 15A rectification unit contained in the equipment. Five units are connected in parallel within this equipment, supplying power of up to 48V60A maximum. The equipment is installed outside like rooftop of the buildings and operated at single-phase AC100V. The conversion efficiency of this equipment has been 87% in the past, however, we have accomplished high efficiency of 90.7%, adopting a new circuit for power factor compensation section.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
GeoDRY, dry-type phase advancing condenser

Nichicon Corporation
Uehara Bldg., Oikedori Karasumahigashi-iru, Nakagyo-ku, Kyoto 604-0844, Japan
Tel: 075-231-8461 Fax: 075-256-4158
E-mail;
URL: http://www.nichicon-us.com/index.html

GeoDRY is a dry-type phase advancing condenser with adoption of N2 gas for insulating gas as a substitute for SF6 gas, objective gas of emission control which leads up to global warming. The product is adopted as a receiving / transforming equipment in the facilities which make much account of disaster prevention, such as building, hotel, hospital and department store. It also adopts the lead-free solder for the terminal area of condenser element and polyvinyl-chloride(PVC)-less products for terminal protection cap. It is a disaster preventing dry type advancing condenser with full lineup of from high pressure to low pressure.

Power conditioner for photovoltaic generation

Nichicon Corporation
Uehara Bldg., Oikedori Karasumahigashi-iru, Nakagyo-ku, Kyoto 604-0844, Japan
Tel: 075-231-8461 Fax: 075-256-4158
E-mail;
URL: http://www.nichicon-us.com/index.html

It is a compact inexpensive power conditioner for photovoltaic generation with the transformer of “transless type.” It transforms solar energy into electric energy efficiently, materializing zero nighttime electricity consumption as well as improvement of power generation efficiency. It comes under the spotlight for installation on the rooftops of buildings, housing and public facility, the roofs of parking or station house, the side wall / sound-proof wall of the expressway.
**Eco-components No.0033**

**Electrical and Electronic Components**

**LSI : Effective power control reduced power consumption to half.**

**Ricoh Company, Ltd.**

1-15-5, Minami-Aoyama, Minato-ku, Tokyo 107-8544, Japan  
Tel; 03-5411-4404 Fax; 03-5411-4410  
E-mail; envinfo@ricoh.co.jp  
URL; http://www.ricoh.co.jp/ecology/

This analog one chip LSI for cellular phone enabled the half-reduction of power consumption with effective power control. It is also equipped with “eco-mode voltage stabilization mains” that can switch power consumption. It is provided to makers that produces several kinds of cellular phones and reduces CO2 of 1000 ton on an annual basis.

Category:

- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Products/Model :  
RC5T623,RC5T625,RC5T513

---

**Eco-components No.0034**

**Electrical and Electronic Components**

**Energy-saving solid capacitor causing no environmental pollution**

**Showa Denko K.K.**

13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 JAPAN  
Tel; 03-5470-3587 Fax; 03-5473-0590  
E-mail;  
URL; http://www.sdk.co.jp

We have used electro conductive polymer with high electrical conduction/high thermo stability for electrolyte to realize produce a chip-type solid capacitor with ultra-low electrical resistance and high heat resistance. This capacitor is used for communications equipment such as personal computers and peripheral devices, mobile terminals, and digital cameras.

This product can save electric power consumption due to its ultra-low internal resistance (ESR). Moreover, the product does not cause environmental contamination because its lead end does not contain any lead. Due to the wide range of possible operating temperatures (-50°C ~ +105°C) and its high heat resistance, this product can be used with lead-free solder.

Category:

- A3. Hazardous Substance
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

Products/Model :  
SDK-CAP HOTAKA

---
### Eco-components No.0035

**Small sized multi-layer ceramic chip capacitor with large capacitance**

<table>
<thead>
<tr>
<th>Taiyo Yuden Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-16-20 Ueno, Taito-ku, Tokyo,110-0005 Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 03-3822-0101 Fax; 03-3835-4754</td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:kankyou@ty.yuden.co.jp">kankyou@ty.yuden.co.jp</a></td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>URL; <a href="http://www">http://www</a>. ty-top.com</td>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td></td>
<td>● C3. Design and Material Selection</td>
</tr>
</tbody>
</table>

Advanced materials technologies allow laminations to turn into thin films, realizing small package of the product. As a result, the amount of materials used can be significantly reduced, while product transportation gets more efficient, and products carrying the inductors can be downsized. In addition, this product uses no regulated substances such as those designated under the RoHS, so it does not pose environmental problems on disposal.

Products/Model :  
Multilayer Capacitor, *MK series

### Eco-components No.0036

**Research klystrons: Recyclable**

<table>
<thead>
<tr>
<th>Toshiba Electron Tubes &amp; Devices Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1385, Shimoishigami, Otawara-shi, Tochigi 324-8550 Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 0287-26-6557 Fax; 0287-26-6060</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>URL; <a href="http://www.toshiba-tetd.co.jp/tetd/qcinfo/ele_kankyo_j.htm">http://www.toshiba-tetd.co.jp/tetd/qcinfo/ele_kankyo_j.htm</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Spent electron tubes were collected, allowing parts that had not deteriorated to be reused. (Deteriorated parts were replaced so that products could be reused.) In addition, we devised a method for commercial production of electron tubes that does not impose loads on the manufacturing process. This produced the following advantages:

1. 90% of the total weight of the electron tubes could be reused.
2. Energy consumption during the fabricating process could be reduced to 78% of that of conventional 1999 products.
3. We could supply recycled products with the same performance, life and low-cost as new products.
Eco-components No.0037

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Electrical contact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco-friendly Cd-free electrical contact for breakers</strong></td>
<td></td>
</tr>
</tbody>
</table>

A.L.M.T. TECH Inc.
1-1-1, Koya-Kita, Itami, Hyogo 664-0016, Japan
Tel: 072-771-0551 Fax: 072-772-3360
E-mail: goma-nori@allied-material.co.jp
URL: http://www.allied-material.co.jp/

Category:
- A3. Hazardous Substance
- B4. Higher Quality

We produced an electrical contact without cadmium, which is a harmful substance. It offers almost the same performance as conventional electrical contacts containing cadmium that have been widely-used as breaker contacts. The breaker mechanism does not need to be modified to replace the conventional contact with the Cd-free electrical contact.

Products/Model:
Cd-free Ag Alloy Electrical Contact 「FDX」 Series

Eco-components No.0038

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Light-Emitting Diode (LED)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Luminance LED for Mobile Phone cameras</strong></td>
<td></td>
</tr>
</tbody>
</table>

Citizen Watch Co., Ltd.
1-23-1, Kamikurechi, Fujisawa-shi, Yamanashi, 403-0001 Japan
Tel: 0555-23-4121 Fax: 0555-23-2426
E-mail;
URL: http://www.c-e.co.jp/home.asp

Category:
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving
- C3. Design and Material Selection

Energy conservation: Power consumption per package is up to 320mW (during DC driving). The product is an ultra energy-saving light.

Resource-saving: The product is compact (5mm×5mm×1.5mm), reducing the use of resources.

High luminance: The product achieves high luminance of 4000mcd per chip. Sufficient light can be obtained with a few chips.

Lead-free: Lead is not used for the mounting board.

Extra-long-life: The product has an extra long life, exceeding 1000 hours of luminance half-life.

Products/Model:
CL-590S-4WD-D
**Eco-components No.0039**

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical and Electronic Components</td>
<td>Downsized high efficiency DC/DC converter</td>
</tr>
</tbody>
</table>

**FDK CORPORATION**  
5-36-11 Shinbashii, Minato-ku, Tokyo 105-8677 Japan  
Tel; 03-3434-1271 Fax; 03-3434-1375  
E-mail: narishi@fdk.co.jp  
URL: http://www.fdk.co.jp/

Components were downsized by the use of higher power conversion frequency 2MHz for the converter. In addition, the development of a power inductor with low-loss magnetic material and coil structure brought about a dramatic cut in loss of circuit. Developed from scratch with the aim of environmental protection, this product is lead-free. It is also resource and energy saving thanks to downsizing and new efficiency improvements.

**Eco-components No.0040**

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical and Electronic Components</td>
<td>FCU series resource-saving actuator unit</td>
</tr>
</tbody>
</table>

**FDK CORPORATION**  
5-36-11 Shinbashii, Minato-ku, Tokyo 105-8677 Japan  
Tel; 03-3434-1271 Fax; 03-3434-1375  
E-mail: narishi@fdk.co.jp  
URL: http://www.fdk.co.jp/

The FCU series Actuator unit has been downsized, made slimmer and uses less parts, achieving resource savings. In addition, developing a non-carrying-current latch allows lenses to maintain their position when the power is turned off, substantially reducing power consumption. In addition, the camera body is manufactured using lead-free material.
<table>
<thead>
<tr>
<th>Eco-components No.0041</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical and Electronic Components</td>
<td>Lead-free Connector Terminal</td>
</tr>
<tr>
<td><strong>Connector terminal: Lead-free soldering</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Fujikura Ltd.</strong></td>
<td>Category:</td>
</tr>
<tr>
<td>1-5-1, Kiba, Koto-ku, Tokyo, 135-8512 Japan</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>Tel; 03-5606-1153 Fax; 03-5606-1580</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:hinoue@fujikura.co.jp">hinoue@fujikura.co.jp</a></td>
<td>● C4. Product Manufacture</td>
</tr>
<tr>
<td>The product is a SMT terminal for card connectors, with lead-free soldering.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eco-components No.0042</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical and Electronic Components</td>
<td>Lead-free Connector Terminal</td>
</tr>
<tr>
<td><strong>Lead-free Connector Terminal: Arc welding without soldering, car parts etc.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Fujikura Ltd.</strong></td>
<td>Category:</td>
</tr>
<tr>
<td>1-5-1, Kiba, Koto-ku, Tokyo, 135-8512 Japan</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>Tel; 03-5606-1153 Fax; 03-5606-1580</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:hinoue@fujikura.co.jp">hinoue@fujikura.co.jp</a></td>
<td>● C4. Product Manufacture</td>
</tr>
<tr>
<td>The product is a flexible printed wiring board with halogen-free adhesive while solder contains no lead.</td>
<td></td>
</tr>
</tbody>
</table>
Postage stamp-sized silicon-based TV tuner that saves energy and resources

Sony Corporation
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel; 03-5448-2111 Fax; 03-5448-2244
E-mail; URL: http://www.sony.net

Category:
- A1. Global Warming
- A5. Resource Consumption
- B3. Resource Saving
- B5. Energy Saving
- C1. Material Extraction

Its total volume is a quarter of that of a conventional television tuner, halving both power consumption and the number of parts needed.

Products/Model:
TV Tuner (BTF-ZJ401/411)

Small-size multi-layer high-loss inductor for digital equipment

Taiyo Yuden Co., Ltd.
6-16-20 Ueno, Taito-ku, Tokyo,110-0005 Japan
Tel; 03-3822-0101 Fax; 03-3835-4754
E-mail; kankyou@ty.yuden.co.jp
URL: http://www.ty-top.com

Category:
- A5. Resource Consumption
- B3. Resource Saving
- B4. Higher Quality
- C1. Material Extraction
- C3. Design and Material Selection

Advanced materials technologies allow laminations to turn into thin films, realizing small package of the product. As a result, the amount of materials used can be significantly reduced, while product transportation gets more efficient, and products carrying the inductors can be downsized. In addition, this product uses no regulated substances such as those designated under the RoHS, so it does not pose environmental problems on disposal.

Products/Model:
Multilayer Ferrite Chip Bead, BK series
### Eco-components No.0045

**Energy-saving switching power supply for Set Manufacturer**

|----------|-----------------------|---------------------|-------------------|----------------------------------------|----------------------------------------|

TKD Corporation  
1-13-1, Nihonbashi, Chuo-ku, Tokyo 103-8272, Japan  
Tel; 03-3278-5111 Fax; 03-5201-7110  
E-mail; kankyo@mb1.tdk.co.jp  
URL; http://www.tdk.co.jp

Through its efforts to make circuits thinner and more efficient by adopting newly developed low-profile components and its unique 3-dimensional CAD mounting design technology incorporating thermal analysis simulation, TDK has made its switching power supply much smaller and lighter than conventional models, with a level of efficiency that far surpasses conventional models.

Products/Model:  
Switching power supplies

### Eco-components No.0046

**Component plated with lead-free solder for electronic equipment**

|----------|-------------------------|-------------------------------|----------------------------------|------------------------|

The Furukawa Electric Co., Ltd.  
6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan  
Tel; Fax;  
E-mail; r-d@ho.furukawa.co.jp  
URL; http://www.furukawa.co.jp

Lead-free plating for the leads of ICs, capacitors, connectors, printed circuit boards etc. has been achieved by using a tin-bismuth alloy instead of the tin-lead material used previously, improving elimination of lead from customers’ mounting process.

Products/Model:  
Lead-Free Plating for Electronic Components
### Eco-components No.0047

**Electrical and Electronic Components** | **Solder pre-coating technology**
---|---

**Solder pre-coating technology for pollution free lead-free**

**Showa Denko K.K.**  
13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 JAPAN  
Tel: 03-5470-3344  Fax: 03-5473-0590  
E-mail; URL: http://www.sdk.co.jp

We have developed technology to produce ultra fine bumps with materials using lead-free solder. The technology is being increasingly deployed as an indispensable method for ultra small packaging.

**Category:**  
- A3. Hazardous Substance  
- B3. Resource Saving  
- B4. Higher Quality  
- C4. Product Manufacture  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
Super JUFFIT Process

### Eco-components No.0048

**Electrical and Electronic Components** | **Bulk feeder**
---|---

**Bulk feeder: Recyclable electronic parts feeder with no waste**

**Taiyo Yuden Co., Ltd.**  
6-16-20 Ueno, Taito-ku, Tokyo,110-0005 Japan  
Tel: 03-3822-0101  Fax: 03-3835-4754  
E-mail; kankyου@tly.yuden.co.jp  
URL: http://www.ty-top.com

Electronics parts are usually packed into a carrier tape, and the tape is then wound around a reel. The reel is then used to “feed” parts to a mounting machine, but after use, the carrier tape cannot be recycled, so it has to be disposed of as a waste. However, the bulk feeder does not use carrier tapes, thus it does not generate the waste. Furthermore, by using this, the energy used for packaging electronic parts can be saved, the packages themselves can be compact, and the product transportation can be much more efficient.

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- C4. Product Manufacture  
- C6. End-of-Life

**Products/Model:**  
Bulk Feeder, F1 series
### Eco-components No.0049

**Micro Heat-Pipe for electronic appliances and computers**

**The Furukawa Electric Co., Ltd.**
6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan
Tel; 03-3286-3495 Fax; 03-3286-3707
E-mail; hiroki@ho.furukawa.co.jp
URL; http://www.furukawa.co.jp

Furukawa Electric's micro heat-pipe provides a solution to the problem of heat-dissipation and cooling of electronic equipment, allowing higher computer power combined with energy savings.

**Category:**
- A1. Global Warming
- A5. Resource Consumption
- B5. Energy Saving
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

**Products/Model:**
- Micro Heat-Pipe

---

### Eco-components No.0050

**Eco-friendly high-performance heat sink for electrical/electronic equipment**

**Showa Denko K.K.**
13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 JAPAN
Tel; 03-5470-3770 Fax; 03-5470-3377
E-mail; 
URL; http://www.sdk.co.jp

While measures against heat issues regarding electrical and electronic equipment becomes increasingly complicated and imminent, our aluminum high-performance heat sink is widely used as an efficient device to counter such issues, thus contributing to resource and energy saving. Also, there are now an increasing number of cases where skive heat sinks are used as an inverter radiator for high efficiency air conditioners.

**Category:**
- A1. Global Warming
- A5. Resource Consumption
- B5. Energy Saving
- C3. Design and Material Selection
- C4. Product Manufacture

**Products/Model:**
- Skyve heat sink
### Eco-components No.0051

**Electrical and Electronic Components** | **Power Cord with Plug**
---|---

**Environmentally-friendly electrical power cord with plug**

Fujikura Ltd.
1-5-1 Kiba, Koto-ku, Tokyo 135-8512 Japan  
Tel; 03-5606-1272 Fax; 03-5606-1549  
E-mail; sanden@info.fujikura.co.jp  
URL; http://www.fujikura.co.jp/

Eco Power Cord with plug is made using halogen-free and lead-free materials to eliminate the risk of dioxin or discharge of lead.

| Category: | ● A3. Hazardous Substance |

**Products/Model:**  
Eco-POWER SUPPLY CORD

### Eco-components No.0052

**Electrical and Electronic Components** | **Electric Wire**
---|---

**Lead-free electric wire for electronic and communication equipment**

Fujikura Ltd.
1-5-1 Kiba, Koto-ku, Tokyo 135-8512 Japan  
Tel; 03-5606-2417 Fax; 03-5606-2418  
E-mail; askecd@fujikura.co.jp  
URL; http://www.fujikura.co.jp/

Unleaded stabilizer replaces the lead stabilizer in wire coating. In addition, the conductor is plated with unleaded material. We manufacture a wide range of products such as electronic wire, coaxial cable, and interface cable.

| Category: | ● A3. Hazardous Substance  
|          | ● B6. Environmental Purification  
|          | ● C5. Product Use, Maintenance and Repair |

**Products/Model:**  
UL style wire
### Eco-components No.0053

**Eco EPC: Halogen free adhesive, Pb free solder**


**Fujikura Ltd.**

1-5-1, Kiba, Koto-ku, Tokyo, 135-8512 Japan  
Tel: 03-5606-1153  Fax: 03-5606-1580  
E-mail: hinoue@fujikura.co.jp  
URL: http://www.fujikura.co.jp/

The product is a flexible printed wiring board with halogen-free adhesive while solder contains no lead.

### Eco-components No.0054

**Halogen-free and lead-free electric wire, cable and cord**


**The Furukawa Electric Co., Ltd.**

6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan  
Tel;  Fax;  
E-mail: r-d@ho.furukawa.co.jp  
URL: http://www.furukawa.co.jp

These wires and cables do not use halogens such as PVC, allowing easy disposal by incineration. ECO-ACE general cables for indoor use, ECOBEAMEX wires for electrical appliances and power cords together with highly flame-retardant optical cables are already in practical use.
### Eco-components No.0055

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Flexible flat cable (FFC)</th>
</tr>
</thead>
</table>

#### UL-conforming halogen-free flexible flat cable for electrical appliances

**Sumitomo Electric Flat Components, INC.**

3-3, Satsuki-cho, Kanuma, Tochigi, 322-8585 Japan  
Tel; Fax;  
E-mail;  
URL; http://www.sei.co.jp/ewp/J/

- **Category:**  
  - A3. Hazardous Substance  
  - C3. Design and Material Selection

This product is a UL-conforming halogen-free flat cable, which does not include PVC or bromic or chloride flame retardant. In addition, the product does not use environment-load substances such as lead or cadmium.

- **Products/Model:** Halogen Free SUMI-CARD

### Eco-components No.0056

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Wire/Cable</th>
</tr>
</thead>
</table>

#### Eco-friendly, recyclable Halogen-free wire/cable for vehicle, electric/electronic

**Sumitomo Wiring Systems, Ltd.**

1-14 Nishisuehiro-cho, Yokkaichi, Mie 510-8503  
Tel; 0593-54-6200 Fax; 0593-54-6318  
E-mail;  
URL; http://www.sws.co.jp/

- **Category:**  
  - A4. Waste  
  - B1. Recyclability  
  - B6. Environmental Purification  
  - C3. Design and Material Selection  
  - C6. End-of-Life

The covering material of this halogen-free wire and cable is compounded by polyolefin resin with metalhydroxide as a flame retardant, resulting in a flame-resisting structure by water which is generated from metalhydroxide and suppresses flame propagation. It does not emit halogenated gas and generates low smoke. Thermal recycling is possible, reducing the volume of landfill dust. The wire meets ISO standard, has light weight, small diameter, and it offers excellent abrasion resistance and water resistance.

- **Products/Model:** Halogen-Free Wire and Cable
### Eco-components No.0057

**NAS battery (sodium sulfur battery)**

<table>
<thead>
<tr>
<th>Category</th>
<th>NGK Insulators, Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-56, Suda-cho, Mizuho-ku, Nagoya-shi, Aichi 467-8530, Japan</td>
</tr>
<tr>
<td></td>
<td>Tel; 052-872-7171 Fax; E-mail; URL: <a href="http://www.ngk.co.jp/">http://www.ngk.co.jp/</a></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The NAS battery is a secondary battery that saves a large amount of power in the battery. This battery is made of sulfur and sodium electrodes. Charging and discharging are made through the chemical reactions of sodium ions reciprocating between sulfur and sodium electrodes. The electrodes are separated by a beta aluminum tube (solid electrolyte). Because no burning entails through charging and discharging, no harmful substances are emitted. The power storing is made using the power generated in the night from the power plant with low fossil energy rate. An efficient use of power generation facility is available by storing the power in the night and using the power in the daytime, when the power consumption is high.</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*

### Eco-components No.0058

**Lead storage battery: Reduction of lead usage, industrial applications**

| Category                                                                 | YUASA Corporation                                                                 |
|                                                                         | 2-3-21, Kosobe-cho, Takatsuki-shi, Osaka 569-1115, Japan                           |
|                                                                         | Tel; 072-686-6181 Fax; 072-686-6345 E-mail; URL: http://www.yuasa-jpn.co.jp/menuhp.html |
|                                                                         |                                                                                      |
| **This is an industrial lead storage battery with reduced lead. The product has about twice as life as conventional products. Recyclable polypropylene resins are used in its tank and cap. In addition, the reduction of parts materials realized miniaturization (volume ratio of 20%, high efficiency) and weight reduction (10% reduction).** |

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*
### Eco-components No.0059

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Battery</th>
</tr>
</thead>
</table>

**Lithium coin battery**

Hitachi Maxell, Ltd.
1-1-88, Ushitora, Ibaraki-shi, Osaka 567-8567, Japan
Tel: 072-623-8250 Fax;
E-mail;
URL: http://www.maxell.co.jp/environment/contact.html

The battery volume is required raising to meet every purpose, in compliance with long-term usage of the apparatuses. In order to satisfy this demand, Hitachi Maxell has raised the battery volume by 10-15% compared to the conventional ones. We reduced the environment burden thus through power-up and ensuing long-term usability, extending battery exchange cycle.

Category:
- A1. Global Warming
- B2. Longevity
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0060

<table>
<thead>
<tr>
<th>Electrical and Electronic Components</th>
<th>Battery</th>
</tr>
</thead>
</table>

**Size AA alkaline dry cell designed for longevity**

Hitachi Maxell, Ltd.
1-1-88, Ushitora, Ibaraki-shi, Osaka 567-8567, Japan
Tel: 072-623-8250 Fax;
E-mail;
URL: http://www.maxell.co.jp/environment/contact.html

It is a new dynamic size AA alkaline dry cell with longevity by approximately 40% accomplished. To meet the need of digital camera, we got around to a review of the technology and the structure of size AA alkaline dry cell, increasing the internal volume by making the wall of cathode can thinner. Additionally, high-drain pulse performance is raised by roughly 40% compared to the conventional one through adoption of power expander technique, materializing top-level performance in the industry.

Category:
- A1. Global Warming
- B2. Longevity
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-components No.0061
#### Solid electrolyte fuel cell separator

**Hitachi Metals, Ltd.**  
Shinjyuku park tower 3-7-1, Nishishinjyuku, Shinjyuku-ku, Tokyo 163-1015, Japan  
Tel: 03-5381-6955-6958  
Fax: 03-5381-6959  
E-mail:  
URL: http://www.hitachi-metals.co.jp/

The fuel cell is a power generator which produce electric energy through the electrochemical reaction of the fuel and oxygen, expected as the energy source for the next-generation on account of its high generating efficiency and low environmental burden. ZMG232, the material of solid electrolyte fuel cell separator is satisfactory with (1) electroconductivity, (2) the operation at the temperature as high as 900 - 1000 degree centigrade, (3) the coefficient of thermal expansion close to that of ZrO2. It is a ferrite system alloy with Fe-22Cr in major proportions, trace element added. It has high oxidation resistance even at 1000 degeree centigrade.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*

### Eco-components No.0062
#### Rare Earth Magnet

**Shin-Etsu Chemical Co., Ltd.**  
2-6-1, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan  
Tel: 03-3246-5091  
Fax:  
E-mail:  
URL: http://www.shinetsu.co.jp/index.shtml

This is the high-powered permanent magnet made from rare earth elements such as neodymium and samarium. The products equipped with this magnet with strong magnetic force are PC's hard disc drives, headset stereos, and motors of factory automation and office automation equipment, as well as air-conditioning compressor motors that require highly efficient motors. This magnet's volume and weight, and its usage of copper wire were reduced by 15% and 40%, respectively, compared to conventional magnets. Regarding energy efficiency, COP was improved 5-10% and power consumption was significantly reduced.

*Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.*
### Eco-components No.0063

<table>
<thead>
<tr>
<th>Category</th>
<th>Permanent magnet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High-performance permanent magnet NEOMAX</strong></td>
<td></td>
</tr>
<tr>
<td>Neomax Co., Ltd.</td>
<td>Category:</td>
</tr>
<tr>
<td>Sumitomo building, 4-7-19, Kitahama, Chuo-ku, Osaka</td>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>Tel; 06-620-8822  Fax; 06-6220-8909</td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>E-mail; URL: <a href="http://www.neomax.co.jp/index.html">http://www.neomax.co.jp/index.html</a></td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td></td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td></td>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

It is world’s strongest permanent magnet NEOMAX. It contributes to reduction of environment burden such as energy-saving and resource-saving in a wide range of field, from the electric apparatus down. In particular, it administers to enormous reduction of environment burden through the lifecycle of the apparatuses by high efficiency of the motor. The picture shows a rotor for EPS (electric power steering). The fuel consumption can be improved by shifting the hydraulic power steering of a car to the electric one, eliminating the oil circulating loss. NEOMAX is used for the rotor of EPS motor.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0064

<table>
<thead>
<tr>
<th>Category</th>
<th>Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cadmium-free motor</strong></td>
<td></td>
</tr>
<tr>
<td>Mabuchi Motor Co., Ltd.</td>
<td>Category:</td>
</tr>
<tr>
<td>430, Matsuhidai, Matsudo, Chiba 270-2280, Japan</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>Tel; 047-384-1111  Fax; 047-389-5299</td>
<td></td>
</tr>
<tr>
<td>E-mail; URL: <a href="http://www.mabuchi-motor.co.jp/">http://www.mabuchi-motor.co.jp/</a></td>
<td></td>
</tr>
</tbody>
</table>

The material with trace of cadmium contained in some commutators has been used so far in order to enjoy longevity of the motor commutator and a contact stability. The cadmium is a harmful heavy metal for ecosystem. MABUCHI Motor Co., Ltd. is under changeover so as to nullify the usage of cadmium for every product.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-components No.0065**

**Electrical and Electronic Components** | **Halide lamp**
---|---

**GS ceramic halide lamp**

Japan Storage Battery Co., Ltd.
1, Inobana-cho, Nishinosho, Kishoin, Minami-ku, Kyoto-shi, Kyoto 601-8520, Japan
Tel; 075-316-3127 Fax;
E-mail;
URL: http://www.nippondench.co.jp/npd/ toi/ toi.html

It is “Eco-cera,” GS ceramic metal halide lamp series with an excellent economical efficiency and an optical performance. The conventional metal halide lamp had a lifetime of 9,000 hours. Nevertheless, it is drastically improved as long as 12,000 hours by adoption of the translucent ceramics for luminous tube. In addition, the usage of GS ceramic halide lamp as a substitute for the conventional mercury-arc lamp enables power-saving by 45% keeping practically the same brightness. The power saving by 10% or more can be achieved only by replace the conventional metal halide lamp / mercury-arc lamp with GS ceramic halide lamp.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-components No.0066**

**Semiconductor Manufacturing Devices** | **Jacket heater**
---|---

**Order-made jacket-heater of adiabatic and energy-saving type**

Mitsui Mining Materials Company Limited
3-3, Toyosu-3 chome, Koutou-ku, Tokyo 135-6006 Japan
Tel; 03-5560-2113 Fax; 03-5560-2192
E-mail;
URL;

The product is a jacket heater for an exhaust-gas tube of the CVD apparatus that is used to manufacture semiconductor, liquid crystal, etc. Original double-layer silica-yarn coated heating-wire made it possible to use safely a higher-density current flow. By placing a reflection film of heat inside the outer coat, the improvement of heating effect and the lowering of temperature of the outer coat is realized.
Eco-components No.0067
Semiconductor Manufacturing Devices | PFC treatment equipment

**Exhaust gas treatment equipment to help prevent global warming**

**Showa Denko K.K.**
13-9, Shibadaimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan
Tel: 044-329-0760 Fax: 044-329-0797
E-mail; http://www.sdk.co.jp

This exhaust gas treatment equipment decomposes and eliminates PFC, SF6 and NF3 (greenhouse effect gases) which are discharged in the production of semiconductors. This product not only eliminates toxic from PFC, SF6 and NF3 at a low temperature (600°C or lower) and with high decomposing ratio (at least 99%) but also disposes fluorine sour gases (such as HF, SiF4) and carbon monoxide at the same time. It also uses a system by which toxic elimination column units can be easily replaced. Used toxic elimination agent can be recycled as cement material.

Category:
- A1. Global Warming
- B4. Higher Quality
- B6. Environmental Purification
- C4. Product Manufacture
- C6. End-of-Life

Products/Model:
Clean-S PF

---

Eco-components No.0068
Semiconductor Manufacturing Devices | Dry vacuum pump

**ESR series: Eco-friendly, energy-saving and cost-saving dry vacuum pump**

**Ebara Corporation**
11-1 Haneda Asahi-cho, Ohta-ku Tokyo 144-8510 Japan
Tel: 03-3743-6135 Fax: 03-3743-6589
E-mail; sakane.shigeru@ebara.com
URL; http://www.ebara.co.jp

The ESR series released in April 2003 reduced power consumption by up to 60%, in comparison with the AA series released in 1994. Products in the ESR series set their operating performance according to service conditions to achieve further energy savings. In addition, resource savings were achieved by reducing their volume and mass by up to 50% and approximately 30% respectively.

Category:
- A1. Global Warming
- A5. Resource Consumption
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving

Products/Model:
Dry Vacuum Pump ESR Series
Eco-components No.0069

Machine Parts | Needle for blood glucose measuring-apparatus (used to take blood sample from finger for measurement of blood glucose value)
--- | ---

### Non-exposed needle for blood glucose measuring avoids injury on disposal

Terumo Corporation  
2-44-1, Hatagaya, Shibuya-ku, Tokyo, 151-0072 Japan  
Tel: 03-3374-8111  
Fax: 03-3374-8399  
E-mail: kankyou@terumo.co.jp  
URL: http://www.terumo.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Blood sugar measuring devices are used to prick the finger to take a blood sample which is then inserted into the device to measure the glucose (blood sugar) level. However, patients have raised concerns about the possibility of injury when disposing of the needle (known as a lancet needle). It also presents a risk of injury from a sharp, bloodied item when waste is collected. To overcome this problem, Terumo has designed its blood glucose monitoring device so that the needle is not exposed, either before or after use or during disposal.

### Eco-components No.0070

Machine Parts | Water development photosensitive printing plate
--- | ---

### Water development photosensitive printing plate without organic solvents

Toyobo Co., Ltd.  
2-8 Dojimahama 2-chome, Kita-ku, Osaka, 530-8230 Japan  
Tel: 06-6348-3417  
Fax: 06-6348-3393  
E-mail: kankyo@ho.toyobo.co.jp  
URL: http://www.toyobo.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
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<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

Printight® is a water-soluble nylon based photosensitive printing plate for use in letterpress applications. It offers superior resolution and excellent reproduction and has been widely accepted in various fields of the printing industry. Cosmolight® is a water-washable photosensitive printing plate for flexo printing. This revolutionary plate eliminates the need for toxic, environmentally damaging washout solvents. It is durable and can be used with water-based inks as well as solvent-based and UV inks.

Products/Model:  
Cosmolight ©  Printight ©
## Eco-components No.0071

<table>
<thead>
<tr>
<th>Machine Parts</th>
<th>Transmission belt</th>
</tr>
</thead>
</table>

### Energy-saving transmission belt for general machinery

Bando Chemical Industries Ltd.
2-24, Isogami-dori 2, Chuo-ku, Kobe-city, 651-0086 Japan
Tel: 078-232-2923  Fax;
E-mail;
URL: http://www.bando.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
</tbody>
</table>

Our energy-saving V-belt reduces power loss in a belt power transmission system, exhibiting a power-saving effect. This power saving can reduce the volume of CO₂ release as well as electricity consumption. In addition, further power savings can be realized by simply replacing the belt since a standard pulley is used.

Products/Model:
Bando Energy Saving V- Belt

---

## Eco-components No.0072

<table>
<thead>
<tr>
<th>Machine Parts</th>
<th>Bearing</th>
</tr>
</thead>
</table>

### Lube guard bearing: Protection of environmental pollution, clean applications

NSK Ltd.
1-6-3 Ohsaki, Shinagawa-ku, Tokyo 141-8560, Japan
Tel: 03-3779-7111  Fax: 03-3779-7431
E-mail;
URL: http://www.nsk.com

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Lube guard bearing which uses resin “solid oil” containing much lubricating oil enabled its long-time use without grease filling for environments where grease easily spills with water and liquid and for applications where contamination though leaked grease would be unacceptable, and helps resource-saving and prevention of environmental pollution.

Products/Model:
Molded Oil BearingTM
### Eco-components No.0073

**Machine Parts** | **Wheel Hub-unit Bearing**  
---|---

**Hub-unit bearing: Lightweight, long-life, low torque and easy -assembling**

| NSK Ltd. |  
| --- | --- |
| 1-6-3 Ohsaki, Shinagawa-ku, Tokyo 141-8560, Japan | Category:  
| Tel: 03-3779-7111  Fax: 03-3779-7431 | ● A1. Global Warming  
| E-mail; | ● B2. Longevity  
| URL; http://www.nsk.com | ● B3. Resource Saving  

Considering long-life, low torque and easy -assembling and promoting unitization with parts for installation counterparts, the third-generation hub-unit bearing enabled a weight reduction of 300g or more per automobile wheel, which contributes to energy conservation and resource-saving.

![Hub-unit Bearing](https://via.placeholder.com/150)

**Products/Model:**  
Hub-unit Bearing

---

### Eco-components No.0074

**Machine Parts** | **Bearing**  
---|---

**High-ability bearing for machine tool spindles**

| Koyo Seiko Co., Ltd. |  
| --- | --- |
| 24-1, Kokubuhigashi-cho, Kashiwabara-shi, Osaka 582-8588, Japan | Category:  
| Tel: 0729-77-1119  Fax; | ● A1. Global Warming  
| E-mail; | ● A5. Resource Consumption  
| URL: http://www.koyo-seiko.co.jp/japanese/ | ● B4. Higher Quality  

This ultra-high-speed angular contact ball bearing is the high-ability bearing developed to meet the demands for higher speed and efficiency. It increased limiting speed 1.2-1.5 times, but decreased temperature rise by 20-30% with the optimal design of internal elements. It achieved to reduce oil supply by approximately 30%, air consumption by 10-20%, noise level by 5-7dBA.

![High-ability bearing](https://via.placeholder.com/150)

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-components No.0075**

<table>
<thead>
<tr>
<th>Machine Parts</th>
<th>Magnet Wire</th>
</tr>
</thead>
</table>

**Heat and refrigerant resistant Magnet Wire for CFC-free refrigerant systems**

<table>
<thead>
<tr>
<th>The Furukawa Electric Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan</td>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>Tel; Fax; E-mail: <a href="mailto:r-d@ho.furukawa.co.jp">r-d@ho.furukawa.co.jp</a></td>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>URL: <a href="http://www.furukawa.co.jp">http://www.furukawa.co.jp</a></td>
<td>● C3. Design and Material Selection</td>
</tr>
</tbody>
</table>

This heat and refrigerant-resistant magnet wire is now in use in the compressor motors of air-conditioning and refrigerating systems using CFC-substitute refrigerants (HFC-R407C, R410A, R134a). It was developed to deal with refrigerant systems using substitutes for ozone-depleting CFCs.

*Products/Model :  
CFC-Substitute Compatible Magnet Wire HPWR-II*

---

**Eco-components No.0076**

<table>
<thead>
<tr>
<th>Machine Parts</th>
<th>Filter</th>
</tr>
</thead>
</table>

**Air filter, “Torayclean”**

<table>
<thead>
<tr>
<th>Toray Industries, Inc.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toray Bldg., 2-1,Nihonbashi-Muromachi 2-chome,Chuo-ku,Tokyo, 103-8666 Japan</td>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>Tel: 03-3245-5179 Fax: 03-3245-5459</td>
<td>E-mail; URL: <a href="http://www.toray.co.jp">http://www.toray.co.jp</a></td>
</tr>
</tbody>
</table>

Torayclean* is an air filter created with Toraymicron*, an electret-type non-woven fabric incorporating Toray’s advanced precision technology and original filter designing technology. Using Toraymicron* as its main material, the air filter realizes a high level of stable particle collection through low-pressure loss and long life. The filter is used mainly for air conditioning, industrial processes and air purifiers, contributing to the creation of clean air.
### Eco-components No.0077

**Machine Parts** | **Hollow fiber membrane**
---|---

**Hollow fiber membrane made of polyethylene for wastewater treatment**

Mitsubishi Rayon Engineering Co., Ltd.
6-41, Konan 1-Chome, Minato-ku, Tokyo, 108-8506 Japan  
Tel: 03-5495-3152  Fax: 03-5495-3217  
E-mail: membrane@mrc.co.jp  
URL: http://www.sterapore.com/

Our hollow fiber polyethylene membrane produces purified water by treating wastewater to allow it to be reused. In addition, it is manufactured through a unique melt spinning and drawing process that does not discharge any solvents.

**Products/Model:**  
Sterapore SUR234, SUN10534

---

### Eco-components No.0078

**Machine Parts** | **Filtration Equipment for Clarifying**
---|---

**High-speed filtration equipment for clarifying, “Marimo”**

Unitika Ltd.  
Osaka Center Bldg., 4-1-3, Kyutarou-cho, Chuo-ku, Osaka-shi, Osaka 541-8566, Japan  
Tel: 06-6281-5247  Fax:  
E-mail:  
URL: http://www.unitika.co.jp/business/home.htm

High-speed filtration equipment for clarifying, “Marimo” uses special fiber as filter medium. Its filtration speed is five times faster than conventional sand filtration. Treatment efficiency is also advanced. Reverse washing can be implemented easily with this product. It is widely used for drainage tertiary treatment, reuse of drainage, filtration of industrial water, and pretreatment of water reuse.

***Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.***
### Eco-components No.0079

<table>
<thead>
<tr>
<th>Machine Parts</th>
<th>Toner</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Recycled toner</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Otsuka Corporation</strong></td>
</tr>
<tr>
<td>2-18-4, Idabashi, Chiyoda-ku, Tokyo 102-8573, Japan</td>
</tr>
<tr>
<td>Tel: 03-3514-7130 Fax: 03-3514-7128</td>
</tr>
<tr>
<td>E-mail; URL: <a href="http://www.otsuka-shokai.co.jp/eco/2003/index.html">http://www.otsuka-shokai.co.jp/eco/2003/index.html</a></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

It is a recycled toner. The toner cartridge of printer used in office is reclaimed and recycled. We complete user-friendly recycle that the cartridge reclaimed from company A is returned to company A following recycling.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0080

<table>
<thead>
<tr>
<th>Machine Parts</th>
<th>Mechanical Module for Car Audio</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Mechanical Module for Car Audio to improve fuel economy</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clarion Co., Ltd.</strong></td>
</tr>
<tr>
<td>50 Kamitoda, Toda-shi, Saitama 335-8511 Japan</td>
</tr>
<tr>
<td>Tel: 048-443-0628 Fax: 048-443-0792</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:Katsumi_Onuma@clarion.co.jp">Katsumi_Onuma@clarion.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.clarion.co.jp">http://www.clarion.co.jp</a></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
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</tbody>
</table>

By reducing the weight of car audio devices, we aim to improve a car's running condition and fuel costs, and consequently reduce CO₂ emission. Our 1DINCD series features mechanical modules that weigh 10% less than similar modules produced a year earlier. In GS-1 series, a single mechanical module offers a weight saving of 47% compared with current status.

Products/Model :
Mechanical Module for Car Audio
### Eco-components No.0081

**Automobile Parts**

**Car Engine**

**Fuel-efficient DVVT twin cam engine for small cars**

**DAIHATSU MOTOR CO., LTD.**  
1-1 Daihatsu-cho, Ikeda-City, Osaka 563-8651 Japan  
Tel: 072-754-3348 Fax: 072-754-3347  
E-mail; environmental_dep@mail.daihatsu.co.jp  
URL: http://www.daihatsu.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
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<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Daihatsu has developed a fuel-efficient engine to contribute to the conservation of global resources. This twin cam engine is equipped with DVVT (Dynamic Variable Valve Timing), in which a computer optimizes the valve timing according to the data on engine revolutions and how far the accelerator pedal is depressed. By using DVVT, the engine achieves both low fuel consumption and high torque.

Products/Model:  
EF-VE

---

### Eco-components No.0082

**Automobile Parts**

**Gasoline direct injection components**

**DENSO CORPORATION**  
1-1, Showa-cho, Kariya, Aichi 448-8661 Japan  
Tel: 0566-25-5733 Fax: 0566-25-4525  
E-mail; kankyo@she.denso.co.jp  
URL: http://www.denso.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Conventional engines supply fuel by injecting gasoline into a suction port. However, this direct injection engine permits direct injection of gasoline into the combustion chamber, achieving lean-burn in a wide range of drive, and improving fuel efficiency. In order to achieve this, we developed components such as a high-pressure injector and high-pressure pump, which are mounted directly on engine.

Products/Model:  
Gasoline direct injection components
### Eco-components No.0083

**Carriers / Automobiles**

**Low fuel consumption common rail diesel engine**

**Toyota Motor Corporation**

1, Toyota-cho, Toyota-shi, Aichi, 471-8571 Japan  
Tel: 0565-23-1572 Fax: 0565-23-1589  
E-mail: hiromasa_hino@mail.toyota.co.jp  
URL: http://www.toyota.co.jp

The common rail fuel injection system ensures stable fuel injection pressure even at low gear without any effect on the engine. This is due to the storage of high pressure fuel produced with a pump within common rail. The direct-injection diesel engine achieves low fuel consumption and features a turbocharger with intercooler.

**Category:**

- A1. Global Warming
- A5. Resource Consumption
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

![Common Rail Fuel Injection System Diagram](image)

Products/Model :  
Common rail fuel injection system

### Eco-components No.0084

**Automobile Parts**

**RENESIS: New generation rotary engine, clean flue gas, fuel economy**

**Mazda Moror Corporation**

3-1, Shinchi, Huchu-cho, Aki-gun, Hiroshima 730-8670, Japan  
Tel: 082-286-5744 Fax;  
E-mail;  
URL: http://customer.mazda.co.jp/inquiry.html

A rotary engine “RENESIS” realized clean exhaust gas and fuel economy through the introduction of a side exhaust system. In particular, contaminant in flue gas was reduced to about 1/10 of conventional contaminant.

**Category:**

- A1. Global Warming
- A2. Air Pollution
- B5. Energy Saving
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-components No.0085**

**Automobile Parts** | **Pre-Catalyst**
---|---

**Metal pre-catalyst for car: Purified exhaust gas, easy installation**

Fuji Heavy Industries Ltd.
1-7-2 Nishishinjuku, Shinjuku-ku, Tokyo Japan
Tel; 03-3347-2111 Fax;
E-mail;
URL: http://www.fhi.co.jp/index.html

A pre-catalyst is installed in the upper flow of the turbocharger and the exhaust flows into the catalyst without cooling the gas temperature. This process allows the catalyst to operate immediately after the engine is started, while also working with another catalyst in the lower flow of the turbocharger to raise total purification function.

**Eco-components No.0086**

**Automobile Parts** | **Diesel Particulate Filter (DPF)**
---|---

**Ceramic filter for purifying exhaust gases from diesel-powered vehicles**

NGK Insulators, Ltd.
2-56 Suda-cho, Mizuho, Nagoya, 467-8530 Japan
Tel; 052-872-7181 Fax; 052-872-7690
E-mail; pr-office@ngk.co.jp
URL: http://www.ngk.co.jp/

The Diesel Particulate Filter (DPF) eliminates the particulate matter (PM) in exhaust gas from diesel-powered vehicles. By plugging alternate honeycomb cells at each end, their porous ceramic walls filter out 90% or more of the PM in exhaust gas. The DPF is regenerated by treatment of accumulated PM by heat, etc.
### Eco-components No.0087

**Intake module: Weight reduction, increased gas mileage**

<table>
<thead>
<tr>
<th>Automobile Parts</th>
<th>Intake Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aisan Industry Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>1-1-1, Kyowa-cho, Obu, Aichi 474-8588, Japan</td>
<td></td>
</tr>
<tr>
<td>Tel: 0562-47-1131 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.aisan-ind.co.jp/">http://www.aisan-ind.co.jp/</a></td>
<td></td>
</tr>
<tr>
<td>Category:</td>
<td></td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
<td></td>
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<tr>
<td>● B4. Higher Quality</td>
<td></td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
<td></td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
</tbody>
</table>

The product realized its weight reduction by combining parts into modules, in order to improve fuel efficiency of a car. The incorporation of an electronic throttle into a resin intake manifold increased its capability and substantially reduced its weight.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0088

**Eco-friendly Freon-free car air conditioning**

<table>
<thead>
<tr>
<th>Automobile Parts</th>
<th>Car air conditioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENSO CORPORATION</td>
<td></td>
</tr>
<tr>
<td>1-1, Showa-cho, Kariya, Aichi 448-8661 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel: 0566-25-5733 Fax: 0566-25-4525</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:kankyo@she.denso.co.jp">kankyo@she.denso.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.denso.co.jp">http://www.denso.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>Category:</td>
<td></td>
</tr>
<tr>
<td>● A1. Global Warming</td>
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</tr>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
</tbody>
</table>

This car air conditioning does not use chlorofluorocarbon for refrigerant. Traditionally, this type of product has used HFC-134a, which has a significant effect on global warming. However, we developed a novel air conditioner system using CO$_2$ by employing higher pressure for the refrigerating cycle. It was installed in Toyota's FCHV fuel cell hybrid car in December, 2002.
### Eco-components No.0089

<table>
<thead>
<tr>
<th>Automobile Parts</th>
<th>Compressor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exterior control compressor: power-saving, stabilization of rpm control, prevention of dry air</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### Calsonic Kansei Corporation
5-24-15, Minamidai, Nakano-ku, Tokyo 164-8602, Japan  
Tel; 03-5385-0178 Fax;  
E-mail;  
URL: http://www.calsonickansei.co.jp/  

**Category:**  
- A1. Global Warming  
- B4. Higher Quality  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

This exterior control compressor accomplished “prevention of excessive drying of air in the car,” “reduction of engine's wasteful operation (power-saving)” and “stabilization of rpm control at idling” by controlling the discharge of refrigerants from the compressor according to exterior temperature and humidity and in-car set temperature with exterior electric signals.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0090

<table>
<thead>
<tr>
<th>Automobile Parts</th>
<th>Air conditioning system</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air condition unit: Energy-saving, compact, increased fuel efficiency</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### Keihin Corporation
1-26-2, Nishi-shinjuku, Shinjuku-ku, Tokyo 163-0539, Japan  
Tel; 03-3345-3411 Fax; 03-3345-3414  
E-mail;  
URL: http://www.keihin-corp.co.jp/  

**Category:**  
- A1. Global Warming  
- B4. Higher Quality  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

Cooling and heating parts are integrated in a more efficient and compact manner (a three-split was unified) to save energy and space of an air conditioning unit (HVAC). This system increases fuel efficiency.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-components No.0091

**Automobile Parts** | **Car air conditioning system**
---|---

**Eco-friendly car air conditioning system with natural refrigerant (CO₂)**

Mitsubishi Heavy Industries Ltd.

3-1 Asahimachi Nishibiwajima-cho Nishikasugai-gun, Aichi-pref,
452-8561 Japan

Tel; 052-504-9815 Fax; 052-503-2638

E-mail; URL; http://www.mhi.co.jp

We have developed an environmentally-friendly car air conditioning system using natural refrigerant (CO₂) which does not damage the ozone layer and has little effect on global warming. In addition, it achieves higher performance than a system using Freon gas (HFC-134a). We have already developed a full-size working model and are planning to market the system in the near future.

### Eco-components No.0092

**Automobile parts** | **Copper Tubing**
---|---

**Multi-grooved copper tubing for cooling units using CFC substitutes**

The Furukawa Electric Co., Ltd.

6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan

Tel; Fax;

E-mail; r-d@ho.furukawa.co.jp

URL; http://www.furukawa.co.jp

These heat exchange copper tubes are for use with CFC-substitute refrigerants to reduce ozone-layer depletion. They reduce oil residues in the tube's inner surface and are internally multi-grooved to improve heat exchanging performance.

**Products/Model:**

- Copper Tube for Use with CFC-Substitutes
- "Furukawa SuperClean Tube",
  Furukawa Multi-Grooved Tube "FMGT"
### Ultra-light 3rd generation hub bearing: Low gas mileage, energy saving

**NTN Corporation**  
1-3-17 Kyomachibori, Nishi-ku, Osaka, 550-0003 Japan  
Tel: 06-6443-5001 Fax;  
E-mail;  
URL: http://www.ntn.co.jp/

A hub bearing is used to support a car’s wheel shaft. We developed the lightest 3rd generation hub bearing in the world for minicars to improve fuel consumption. By optimizing the shape of the hub bearing, we reduced its weight to 1kg (around 30% less than conventional products), and achieved better power fuel consumption as well as resource savings. In addition, the use of high-efficiency long life grease in the bearing significantly increases bearing life.

**Category:**  
- A5. Resource Consumption  
- B3. Resource Saving  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
Super light-weight GEN3 HUB Bearing

---

### Car power seat switch: Wire reduction by IR communication

**Tokai Rika Co., Ltd.**  
3-260 Toyota, Oguchi-cho, Niwa-gun, Aichi, 480-0195 Japan  
Tel: 0587-95-5211 Fax;  
E-mail;  
URL: http://www.tokai-rika.co.jp/

A wireless power seat switch for memorizing and adjusting a car seat position has reduced the number of wires required from 10 down to three. Furthermore, combining it with a tactile switch has reduced the weight of the switch. This wireless system allows a switch (transmitting) to communicate with a circuit (receiving) using infrared radiation.

**Category:**  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving  
- C3. Design and Material Selection  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
Wireless Power Seat Switch
## Eco-components No.0095

### Integraley molded CFRP car hood

**Category:**
- B2. Longevity
- B5. Energy Saving

**Additional Information:**
- Toray Industries, Inc.
  - Toray Bldg., 2-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8666 Japan
  - Tel: 03-3245-5179 Fax: 03-3245-5459
  - E-mail: URL: http://www.toray.co.jp

Torayca*, a light and strong carbon fiber made by Toray, is used for the integrally molded CFRP (carbon fiber reinforced plastics) hood of Nissan Motor Co., Ltd. Skyline GT-R model. The weight saving achieved by Torayca* helps conserve energy and increase transportation efficiency, thus reducing the environmental load. Torayca’s* durability and corrosion resistance also helps to reduce waste. Other automobile manufacturers have also begun studying the possibility of applying CFRP to their products.

---

## Eco-components No.0096

### Constant velocity joints for drive shaft: Lightweight, compact, high efficiency

**Category:**
- A5. Resource Consumption
- B3. Resource Saving
- C5. Product Use, Maintenance and Repair

**Additional Information:**
- NTN Corporation
  - 1-3-17 Kyomachibori, Nishi-ku, Osaka, 550-0003 Japan
  - Tel: 06-6443-5001 Fax;
  - E-mail: URL: http://www.ntn.co.jp/

Constant velocity joints are used to smoothly transmit engine torque to tires. We developed E-series constant velocity joints to be highly efficient while smaller and lighter. Traditionally, six balls were used for the joints, but this system uses eight balls. These products provide high levels of functionality and environmental solutions by offering reduced weight, compactness, and high transmission efficiency. And also to reduce environmental impact, lead-free grease is used.

---

Products/Model:
- Constant velocity joints, E-series
**Eco-components No.0097**

<table>
<thead>
<tr>
<th>Automobile Parts</th>
<th>Power steering motor</th>
</tr>
</thead>
</table>

### Power steering motor: Motorization, weigh reduction, increased fuel efficiency

Mitsuba Corporation
598, Minegishi, No, Niisato-mura, Seta-gun, Gunma 376-0122, Japan
Tel; 0277-52-0111  Fax; 0277-52-5160
E-mail;
URL; http://www.mitsuba.co.jp/

A power steering system, hydraulic type being traditionally engine-driven was successfully motorized. An iron yoke aluminum casting technology reduced the weight by 12%, contributing to improved fuel efficiency.

Category:
- A1. Global Warming
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-components No.0098**

<table>
<thead>
<tr>
<th>Automobile Parts</th>
<th>Material for belt</th>
</tr>
</thead>
</table>

### Material for CVT (continuously variable transmission) belt

Neomax Co., Ltd
Sumitomo building, 4-7-19, Kitahama, Chuo-ku, Osaka
541-0041, Japan
Tel; 06-620-8822  Fax; 06-6220-8909
E-mail;
URL; http://www.neomax.co.jp/index.html

It is a material for CVT (continuously variable transmission) belt. The fuel consumption is improved by scaling of V pulley groove width, permitting continuously variable transmission and thus constantly operating an engine at an optimum number of revolutions. It is also advantageous to hydraulic AT with no oil circulation loss. Since the service condition of the metal belt used for CVT is severe, the special high alloy with high cleanliness is specially heat-treated and manufactured through high-precision processing.

Category:
- A1. Global Warming
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Eco-components No.0099

Automobile Parts | Tire

“DNA Ecos,” tire for car

The Yokohama Rubber Co., Ltd.
5-36-11, Shinbashi, Minato-ku, Tokyo 105-8685, Japan
Tel; 03-5400-4531 Fax;
E-mail; URL; http://www.yrc-pressroom.jp/env/

Category:
● A1. Global Warming
● B2. Longevity
● B4. Higher Quality
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

The most hindering element of car drive is air resistance, the second is “rolling resistance” of the tire. It is the adverse force to travelling direction which functions when tires roll on road surface. The decrease of it leads to improvement of fuel consumption, hence the reduction of carbon dioxide generation rate. “DNA Ecos” is the tire for car which adopts “incorporated rubber (patent taken),” the compound containing silica which decreases “rolling resistance.”

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Eco-components No.0100

Automobile Parts | Tire

Digi-tire Eco

Sumitomo Rubber Industries, Ltd.
6-9, Wakihama-cho, 3-chome, Chuo-ku, Kobe-shi, Hyogo
651-0072, Japan
Tel; 078-265-3000 Fax;
E-mail;
URL; http://www.srigroup.co.jp/ecopedia/index.html

Category:
● A1. Global Warming
● B4. Higher Quality
● B5. Energy Saving
● C1. Material Extraction
● C5. Product Use, Maintenance and Repair

With reference to summer tire for car, making synthetic rubber in heavy usage as raw material has prevailed. As to “SP 65e”, “SP70e”, the natural rubber is used for tread at the rate of 20%, contributing drastically to oil-resource-saving. In addition, the natural rubber is superior to synthetic rubber in fuel-consumption or life. The drawback of grip force or wet performance is overcome by digi-tire technology, allowing compatibility of safety and excellent fuel-consumption / life. It is a resource-saving tire for 21st century.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Retreaded tire

Sumitomo Rubber Industries, Ltd.
6-9, Wakihama-cho, 3-chome, Chuo-ku, Kobe-shi, Hyogo 651-0072, Japan
Tel: 078-265-3000 Fax;
E-mail;
URL: http://www.srigroup.co.jp/ecopedia/index.html

As an efficient utilization of skyrocketing number of used tires, the tires whose tread is abraded have been retreaded. Solely the installation parts are replaced. The retreaded tires which are revived under an excellent revival technology and thorough quality control meet a wide range of needs from long-haul truck, bus, down to construction vehicle, excel in economical efficiency, administering to recycle.

Category:
● A4. Waste
● A5. Resource Consumption
● B1. Recyclability
● B5. Energy Saving
● C6. End-of-Life

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Lightweight low torque hub unit

Koyo Seiko Co., Ltd.
24-1, Kokubuhigashijo-cho, Kashiwabara-shi, Osaka 582-8588, Japan
Tel: 0729-77-1119 Fax;
E-mail;
URL: http://www.koyo-seiko.co.jp/japanese/

We employed an end caulking for this third generation hub unit used in car wheels and realized lighter weight and smaller size (axial reduction in size). Lower torque was also obtained by improving internal design, which is beneficial to energy saving.

Category:
● A1. Global Warming
● B4. Higher Quality
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-components No.0103

**Automobile Parts**  
**Coil Spring**

**Car coned coil spring: Elimination of cuttings, reduction of industrial waste**

<table>
<thead>
<tr>
<th>NHK Spring Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-10, Hukuura, Kanazawa-ku, Yokohama-shi, Kanagawa 236-0004, Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 045-786-7511  Fax; 045-786-7599</td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>URL: <a href="http://www.nhkspg.co.jp/">http://www.nhkspg.co.jp/</a></td>
<td>● C2. Material and Components Production</td>
</tr>
</tbody>
</table>

Materials for car coned coil spring have a thick center part in a longitudinal direction and thinner ends that were taper processed. Traditionally, chippings were generated from cutting. But, a method for rolling and processing these materials eliminated cuttings and reduced industrial waste.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0104

**Automobile Parts**  
**Battery**

**Automobile lead storage battery: Recyclable resins, earthquake and heat resisting**

<table>
<thead>
<tr>
<th>YUASA Corporation</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3-21, Kosobe-cho, Takatsuki-shi, Osaka 569-1115, Japan</td>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>Tel; 072-686-6181  Fax; 072-686-6345</td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.yuasa-jpn.co.jp/menuhp.html">http://www.yuasa-jpn.co.jp/menuhp.html</a></td>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

This is an automobile lead storage battery containing recyclable resins. Recyclable polypropylene resins are used in the battery body and package. The introduction of firm and heat-resisting special calcium alloy plate and aseismicity design enables long time high performance.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Eco-components No.0105

Battery for environment-friendly car with high performance

Japan Storage Battery Co., Ltd.
1, Inobana-cho, Nishinosho, Kisshoin, Minami-ku, Kyoto-shi, Kyoto 601-8520, Japan
Tel; 075-316-3127 Fax;
E-mail;
URL: http://www.nippondenchi.co.jp/npd/toi/toi.html

It is “battery for environment-friendly car with high performance,” with the use of recycled member and orchestrated superb technology. It uses recycled lead for lead member, recycled resin (polypropylene 100%) for resin section (battery case / lid / liquid stopper), respectively, each of them materializing the equal quality to non-recycled resin.

JAPAN STORAGE BATTERY CO., LTD. has furthermore materialized the product warranty of 24 months / 40,000km through adoption of newly developed FM grid and the surface treatment of the special alloy.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

Eco-components No.0106

Rear aluminum caliper: Designed for automobile brake, fuel economy

Tokico Ltd.
1-6-3, Fujimi, Kawasaki-ku, Kawasaki-shi, Kanagawa 210-0011, Japan
Tel; 044-244-3126 Fax; 044-244-7301
E-mail;
URL: http://www.tokico.co.jp/

Aluminum was used in a cylinder body of a rear caliper for automobile brake. The use of aluminum reduced its weight by about 10.3% while reduced sliding resistance of a friction pad increased gas mileage. The elimination of chromate treatment for aluminum reduced the usage of hexavalent chromium.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-components No.0107**

**Automobile Parts**

**Canister: Prevention of release of gasoline steam, improved absorption**

Aisin Industry Co., Ltd.
1-1-1, Kyowa-cho, Obu, Aichi 474-8588, Japan
Tel; 0562-47-1131 Fax;
E-mail;
URL; http://www.aisan-ind.co.jp/

Category:
● A2. Air Pollution
● A3. Hazardous Substance
● B6. Environmental Purification
● C5. Product Use, Maintenance and Repair

This is a canister that prevents the release of gasoline steam. The product prevents gasoline steam from releasing in air from a gasoline tank opening. The canister absorbs more gasoline steam than conventional products.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-components No.0108**

**Automobile Parts**

**Headlamp resin lens: Heat and shock resistance, reduction of resin waste and materials**

Koito Manufacturing Co., Ltd.
Kitawaki 500, Shimizu-shi, Shizuoka 424-8765, Japan
Tel; 03-3443-7111 Fax;
E-mail;
URL; http://www.koito.co.jp/f_index.html

Category:
● A1. Global Warming
● A5. Resource Consumption
● B4. Higher Quality
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

Due to upsizing, increased transparency and thickness of a car headlamp resin lens, the usage of resin materials for the lens is increasing while more energy is being consumed with increasing molding time. New resin materials and a molding technology were developed that ensures shock and heat resistance of resin lens while reducing a molding time and making its wall thinner than conventional products. This reduced the usage of materials and the consumption of energy while enhancing the fuel efficiency of cars with the weight reduction of a headlamp. Furthermore, an improved injection method in a molding process reduced the amount of resin waste.

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-components No.0109

**Automobile Parts**

**Headlamp**

**Discharge headlamp: Low power consumption, increased gas mileage, long life**

<table>
<thead>
<tr>
<th>Koito Manufacturing Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel; 03-3443-7111 Fax; E-mail; URL: <a href="http://www.koito.co.jp/f_index.html">http://www.koito.co.jp/f_index.html</a></td>
<td>● B2. Longevity</td>
</tr>
</tbody>
</table>

With an increasingly electronified automobile and increased power consumption parts, it has been required to reduce power consumption of individual systems. The discharge headlamp is about 2 to 3 times as bright as conventional halogen headlamps and consumes power about 2/3 less than the headlamps. The mounting of the discharge headlamp leads to 0.5-1% increase of automobile fuel efficiency. A discharge bulb, a light source realizes long life of a halogen bulb.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-components No.0110

**Packaging**

**Drugs**

**Health drink with improved recyclability through bottle shift to brown-glass-bottles**

<table>
<thead>
<tr>
<th>Taisho Pharmaceutical Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-1, Takada 3-chome, Toshima-ku, Tokyo 170-8633, Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 03-3985-1111 Fax; E-mail; URL: <a href="http://www.taisho.co.jp">http://www.taisho.co.jp</a></td>
<td>● B1. Recyclability</td>
</tr>
</tbody>
</table>

The green bottles and black bottles, which have been used for some of health drinks, is difficult to be recycled as bottles. In consequence, Taisho Pharmaceutical Co., Ltd. shifted to easy-to-recycle brown bottles in order to promote recycle from bottle to bottle, designing decrease of the need for the raw material of bottle (resource-saving).
### Eco-components No.0111

<table>
<thead>
<tr>
<th>Category</th>
<th>Cosmetics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packaging</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Environmentally friendly cosmetics for naturalist</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SHISEIDO CO., LTD.</strong></td>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>7-5-5, Ginza, Chuo-ku, Tokyo 104-0061 Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel: 03-3572-1111 Fax: 03-6218-5119</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:ataru.iwamoto@to.shiseido.co.jp">ataru.iwamoto@to.shiseido.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.shiseido.co.jp">http://www.shiseido.co.jp</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C1. Material Extraction</td>
</tr>
</tbody>
</table>

Naturals uses an environment-friendly container as much as possible. The glass with high cullet rate is used for the glass container, recycled resin for the tube, biodegradable resin (green plastic) for the cap, kenaf of non-wood paper for the paper case and recycled paper for the package leaflet.

Products/Model:
- Naturals

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### Eco-components No.0112

<table>
<thead>
<tr>
<th>Category</th>
<th>Cosmetics (lipstick)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packaging</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Lipstick for 20’s capable of realizing moisture on lips</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SHISEIDO CO., LTD.</strong></td>
<td><strong>Category:</strong></td>
</tr>
<tr>
<td>7-5-5, Ginza, Chuo-ku, Tokyo 104-0061 Japan</td>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>Tel: 03-3572-1111 Fax: 03-6218-5119</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:ataru.iwamoto@to.shiseido.co.jp">ataru.iwamoto@to.shiseido.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.shiseido.co.jp">http://www.shiseido.co.jp</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C2. Material and Components Production</td>
</tr>
</tbody>
</table>

We used reclaimed aluminium for its container in a positive manner.

Products/Model:
- PIEDSNUS LIPSTICK
### Eco-components No.0113

**Packaging**

**Foundation (foundation cosmetics)**

**Foundation cosmetics for naturalist regarding waste and resource consumption**

<table>
<thead>
<tr>
<th>SHISEIDO CO., LTD.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-5-5, Ginza, Chuo-ku, Tokyo 104-0061 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel: 03-3572-1111 Fax: 03-6218-5119</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:ataru.iwamoto@to.shiseido.co.jp">ataru.iwamoto@to.shiseido.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.shiseido.co.jp">http://www.shiseido.co.jp</a></td>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

We have succeeded in subtilization of the thickness of the resin cover sheet used for the foundation refill from 0.4mm to 0.3mm. We thus have substantially decreased the used amount of resin.

Products/Model :
ELIXIR skin up pockt (refin)

### Eco-components No.0114

**Packaging**

**Sun Block**

**Sunscreen products designed with resource consumption and waste in mind**

<table>
<thead>
<tr>
<th>SHISEIDO CO., LTD.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-5-5, Ginza, Chuo-ku, Tokyo 104-0061 Japan</td>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>Tel: 03-3572-1111 Fax: 03-6218-5119</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:ataru.iwamoto@to.shiseido.co.jp">ataru.iwamoto@to.shiseido.co.jp</a></td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>URL: <a href="http://www.shiseido.co.jp">http://www.shiseido.co.jp</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C6. End- of- Life</td>
</tr>
</tbody>
</table>

We applied both recycled resin and biodegradable resin for the product's package. Additionally, we used reclaimed material for its container in a positive manner.

Products/Model :
ANESSA face sun screen
### Eco-components No.0115

**Packaging**

**Thermoforming Sheet**

**Polypropylene-based composite sheet for food container with reduced environmental load**

<table>
<thead>
<tr>
<th>Japan Polypropylene Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-8, Shiba 5-chome, Minato-ku, Tokyo 108-0014 Japan</td>
</tr>
<tr>
<td>Tel; 03-6414-4557 Fax;</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL; <a href="http://www.film-sheet.com/">http://www.film-sheet.com/</a></td>
</tr>
</tbody>
</table>

“Ecolo-sheet”, which is a composite resin sheet consisting of polypropylene and mineral filler, talc, has characteristics of significantly reduced combustion calorie and CO₂ emission when incinerated after use. Food container made from “Ecolo-sheet” by means of thermoforming is excellent in terms of rigidity, intensity such as impact strength, microwave-oven heat resistance, and safety. Especially, Ex-type is designed to make the medium layer a foam layer so as to have lower specific gravity without spoiling the quality as a filler compound sheet, exceeding conventional filler compound sheets in weight.

**Products/Model:**

Ecolo-sheet · F-, K-, EX-type

### Eco-components No.0116

**Packaging**

**Cap**

**Environmentally oriented container for general users featuring disposal by material**

<table>
<thead>
<tr>
<th>Kikkoman Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>250, Noda, Noda-shi, Chiba 278-8601 Japan</td>
</tr>
<tr>
<td>Tel; 04-7123-5111 Fax;</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL; <a href="http://www.kikkoman.co.jp/">http://www.kikkoman.co.jp/</a></td>
</tr>
</tbody>
</table>

With this product, the PET bottle and its cap can be separated and disposed by end users, with no separation work of the bottle and the cap required by governments or recycling manufactures, thus further promoting classified disposal.

**Products/Model:**

Eco-Cap
## Eco-components No.0117

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Packing Material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Diet Puti”, bubble-embedded shock-absorbing sheet for packing</strong></td>
<td></td>
</tr>
</tbody>
</table>

Kawakami Sangyou Co., Ltd.
2-50 Sennari-dori, Nakamura-ku, Nagoya 483-1031 Japan
Tel: 052-483-1031 Fax: 052-483-3351
E-mail: h_maeda@putiputi.co.jp
URL: http://www.putiputi.co.jp/

We succeeded in slimming down the bubble-type shock-absorbing sheet for packing, with keeping its performance before slimming. “DIET PUTI” is the brand name of new product. A 20% decrease of raw-material consumption and a 20% decrease of volume were achieved owing to the slimming. Slimming brings out the lowering of distribution cost and the rationalization of distribution system as well as the reduction of wastes. Hence, it may contribute to suppress the environmental load. Raw material is a pure polyethylene resigns which does not generate harmful substance such as hydrogen chloride and dioxin in its incineration.

Category:
- A1. Global Warming
- A4. Waste
- B3. Resource Saving
- B4. Higher Quality
- C3. Design and Material Selection

Products/Model:
Diet Puti. ▶ 36

---

## Eco-components No.0118

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disposable Medicine Container for hospitals and drug stores</strong></td>
<td></td>
</tr>
</tbody>
</table>

Shionogi & Co., Ltd.
1-8 Doshomachi, 3-chome, Chuo-ku, Osaka, 541-0045 Japan
Tel: 06-6209-7884 Fax: 06-6229-9596
E-mail: toiwase@shionogi.co.jp
URL: http://www.shionogi.co.jp/

Plastic trays were conventionally used for ampules, vials and tubes containing medicines, but paper trays that are easily recyclable are now replacing these containers. The picture shows a paper tray designed to reduce shocks during transportation (preventing the breakage of vials) which was granted a “Good Packaging Award “ by the Japan Packaging Institute.

Category:
- A4. Waste
- A5. Resource Consumption
- B5. Energy Saving
- B7. Usage of Recycled Material
- C6. End-of-Life

Products/Model:
FLUMARIN
### Eco-components No.0119

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category:</strong></td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
<td></td>
</tr>
<tr>
<td>● C1. Material Extraction</td>
<td></td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
<td></td>
</tr>
<tr>
<td><strong>Resource-saving drugs with recycled-paper (used-paper content: 100%) for paper container</strong></td>
<td></td>
</tr>
<tr>
<td>Taisho Pharmaceutical Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>24-1, Takada 3-chome, Toshima-ku, Tokyo 170-8633, Japan</td>
<td></td>
</tr>
<tr>
<td>Tel: 03-3985-1111 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.taisho.co.jp">http://www.taisho.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>The quantity consumed of virgin pulp is reduced by the use of recycled paper with a 100% used paper content for the paper container (outer case to contain products) of the drugs, designing resource-saving.</td>
<td></td>
</tr>
</tbody>
</table>

### Eco-components No.0120

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category:</strong></td>
<td></td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
<td></td>
</tr>
<tr>
<td>● A4. Waste</td>
<td></td>
</tr>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
<tr>
<td><strong>Drugs with PTP-sheet material replaced from polyvinyl chloride with others (polypropylene, etc)</strong></td>
<td></td>
</tr>
<tr>
<td>Taisho Pharmaceutical Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>24-1, Takada 3-chome, Toshima-ku, Tokyo 170-8633, Japan</td>
<td></td>
</tr>
<tr>
<td>Tel: 03-3985-1111 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL: <a href="http://www.taisho.co.jp">http://www.taisho.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>With reference to PTP wrapping, the mainstream of wrapping figuration of drugs, the material of sheet is shifted from polyvinyl chloride, which is in danger of generating dioxin on incineration, to the other material (polypropylene, etc.), reducing environment burden.</td>
<td></td>
</tr>
</tbody>
</table>
**Eco-components No.0121**

**Packaging**

**Aluminum Can**

**ATULC can: Reduction of environmental loads, laminated with polyester film**

**KIRIN Brewery Company Limited**

10-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8288 Japan  
Tel: 03-5540-3411  Fax: 03-5540-3550  
E-mail; sustainability@kirin.co.jp  
URL; http://www.kirin.co.jp

Laminating internal and external surfaces with polyester film eliminated solid waste generated from a can molding process and cleaning water and reduced environmental loads. LCA evaluation: CO2 14% reduction, water 6% reduction and solid waste 12% reduction. Toyo Seica developed the product for beer cans while KIRIN Brewery commercialized it firstly in the world in 2002.

**Category:**

● A1. Global Warming  
● B3. Resource Saving  
● C3. Design and Material Selection

---

**Eco-components No.0122**

**Packaging**

**Glass Bottle**

**Beer glass bottle: Light-weight bottle coated with ceramics**

**KIRIN Brewery Company Limited**

10-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8288 Japan  
Tel: 03-5540-3411  Fax: 03-5540-3550  
E-mail; sustainability@kirin.co.jp  
URL; http://www.kirin.co.jp

A ceramic-coated beer glass bottle offered its weight reduction of about 21%, in comparison with conventional large bottles. The weight of a traditional bottle is 605g while that of this new bottle is 475g. The ceramic-coated bottle has the same strength as conventional bottles and is more resistant to abrasion than the latter. The weight of the bottle per case (20 bottles) is 2.6kg lighter than that of the traditional bottles, which increases load-carrying capacity and transportation efficiency by 12%. The old bottles had been replaced with the new ones in sequence since 1993, and all bottles were replaced with the new ones on June 2003.

**Category:**

● A1. Global Warming  
● B3. Resource Saving  
● C3. Design and Material Selection

---

**Products/Model:**

Gokunama, Lager Beer & others

**Products/Model:**

Kirin Lager Beer 633 & others
Resource saving packaging and container for Set Manufacturer

TDK Corporation
1-13-1, Nihonbashi, Chuo-ku, Tokyo 103-8272, Japan
Tel; 03-3278-5111 Fax; 03-5201-7110
E-mail; kankyo@mb1.tdk.co.jp
URL; http://www.tdk.co.jp

Category:
● A5. Resource Consumption
● B1. Recyclability
● B3. Resource Saving
● C1. Material Extraction
● C2. Material and Components Production

TDK has scaled back the spacing between the reels used to carry its chip capacitors, reducing the intervals by half, so that reels having the same diameter as before can now hold three times as many capacitors.

Pockets have also been added to the cardboard on which the reels are mounted, making them independent from the bottom tape, and allowing the cardboard to be re-used.

Products/Model :
Narrow-pitch pressed pocket tape reels

Corner cut cartons: Eight dimension carton, more portable and easier handling

KIRIN Brewery Company Limited
10-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8288 Japan
Tel; 03-5540-3411 Fax; 03-5540-3550
E-mail; sustainability@kirin.co.jp
URL; http://www.kirin.co.jp

Category:
● A4. Waste
● C6. End-of-Life

This is our own carton that is more portable and handled more easily by cutting four corners of a corrugated fibreboard carton and making the angels flat. The usage of paper was reduced by 2%. This carton was introduced into 350ml and 500ml cans for "KIRIN CHUHAI HYOKETSU" this spring. It will be now employed in 250ml, 350ml and 500ml cans for beer, low malt beer and soft drinks.

Products/Model :
Kirin hyouketsu lemon350ml & others
### Eco-components No.0125

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Seedling Container</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recyclable Kami-da seedling pots and trays for seedling producers and home gardeners</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Sakata Seed Corporation**

2-7-1, Nakamachidai, Tsuzuki-ku, Yokohama, 224-0041 Japan  
Tel: 045-945-8806  Fax: 045-945-8807  
E-mail: hortsupply@sakata-seed.co.jp  
URL: http://www.sakataseed.co.jp

These pots and trays for seedlings are made from 100% used paper. They can be buried, where they will decompose in the soil or be recycled again for paper. It is estimated that 25 million plastic seedling trays (about 100,000 tons) are disposed of each year. This product is eco-friendly, helping to reduce the amount of plastic trays and pots and contributing to recycling in the garden and in agriculture.

**Products/Model:**  
Kami-da Pot, Kami-da Tray

### Eco-components No.0126

<table>
<thead>
<tr>
<th>Others</th>
<th>Ceramic Block</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Toraysurou”: ceramic paving material :Eco-friendly, water-permeable</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Toray Industries, Inc.**

Toray Bldg., 2-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8666 Japan  
Tel: 03-3245-5179  Fax: 03-3245-5459  
E-mail;  
URL: http://www.toray.co.jp

Toraysurou is an Eco Mark winning recycled building material made from municipal wastewater discharged from local communities and fused slag from sewage sludge. Thanks to its good water permeability, Toraysurou paving material prevents puddles and flooding in cities, allowing rainwater to return to the ground. In addition, its water retention properties help to reduce the heat island effect in summer. A new type has recently been introduced that can decompose NOx in the atmosphere using a titanium oxide photocatalyst.
### Eco-components No.0127

<table>
<thead>
<tr>
<th>Others</th>
<th>Printing Ink</th>
</tr>
</thead>
</table>

#### Eco-friendly sheet-fed offset printing ink containing soybean oil

**TOYO INK MFG. CO., LTD.**  
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel: 03-3272-5720  Fax: 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL: http://www.toyoink.co.jp

Category:  
- A2. Air Pollution  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection

This is low pollution/low emission printing ink. Aromatic ingredients content in the ink is less than 11%, soy oil content is more than 20%, which doesn't deteriorate drying on print, still ensure printing of the same quality as regular ink.

**Products/Model:**  
TK Hy-Unity SOY

### Eco-components No.0128

<table>
<thead>
<tr>
<th>Others</th>
<th>Printing Ink</th>
</tr>
</thead>
</table>

#### Eco-friendly sheet-fed offset printing ink containing soybean oil and no VOC

**TOYO INK MFG. CO., LTD.**  
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel: 03-3272-5720  Fax: 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL: http://www.toyoink.co.jp

Category:  
- A2. Air Pollution  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection

This is sheet-fed offset printing ink for thin paper with low pollution/emission, which doesn't contain any VOC (abbreviation of Volatile Organic Compound, petroleum solvent). It has good setting and drying properties equivalent to regular sheet-fed process ink. It acquired the “Soy Seal” issued by the ASA (American Soybean Association), which certifies that the ink contains soybean oil/soybean protein. Besides, vegetable oil replaced VOC in the ink, and aromatic capacity ratio in the ink was set at less than 1%.

**Products/Model:**  
TK Hy-Ecco NV
### Eco-components No.0129

**Others** | **Printing Ink**
---|---

**Web offset ink containing soybean oil and no aromatic solvent**

TOYO INK MFG. CO., LTD.  
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel; 03-3272-5720  Fax; 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL; http://www.toyoink.co.jp

This is high-performance web offset process ink with low pollution/emission, containing soybean oil. It realized equivalent efficiency to conventional products without detriment to drying property. From the standpoint of environmental conservation, it uses only aroma-free solvent and soybean oil more than 7% of whole content. Aromatic capacity ratio is set at less than 1%.

**Category:**  
- A2. Air Pollution  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection

Products/Model:  
WD LeoEco SOY

---

### Eco-components No.0130

**Others** | **Printing Ink**
---|---

**Offset hybrid UV ink containing soybean oil with deinking properties**

TOYO INK MFG. CO., LTD.  
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel; 03-3272-5720  Fax; 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL; http://www.toyoink.co.jp

This is the new generation printing ink combining the printing effect of oil ink and quick drying properties of UV ink, which enables to make out high-gloss print with high color rendition. It is eco-friendly low pollution/low emission type printing ink with deinking properties same as oil ink, certified with Soy Seal. Aromatic capacity ratio is set at less than 1% and VOC is 0%. The percentage of soybean oil contained in the ink is more than 7%.

**Category:**  
- A2. Air Pollution  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection

Products/Model:  
FD Hybrid Eco SOY
### Eco-components No.0131

**Eco-friendly general-purpose water based gravure printing ink for laminated films**

<table>
<thead>
<tr>
<th>Category</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A2. Air Pollution</td>
<td></td>
</tr>
<tr>
<td>A3. Hazardous Substance</td>
<td></td>
</tr>
<tr>
<td>A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>C3. Design and Material Selection</td>
<td></td>
</tr>
</tbody>
</table>

**TOYO INK MFG. CO., LTD.**
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel: 03-3272-5720  Fax: 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL: http://www.toyoink.co.jp

This is non-hazardous water based gravure printing ink with low pollution and low emission.  
It is multi-purpose lamination ink applicable for wide range areas from snack to retort food. The percentage of VOC contained ink is set at less than 20%.

### Eco-components No.0132

**Eco-frienly water based gravure printing ink for polystyrene film**

<table>
<thead>
<tr>
<th>Category</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A2. Air Pollution</td>
<td></td>
</tr>
<tr>
<td>A3. Hazardous Substance</td>
<td></td>
</tr>
<tr>
<td>A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>C3. Design and Material Selection</td>
<td></td>
</tr>
</tbody>
</table>

**TOYO INK MFG. CO., LTD.**
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel: 03-3272-5720  Fax: 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL: http://www.toyoink.co.jp

This water based gravure printing ink is a non-hazardous ink with low pollution/emission. Among different applications, it is particularly suitable for printing on polystyrene shrink label for PET bottles. VOC(voratle organic compounds) content in the ink is set at less than 20%.
### Eco-components No.0133

<table>
<thead>
<tr>
<th>Category</th>
<th>Printing Ink</th>
</tr>
</thead>
</table>

#### Eco-friendly water based flexographic printing ink for corrugated Boards

**TOYO INK MFG. CO., LTD.**
3-13, Kyobashi 2-chome, Chuo-ku, Tokyo 104-8377 Japan  
Tel: 03-3272-5720  Fax: 03-3272-9788  
E-mail: master@toyoink.co.jp  
URL: http://www.toyoink.co.jp

100% water based flexographic ink with low pollution and low emission. This ink is for corrugated boards, designed to have low viscosity and high concentration. It is excellent at fast drying, decorative property, and printability. The percentage of VOC content in the ink is less than 5%.

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
</tr>
</tbody>
</table>

### Eco-components No.0134

<table>
<thead>
<tr>
<th>Category</th>
<th>Inline Optical-Isolator</th>
</tr>
</thead>
</table>

#### “Inline Isolator”, product for the conservation of the environment

**NEC TOKIN Corporation**  
1-1, Asahi-Cho 7-Chome, Shiroishi, Miyagi 989-0223 Japan  
Tel: 0224-24-4145  Fax: 0224-26-1655  
E-mail: mttk@nec-tokin.com  
URL: http://www.nec-tokin.com

By using lead-free solder, NEC TOKIN Corp. has developed an inline optical-isolator that is used as a passive part of the optical communication. That is an Eco-product made in consideration of the protection of the environment.

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

Products/Model:  
IL-155-IW3028EH-110
3 Eco-products

i  Home electric appliances /Lightings
ii  Carriers / Automobiles
iii  OA / IT Equipments
iv  OA Furniture
v  Apparel / Fabric Products
vi  Commodity / Outdoor Goods / Housing Kit
vii  Building and Civil Engineering
viii  Machines and Equipments
ix  Others
Eco-products No.0001

Home electric appliances / Lightings

<table>
<thead>
<tr>
<th>Energy-saving household air conditioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toshiba Carrier Corporation</td>
</tr>
<tr>
<td>12-32, Konan 2-Chome, Minato-ku, Tokyo, 108-0075 Japan</td>
</tr>
<tr>
<td>Tel; 03-5781-7826 Fax; 03-5781-7852</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:sato.haze@toshiba.co.jp">sato.haze@toshiba.co.jp</a></td>
</tr>
<tr>
<td>URL; <a href="http://www.toshiba-carrier.co.jp">http://www.toshiba-carrier.co.jp</a></td>
</tr>
<tr>
<td>Category:</td>
</tr>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

A dual stage compressor achieves high efficiency operation at all capacities, such as compression of refrigerant by 1 cylinder at lower load and by 2 cylinders at mid load or higher. This new model reduces power consumption by three quarters compared with models of 11 years ago*, when used in high air tight and insulated rooms. (*comparison of seasonal power consumption by our calculation standard).

In addition, the new model offers environmental benefits. It is lightweight and has improved failure rate of pressing material, description of material for plastic parts. Recycled plastics and papers are used for documentation and it has a lead-free PC board.

Products/Model :
room air conditioner RAS-285NDRX

Eco-products No.0002

Home electric appliances / Lightings

<table>
<thead>
<tr>
<th>Energy-saving air conditioner for residential use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toshiba Carrier Corporation</td>
</tr>
<tr>
<td>South Port Shinagawa, 12-32, Konan 2-chome, Minato-ku, Tokyo, 108-0075 Japan</td>
</tr>
<tr>
<td>Tel; 03-5781-7800 Fax; 03-5781-7842</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL; <a href="http://www.toshiba-carrier.co.jp/">http://www.toshiba-carrier.co.jp/</a></td>
</tr>
<tr>
<td>Category:</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Recently, room air conditioners tend to be used for long term in a year and for lower cooling/heating load term such as spring or autumn. One of the reasons of such kind of situation occurrence is the popularization of electrified housing with higher airtightness and higher heat insulation.

The dual stage compressor has been developed as the engine of this product to enhance energy saving in response to increasing use in the low capacity load zone. Much improved energy efficiency was achieved by switching the number of cylinder of compressor from two to one in operation on low cooling/heating load. By employing different energy-saving technologies, we have achieved 6.27 COP (10% improved) and 891kWh (8.3% improved) for annual power consumption.

Products/Model :
DAISEIKAI series RAS-285NDR


**Eco-products No.0003**

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Air Conditioner</th>
</tr>
</thead>
</table>

**Residential air conditioner featuring ion air purification technology**

**SHARP CORPORATION**

22-22, Nagaike-cho, Abeno-ku, Osaka, 545-8522 Japan  
Tel: 06-6621-1221 Fax: 06-6628-1653  
E-mail;  
URL: http://www.sharp.co.jp

Category:  
- B1. Recyclability  
- B2. Longevity  
- B3. Resource Saving  
- B4. Higher Quality  
- B5. Energy Saving

The use of “Plasmacluster Ion air purification technology” helps to inactivate fungus and airborne viruses.  
<Energy saving> One of the best energy saving scores in the industry (COP 3.85), energy saving ratio (121%) and the lowest stand-by power consumption (about 0.5W).  
<Green materials> The main board uses lead-free solder. The instruction manual has been printed using recycled paper and soy ink. Packaging material for an indoor unit uses only cardboard.  
<Recycling> Waste plastic (polypropylene) has been recycled for components of the indoor unit. (COP is an acronym for The Coefficient of Performance.) It represents cooling and heating capacity (kw) per 1kw power consumption. The higher the COP value, the greater the energy efficiency.

Products/Model:  
Air Conditioner AY-R45XC

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**Eco-products No.0004**

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Air Conditioner</th>
</tr>
</thead>
</table>

**High performance, energy-saving Air Conditioner**

**DAIKIN INDUSTRIES, LTD.**

Umeda Center Building, 4-12 Nakazaki-Nishi 2-chome, Kitaku, Osaka  
530-8323  
Tel: 06-6373-4395 Fax: 06-6373-4386  
E-mail;  
URL: http://www.daikin.co.jp

Category:  
- A1. Global Warming  
- A5. Resource Consumption  
- B1. Recyclability  
- B4. Higher Quality  
- B5. Energy Saving

Daikin’s air-conditioning business is closely involved in takes into account the ozone layer and global warming. We develop energy conservation techniques and practical applications for non-destructive refrigerants to prevent damage to the ozone layer and prevention of global warming.

Products/Model:  
S28ETRS-W
### Eco-products No.0005

**Household air conditioner with high energy-saving performance**

|----------|--------------------|------------------------|-------------------|-------------------|---------------------------------------|

**Hitachi Home & Life Solutions, Inc.**
15-12, Nishi shimbashi 2-chome, Minato-ku, Tokyo, 105-8410 Japan
Tel: 03-3502-2111 Fax;
E-mail;
URL: http://www.hitachi-hl.com/

This product realizes high energy savings, including cost-saving for electricity as well as resource-saving and prevention of global warming. It is designed for long-term use; its simple structure allows easy cleaning inside and outside with dedicated cleaning spray. In addition, environmentally harmful chemical substances are reduced through applications of new refrigerant and lead-free solder onto electronic control boards. Recycling is also taken into consideration such as in the use of recycled plastics for the product.

**Products/Model:**
Room Air conditioner RAS-E28S

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### Eco-products No.0006

**Environmentally-friendly air-conditioner**

|----------|--------------------|------------------------|----------|-------------------------|-------------------|

**Mitsubishi Electric Corporation**
2-2-3 Marunouchi, Chiyoda-ku, Tokyo, 100-8310 JAPAN
Tel: 03-3218-9024 Fax: 03-3218-2465
E-mail; eqd.eco@hq.melco.co.jp

This long-life product can be easily taken apart for cleaning and is designed for recycling after use. COP (coefficient of performance) has been more than doubled while a floor temperature sensor provides energy saving control. Existing pipe can be re-used to reduce waste and limit the amount of new materials needed. Furthermore, it contributes to the reduction of environmentally toxic substances by using lead-free solder for its printed wiring board.

**Products/Model:**
ZR Series
### Eco-products No.0007

**Home electric appliances / Lightings**

**Air Conditioner**

**Air purifying, energy-saving Air Conditioner**

<table>
<thead>
<tr>
<th>Matsushita Electric Industrial Co., Ltd. Air Condition Division</th>
<th>Category:</th>
</tr>
</thead>
</table>
| 2-3-1-1 Noji-higashi, Kusatsu City, Shiga, 525-8520 Japan Tel: 077-567-9807 Fax: 077-561-3208 E-mail; URL: http://national.jp/product/air/aircon/ | ● A1. Global Warming  
● B1. Recyclability  
● B4. Higher Quality  
● B5. Energy Saving |

This air-conditioner performs many functions, including air purification using an oxygen supply function and an ultrasonic ion air-cleaning function (pollen removal rate 99%). To improve energy efficiency, Matsushita developed the high-performance “e-scroll compressor” and “hybrid heat exchanger”, which have already attained Japan’s FY’04 energy-saving target by 121%.

Products/Model : CS-XE283A

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### Eco-products No.0008

**Home electric appliances / Lightings**

**Digital Video Camera**

**High-Definition Digital Video Camera**

<table>
<thead>
<tr>
<th>Victor Company of Japan, Limited</th>
<th>Category:</th>
</tr>
</thead>
</table>
| 12,3-chome, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa, 2 21-8528 Japan Tel: 045-450-2512 Fax: 045-453-1406 E-mail; URL: http://www.victor.co.jp/ | ● A3. Hazardous Substance  
● B6. Environmental Purification  
● C6. End-of-Life |

Exclusion of a hazardous chemistry substance by the adoption of lead free solder and the natural wood in vibrating plate of speakers.

Products/Model : High-Definition Digital Video Camera GR-HD1
### Eco-products No.0009

#### Home electric appliances / Lightings

**Mini-DV cassette with recycled resin**

|-----------|---------------------------|---------------------------|---------------------|-------------------------|-------------------------|

Sony Corporation  
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan  
Tel; 03-5448-2111 Fax; 03-5448-2244  
E-mail;  
URL; http://www.sony.net

The Mini-DV Cassette uses a recently developed recycled resin for more than 40% of the plastic in its cassette and case. The label and index card use 100% recycled paper and are printed using VOC-free vegetable oil-based ink.

Products/Model :  
Mini-DV Cassette (3DVM60RE)

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### Eco-products No.0010

#### Home electric appliances / Lightings

**DVD player using lead-free solder**

|-----------|---------------------------|---------------------|---------------------|------------------------------------------|

Sony Corporation  
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan  
Tel; 03-5448-2111 Fax; 03-5448-2244  
E-mail;  
URL; http://www.sony.net

No lead solder is used in this DVD player and it uses less than 0.1W power in stand-by mode. Halogenated flame retardants are not used in the main printed circuit board and the front panel and 100% paper cushion is used for packaging.

Products/Model :  
DVD Player(DVP-NS575P)
## Eco-products No.0011

**Home electric appliances / Lightings** | **DVD Player**
--- | ---

### Consumer DVD Player with Reduced Standby Power Consumption

**PIONEER CORPORATION**
1-4-1 Meguro, 1-chome, Meguro-ku, Tokyo 153-8654 Japan
Tel: 03-3494-1111 Fax: 03-3495-4428
E-mail; URL: http://www.pioneer.co.jp

Category:
- A1. Global Warming
- A3. Hazardous Substance
- B5. Energy Saving
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

Not to mention high-definition, the product achieves standby power consumption of 0.07 W and operating power consumption of 8W and offers a reduction in CO₂ emissions. In addition, lead-free solder is used for mounting and chrome-free copperplate is used for the casing.

Products/Model :
- DVD Player - DV-474-S

---

## Eco-products No.0012

**Home electric appliances / Lightings** | **DVD Recorder**
--- | ---

### Resource-saving Hard Disk-mounted DVD Recorder for Saving Resources

**PIONEER CORPORATION**
1-4-1 Meguro, 1-chome, Meguro-ku, Tokyo 153-8654 Japan
Tel: 03-3494-1111 Fax: 03-3495-4428
E-mail; URL: http://www.pioneer.co.jp

Category:
- A3. Hazardous Substance
- B3. Resource Saving
- B5. Energy Saving
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

The new “SLP Mode” recorder allows around eight hours recording on a single side of DVD. A 1-hour program can be copied to the minimum time of about 66 seconds with the fastest dubbing by the 55 times high-speed function. This reduces the number of discs needed for storage. In addition, its energy-saving design uses only 0.43W in standby mode and its compact size (5.9 cms-high) reduces transportation costs. Furthermore, lead-free solder is used for mounting.

Products/Model :
- DVD Recorder with built-in Hard Disc Drive - DVR-620H-S
### Eco-products No.0013

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>DVD video recorder</th>
</tr>
</thead>
</table>

**Eco-friendly DVD video recorder**

Matsushita Electric Industrial Co., Ltd. Panasonic AVC Networks Company

- 1-15 Matsuo-cho, Kadoma City, Osaka, 571-8504 Japan
- Tel: 06-6905-8356 Fax: 06-6905-4755
- E-mail: tomiyasu.seiji@jp.panasonic.com
- URL: http://panasonic.co.jp/pavc/

This new video recorder was developed along the concept of "changing picture recording from tape to disk." It can play back a program currently being recorded from the beginning while continuing to record. Matsushita has put much effort into integrating circuits to save energy, while making parts smaller. Chrome-free steel plate is used for the chassis and top panels.

Products/Model:
DMR-E50-S

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### Eco-products No.0014

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Compact Component DVD System</th>
</tr>
</thead>
</table>

**Compact Component DVD System**

Victor Company of Japan, Limited

- 123-chome, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa, 221-8528 Japan
- Tel: 045-450-2512 Fax: 045-453-1406
- E-mail:
- URL: http://www.victor.co.jp/

Exclusion of a hazardous chemistry substance: Lead solder etc.

Products/Model:
Compact Component DVD System / EX-A5
Eco-products No.0015

Home electric appliances / Lightings | Digital camcorder

Camcorder using lead-free solder

Sony Corporation
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel: 03-5448-2111 Fax: 03-5448-2244
E-mail;
URL: http://www.sony.net

Category:
● A3. Hazardous Substance
● B5. Energy Saving
● B7. Usage of Recycled Material
● C3. Design and Material Selection
● C4. Product Manufacture

(1) Lead-free solder is used for soldering
(2) Halogenated flame retardants are not used in cabinet and in the certain printed wiring boards.
(3) 100% recycled paper and VOC-free vegetable oil-based ink are used for the carton
(4) Corrugated cardboard is used for the packaging cushions.

Products/Model :
Digital Handycam (DCR-HC40)

Eco-products No.0016

Home electric appliances / Lightings | Digital Video Camera

High-Band Digital Video Camera

Victor Company of Japan, Limited
12,3-chome, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa,
2 21-8528 Japan
Tel: 045-450-2512 Fax: 045-453-1406
E-mail;
URL: http://www.victor.co.jp/

Category:
● A1. Global Warming
● A3. Hazardous Substance
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair
● C6. End-of-Life

Exclusion of a hazardous chemistry substance and conservation of energy by 20% compared to previous models.

Products/Model :
High-Band Digital Video Camera GR-D230
### Eco-products No.0017

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Audio component</th>
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</thead>
<tbody>
<tr>
<td><strong>Using lead-free solder and realizing high-sound quality</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Sony Corporation**
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel; 03-5448-2111 Fax; 03-5448-2244
E-mail; URL; http://www.sony.net

Category:
- A3. Hazardous Substance
- B1. Recyclability
- B4. Higher Quality
- C6. End-of-Life

The ES series TA-DA9000ES integrated amplifier is a top-class audio component. Sony conducted listening tests using many different kinds of solder to analyze the correlation of solder composition to sound quality. The results showed that lead-free soldering of tin copper eutectic solder, with a copper content of 0.7%, achieves high sound quality and good performance.

Products/Model :
Multi-channel amplifier (TA-DA9000ES)

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### Eco-products No.0018

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>IC memory audio player</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Walkman offering large size recording without PC</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Sony Corporation**
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel; 03-5448-2111 Fax; 03-5448-2244
E-mail; URL; http://www.sony.net

Category:
- A3. Hazardous Substance
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

(1) Lead-free solder and halogenated-free flame retardants are used for major parts and accessories.
(2) Standby power consumption is 0.1W or less.
(3) 100% recycled paper is used for the instruction manual; 100% recycled magazine paper is used for the top layer of the carton and VOC-free vegetable oil-based ink is used.

Products/Model :
Network Walkman (NW-MS77DR)
Eco-products No.0019

Home electric appliances / Lightings  Head-phone stereo

**Walkman using vegetable-based plastic**

Sony Corporation
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel: 03-5448-2111 Fax: 03-5448-2244
E-mail;
URL: http://www.sony.net

Vegetable-based plastic is used for around 90% of the product body. This reduces the amount of oil-derived resources used by 55%. Additionally, of course, the plants absorbed CO₂ while they were growing, thus reducing CO₂ emissions by 20%.

Products/Model :
Walkman (WM-FX202)

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Eco-products No.0020

Home electric appliances / Lightings  Audio system

**Consumer DVD/MD Mini System with reduced standby power consumption**

PIONEER CORPORATION
1-4-1 Meguro, 1-chome, Meguro-ku, Tokyo 153-8654 Japan
Tel: 03-3494-1111 Fax: 03-3495-4428
E-mail;
URL: http://www.pioneer.co.jp

This compact and recyclable system is designed for saving space with a main body of (W) 320 x (H) 86 x (D) 275mm. It supports various DVDs/CDs/MDs and has FM/AM reception. Its thin speakers can be wall-mounted. In addition, its energy conservation design enabled 0.065W of standby power consumption, an industrial top-class level. Furthermore, lead-free solder is used for mounting.

Products/Model :
DVD/MD Mini Component System • X-FS9DV
### Eco-products No.0021

**Home electric appliances / Lightings**

**Eco-friendly Household Lighting equipment**

<table>
<thead>
<tr>
<th>Category:</th>
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<tbody>
<tr>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

**TOSHIBA HOME LIGHTING CO., LTD.**

3-21, 1-Chome, Bunkyo-ku, Tokyo, 112-0002 Japan  
Tel: 03-5805-5048 Fax: 03-3818-8095  
E-mail: info.jyusyo@tt.co.jp  
URL: http://www.tt.co.jp/  
(http://www.tt.co.jp/tlt/akari/homehome/homehome.htm)

“How can we produce lights that use the earth’s finite resources more efficiently?” That question paved the way for the development of Neoslim. It achieves excellent resource savings - to say nothing of energy savings - at every stage of material supply, assembly and packaging. The amount of both glass and packaging materials has been reduced by roughly 45%.

**Products/Model:**  
NEO SLIM V

### Eco-products No.0022

**Home electric appliances / Lightings**

**High-efficiency office luminaire offering both energy and resource savings**

**Toshiba Lighting & Technology Corporation Electric Products Equipment Division**

Minamishinagawa JN Bldg, 2-13, Minamishinagawa 2-Chome, Shinagawa-ku, Tokyo, 140-8660 Japan  
Tel: 03-5463-8769 Fax: 03-5463-8824  
E-mail;  
URL: http://www.tlt.co.jp/

White steel plates and aluminum mirror plates with a 90% reflection factor are used as reflectors, contributing to the high efficiency of this product.  
To reduce the environmental burden, it uses materials such as chromium-free steel plates, lead-free electric wire and soft solder. It uses less raw material thanks to a reduction in equipment size and weight, and partial packaging. The luminaire has universal voltage so it can be used with power supply voltages ranging from 100V to 242V.
### Eco-products No.0023

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Lighting Fixture</th>
</tr>
</thead>
</table>

#### Energy saving HID lighting fixture for high-ceilinged rooms

**TOSHIBA LIGHTING & TECHNOLOGY CORPORATION Electric Products Equipment Division**
Minamishinagawa JN Bldg, 2-13, Minamishinagawa 2-Chome, Shinagawa-ku, Tokyo, 140-8660 Japan
Tel; 03-5463-8776 Fax; 03-5463-8824
E-mail; URL: http://www.tlt.co.jp/

High-color-rendering 250W NEOCERA lamp (offering the best lamp efficiency in the industry) and a newly developed reflective film, make this product one of the best lamps in the industry in terms of light output ratio and allows you to reduce the number of lights installed. The product also cuts energy use by about 52% compared with others such as 400W mercury lamp+adaptive accessories in high-ceilinged facilities. An inverter equipped with 100%-50% continuous dimming function also contributes to energy saving by offering flexible lighting control.

### Eco-products No.0024

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Emergency Lighting fixture</th>
</tr>
</thead>
</table>

#### Emergency Lighting Fixture with fewer substances related to RoHS directives

**TOSHIBA LIGHTING & TECHNOLOGY CORPORATION Electric Products Equipment Division**
Minamishinagawa JN Bldg, 2-13, Minamishinagawa 2-Chome, Shinagawa-ku, Tokyo, 140-8660 Japan
Tel; 03-5463-8769 Fax; 03-5463-8824
E-mail; URL: http://www.tlt.co.jp/

The main body consists of a chrome-free steel plate without any soil pollutant. The lighting unit is a halogen-free plate without any dioxin emission substance. Lead-free wire is used in electric wires inside the lighting fixture to cut down toxic substances. The emergency battery is a cadmium-free nickel hydride battery.
### Eco-products No.0025

**Home electric appliances / Lightings**

#### High efficiency office lighting

**MITSUBISHI ELECTRIC LIGHTING CORPORATION**

2-14-40, Ofuna, Kamakura-city, Kanagawa, 247-0056 Japan  
Tel; 0467-41-2701 Fax; 0467-41-2780  
E-mail;  
URL; http://www.mitsubishiellectric.co.jp/group/mlf/

- **Category:**  
  - A3. Hazardous Substance  
  - B4. Higher Quality  
  - B5. Energy Saving  
  - C5. Product Use, Maintenance and Repair  
  - C6. End-of-Life

This eco-friendly lighting fixture allows you to reduce the number of lighting units by more than 40% since it is 1.7 times as bright as a conventional light. In addition, it uses only 60% of the electricity needed for a conventional product to generate the same level of brightness.

Reducing the number of lighting fixtures contributes to energy conservation and also reduces environmental impact in terms of power consumption and future savings on the amount of material for disposal. Further energy savings can be achieved by making use of the dimming facility.

### Eco-products No.0026

**Home electric appliances / Lightings**

#### Water and detergent-saving dishwasher equipped with “ion course”

**SHARP CORPORATION**

22-22, Nagaike-cho, Abeno-ku, Osaka, 545-8522 Japan  
Tel; 06-6621-1221 Fax; 06-6628-1653  
E-mail;  
URL; http://www.sharp.co.jp

- **Category:**  
  - B2. Longevity  
  - B3. Resource Saving  
  - B4. Higher Quality  
  - B5. Energy Saving  
  - B7. Usage of Recycled Material

This dishwasher is equipped with a detergent-free option.

- **<Resource-saving>** It incorporates an “ion course” that allows dishes to be thoroughly cleaned in hard water without the use of detergent. A drastic reduction in water consumption is made possible by three “ion attack nozzles” that allow efficient washing and rinsing. More specifically, the volume of water used is reduced by 25% compared with our conventional dishwasher, QW-A60.

- **<Green material>** Lead-free solder is used for all boards and electric cord doesn’t include lead or DOP. Specific bromine fire retardant additive is not used since it has the potential to generate toxic gas when incinerated and we have eliminated cloroethelene from both molded components and coating material. Vegetative soy ink and recycled paper are used in the instruction manual.

- **<Recycling>** Plastic used in outer cabinet contains only polypropylene for easy recycling.

Products/Model:  
Dishwasher QW-A70-S/C
### Eco-products No.0027

**Home electric appliances / Lightings** | **Dishwasher**
---|---

**Water-saving Dishwasher: easy to use**

**Matsushita Electric Industrial Co., Ltd.**
1-2 Kamisu-cho, Toyonaka City, Osaka, 561-0823 Japan
Tel: 06-6331-6278 Fax: 06-6334-0567
E-mail; URL: http://national.jp/product/house_hold/dishwasher/dishwasher/

Category:
- A5. Resource Consumption
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

This easy-to-use dishwasher has a large capacity and flat dish basket and can remove lipstick and green tea stains. It offers improved cleaning efficiency thanks to four cleaning nozzles that move in sequence and water consumption is reduced by about 55% in comparison with a 2002 product (NA-40SX2).

**Products/Model:**
Dishwasher NP-60SS5

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### Eco-products No.0028

**Home electric appliances / Lightings** | **Induction Heat Cooking Range**
---|---

**High-powered induction heat cooking range with thermal efficiency**

**TOSHIBA CONSUMER MARKETING CORPORATION**
2-15,Sotokanda 2-chome,Chiyoda-ku,Tokyo, 101-0021 Japan
Tel: 03-3257-6150 Fax;
E-mail; URL: http://www.toshiba.co.jp/tcm/

Category:
- A1. Global Warming
- B4. Higher Quality
- B5. Energy Saving
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

A safe and clean induction heat stove that generates high power without flame. With 3kw right and left burners equipped with induction heating and digital signal processor inverter, this product provides high power-equivalent to 5,400 kcal/h gas cooking stove. In addition, high microcomputer throughput speed ensures rapid heating and maintains a stable temperature for excellent cooking. Other advantages include high thermal efficiency (about 90%), the reduction of heating loss by low radiant heat, ventilation, and air conditioning. The eco-friendly design includes the use of lead-free solder in the production of the electronic board.

**Products/Model:**
Induction Heating Cooking Heater•BHP-M46XS
**Eco-products No.0029**

Home electric appliances / Lightings  | Air Purifier
---|---

**Air purifier using Plasmacluster Ion technology**

**SHARP CORPORATION**
22-22, Nagaike-cho, Abeno-ku, Osaka, 545-8522 Japan
Tel: 06-6621-1221  Fax: 06-6628-1653
E-mail: URL: http://www.sharp.co.jp

Category:
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving
- B6. Environmental Purification

This purifier is equipped with a “lookout function”, which helps to create an air environment that prevents airborne bacteria from developing.

**<Energy saving>** DC motor and inverter control contribute to reduced energy loss use and achieve an annual electric bill of about 600 yen. (This is calculated based on power consumption during silent running and new power charge per unit of 22 yen/kWh (tax included) as a rough standard.)

**<Green material>** We have discontinued the use of specific bromine fire retardant. Vegetative soy ink and recycled paper are used for the instruction manual. We also applied fire retardant resin to the body and a bicapular cabtyre cord to allow the product to be placed on the floor.

Products/Model:
Air Purifier FU-P60CX-S

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**Eco-products No.0030**

Home electric appliances / Lightings  | Sewing machine
---|---

**Home sewing machine benefiting from eco-friendly manufacturing**

**BROTHER INDUSTRIES, LTD.**
15-1, naeshiro-cho, Mizuho-Ku, Nagoya 467-0841 Japan
Tel: 052-824-2072  Fax: 052-811-6826
E-mail: toshiihiro.izuhara@brother.co.jp
URL: http://www.brother.co.jp

Category:
- A2. Air Pollution
- B3. Resource Saving
- C2. Material and Components Production

This product features the use of newly developed resin in place of the conventional aluminum die cast product. This is the first time that LCA has been used in a household sewing machine.

In household sewing machines, 60% of the energy used is consumed on “raw material procurement – component processing” stage from the viewpoint of life cycle of “raw material procurement/ component processing/assembling/transportation/ usage/ recycling/disposal” from the result of analysis. In comparison, the new arm bed manufacturing process reduces the exhaust levels of CO₂, Nox and SOx down to 1/3th or less compared with the aluminum product.

Products/Model:
INNOVIS P-100/N80
# Eco-products No.0031

**Home electric appliances / Lightings** | **Vacuum Cleaner**
---|---

## New AERO CYCLONE cleaner saves resources and energy

**TOSHIBA TEC CORPORATION**  
1-1, Kanda Nishiki-cho, Chiyoda-ku, Tokyo, 101-8442 Japan  
Tel: 03-3292-4859 Fax: 03-3292-4509  
E-mail: environment@toshibatec.co.jp  
URL: http://www.toshibatec.co.jp/

- Resource saving-no need for vacuum cleaner bags thanks to the aero cyclone formula  
- High performance-achieves top-level maximum suction power (560W) in the industry  
- 15% improvement in the dust suction performance of a brushing power head embedded with DSP  
- Use of lead-free solder in circuit boards  
- Recycled materials used in instruction manual and packing materials  
- Germ elimination and deodorization by means of photo catalyst antibacterial brush and three filters (ion hepaclean, enzyme, bamboo charcoal & photo catalyst antibacterial)

**Products/Model:** vacuum cleaner VC-R14C

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# Eco-products No.0032

**Home electric appliances / Lightings** | **Washing Machine**
---|---

## Ag⁺ ion coating fully-automatic washing machine with drying function

**SHARP CORPORATION**  
22-22, Nagaie-cho, Abeno-ku, Osaka, 545-8522 Japan  
Tel: 06-6621-1221 Fax: 06-6628-1653  
E-mail:  
URL: http://www.sharp.co.jp

This washing machine saves water because it is a “washing tub without holes”.  
<Energy saving> Stand-by power consumption is 0W.  
<Resource saving> Since water does not pour into the outside of the tub due to its hole-free design, the amount of water and detergent used is drastically reduced.  
<Recycling> We have developed our own technology for the recycling of plastic. Sharp is the first company in the industry to develop the technology of assessing the degraded state of plastic in a simplified way along with characteristic improvement treatment and quality control technology. This allows collected polypropylene to be repeatedly recycled as material for new products.  
<Green material> Main board uses lead-free solder.

**Products/Model:** Fully Automatic Washing Machine ES-KG83V-A/N
Eco-products No.0033

Home electric appliances / Lightings  | Washer/dryer

**Drum-type washing machine and dryer with steam washing function**

SANYO Electric Co., Ltd.
5-5, Keihan-Hondori 2-Chome, Moriguchi City, Osaka, 570-8677, Japan
Tel: 06-6991-1181 Fax;
E-mail;
URL: http://www.sanyo.co.jp/

Category:
- A1. Global Warming
- B1. Recyclability
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

<Energy saving>
- Uses around 40% less electricity and water than our model of eight years ago. (When 6 kg of clothes are washed and dried)
- Washes a 9kg load with only a quarter of the water used by our machine eight years ago to wash 8kg.

<Reduces water pollution>
- “Detergent-free” option allows clothes that are slight stain to be washed without the use of detergent.
- “Mold prevention” option using electrolytic water can be selected to prevent mold forming at the back of the tank even when no detergent is used.

Products/Model:
Drum Type Fully Automatic Washing Machine AWD-GT 960Z

Eco-products No.0034

Home electric appliances / Lightings  | Combined Washer Dryer

**Water-saving washer/dryer for domestic use**

TOSHIBA CONSUMER MARKETING CORPORATION
2-15, Sotokanda 2-chome, Chiyoda-ku, Tokyo, 101-0021 Japan
Tel: 03-3257-6150 Fax;
E-mail;
URL: http://www.toshiba.co.jp/tcm/

Category:
- A4. Waste
- A5. Resource Consumption
- B4. Higher Quality
- B7. Usage of Recycled Material
- C5. Product Use, Maintenance and Repair

This product reduces the environmental burden thanks to its improved water-saving performance. Developed using lead-free solder and reprocessed materials, it satisfies the mounting demand for an all-in-one drum washer dryer.

It achieves a high speed spin by the adjustment of uneven cloth during spin-drying and a 60% reduction in load entanglement compared to our conventional products thanks to the introduction of “baffle to loosen load”, along with DSP control. As a result, it now requires only two rinsing cycles rather than the previous three. This brings a major water saving—with the use of only 79 liters per 8kg load compared with 134 liters used by the automatic washer we launched 8 years ago.

Products/Model:
the top in drum TW-80TA
Eco-products No.0035

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Laundry and drying machine</th>
</tr>
</thead>
</table>

**Household laundry and drying machine with high cleaning/drying performance**

Hitachi Home & Life Solutions, Inc.
15-12, Nishi shimbashi 2-chome, Minato-ku, Tokyo, 105-8410 Japan
Tel: 03-3502-2111 Fax;
E-mail;
URL: http://www.hitachi-hl.com/

Reduction of 30% in electric power consumption (compared to 1998) and 30% in coolant consumption (compared to 2001) during drying are achieved with this product, contributing to energy-saving. Moreover, the product has a built-in pump to utilize used water from a bath, while power dissipation is almost zero during the standby. In order to reduce environmentally harmful chemical substances, lead-free solder is applied to boards while the product uses steel plates that do not contain chromium compound. In addition, recycled plastics are used for the product body to save resources.

**Products/Model:**
Washer dryer NW-D8CX

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Eco-products No.0036

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Automatic Washing Machine</th>
</tr>
</thead>
</table>

**Easy-to-use water-saving automatic washing machine**

Matsushita Electric Industrial Co., Ltd.
1-2 Kamisu-cho, Toyonaka City, Osaka, 561-0823 Japan
Tel: 06-6331-6758 Fax: 06-6334-0567
E-mail;
URL: http://national.jp/product/house_hold/wash/

This washing machine is easy to use thanks to its special design which involved tilting its drum and inlet at a 30° angle. By the effect of tilting the drum, the machine achieves water savings of around 66% water compared with a 1997 product (NA-F70VP1).

**Products/Model:**
NA-V80
Eco-products No.0037

Home electric appliances / Lightings | Color Television (Tube)

High-quality, Energy-saving and easy- to- use Domestic Color Television

Mitsubishi Electric Corporation
2-2-3 Marunouchi, Chiyoda-ku, Tokyo 100-8310 Japan
Tel; 03-3218-9024 Fax; 03-3218-2465
E-mail; eqd.eco@hq.melco.co.jp
URL; http://www.mitsubishelectric.co.jp/

The company is striving to develop eco-products that reduce environmental impact throughout their life cycle by establishing environmental goals based on MET: That is, Materials should be effectively exploited, Energy should be efficiently used, and Toxic substances should be reduced. A 3R product assessment is made for design and development which looks at green procurement and reducing plastics/packaging materials and power consumption.

Products/Model :
Color television • 25T-D103

Eco-products No.0038

Home electric appliances / Lightings | Liquid Crystal Color Television

Ground and BS, 110 CS digital high-definition liquid crystal television

SHARP CORPORATION
22-22, Nagaike-cho, Abeno-ku, Osaka, 545-8522 Japan
Tel; 06-6621-1221 Fax; 06-6628-1653
E-mail; 
URL; http://www.sharp.co.jp

37V type extended high definition TV equipped with high-definition liquid crystal panel of 3.15 million dots. High-quality sound generated from 1-bit digital amplifier, independent aluminum speaker box, and stainless speaker net.

- Energy saving: Incorporates a brightness sensor, which automatically controls the panel brightness according to room brightness.
- Resource saving: Backing light longevity is about 60,000 hours. Economically-designed so that the backing light can be replaced when brightness begins to diminish.
- Green materials: Main boards feature lead-free solder and the cabinet uses halogen-free material to reduce dioxin release on incineration. In addition, we no longer use polyvinyl-chloride for producing electric cords.

Products/Model :
AQUOS LCD TV LC-37GD1
### Eco-products No.0039

**Home electric appliances / Lightings** | **Liquid Crystal Color Television**
---|---

**20V energy and resource-saving long-life liquid crystal color television**

**SHARP CORPORATION**
22-22, Nagaie-cho, Abeno-ku, Osaka, 545-8522 Japan
Tel: 06-6621-1221 Fax: 06-6628-1653
E-mail;
URL: http://www.sharp.co.jp

Extended definition with a fine liquid crystal panel of 2.36 million dots and D4 image input.

- **Energy-saving** > Equipped with a brightness sensor, which automatically controls the panel brightness according to room brightness.
- **Energy-saving** > Backing light longevity is about 60,000 hours. Economically designed so that the backing light can be replaced when original brightness begins to diminish.
- **Green materials** > Main boards and other components feature lead-free solder.

- Internally, halogen-free electric wire is used throughout except for shield wire and high voltage wire. Halogen-free material is also used in the mechanisms.
- In addition, we have integrated the grade of fire retardant and applied plastic that includes reclaimed material more than 30% of total volume to a stand.

**Category:**
- B1. Recyclability
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving

**Products/Model:**
AQUOS LCD TV LC-20K1-S

### Eco-products No.0040

**Home electric appliances / Lightings** | **Digital high-definition LCD television**
---|---

**LCD TV with remote control power-save function**

**Sony Corporation**
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel: 03-5448-2111 Fax: 03-5448-2244
E-mail;
URL: http://www.sony.net

Power consumption can be reduced by 20% by adjusting the brightness with remote control. Lead-free solder is used, halogenated flame retardants are not used in printed wiring boards, 100% recycled paper is used for the top layer of the carton.

**Category:**
- A3. Hazardous Substance
- B5. Energy Saving
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

**Products/Model:**
Digital High Definition Television(KDL-L32RX2)
**Eco-products No.0041**

**Digital LCD Hi-Vision TV**

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Global Warming</td>
<td>We reduced this model's stand-by power consumption by 30% compared to previous models. We included E.E. sensor which is gentle to eyes and effective in energy conservation. We also included a listening aid system into this television to help the viewer catch difficult to follow news or programs as the universal design.</td>
</tr>
<tr>
<td>A3. Hazardous Substance</td>
<td></td>
</tr>
<tr>
<td>B5. Energy Saving</td>
<td></td>
</tr>
<tr>
<td>C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
</tbody>
</table>

**Product/Model:**

- LCD Flat Panel Display LT-26LC50

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**Eco-products No.0042**

**Consumer High-Definition Plasma Television with reduced power consumption**

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Global Warming</td>
<td>The television achieves high-level brightness (white peak, panel element) of 1000cd/m² while reducing power consumption by 36% compared with the first 1997 model (PDP-50 1HD). It has stand-by power consumption of 0.5W. In addition, the company was successful in directly attaching a film-type PDP front filter to a panel instead of using a grass-type, giving a weight reduction of at least 5kg in comparison with a previous model. Furthermore, lead-free solder is used for mounting.</td>
</tr>
<tr>
<td>B4. Higher Quality</td>
<td></td>
</tr>
<tr>
<td>B5. Energy Saving</td>
<td></td>
</tr>
<tr>
<td>C3. Design and Material Selection</td>
<td></td>
</tr>
<tr>
<td>C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
</tbody>
</table>

**Product/Model:**

- 50V-type High-Definition Plasma Television • PDP-505HDL
Eco-products No.0043

Home electric appliances / Lightings Plasma-TV

**ALIS energy-saving long-life high-definition plasma TV**

Hitachi, Ltd., Digital Media Division
292 Yoshida-cho, Totsuka-ku, Yokohama, 244-0817 Japan
Tel; Fax;
E-mail;
URL: http://www.hitachi.co.jp/index-j.html

Category:
- A1. Global Warming
- B1. Recyclability
- B2. Longevity
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

The TV uses ALIS for light emission to lengthen the life of phosphors. It is also energy-saving with higher efficiency light emission.

It does not contain harmful substances or environmental pollutants which could be released on recycling and features lead-free solder, halogen-free chassis and chrome-free steel plate.

Products/Model:
W55-P5500+AVC-HR5500

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Eco-products No.0044

Home electric appliances / Lightings Plasma Panel TV

**Plasma Panel TV: Energy-saving, easy handling, designed for consuming public**

Victor Company of Japan, Limited
123-chome, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa,2 21-8528 Japan
Tel; 045-450-2512 Fax; 045-453-1406
E-mail;
URL: http://www.victor.co.jp/

Category:
- A1. Global Warming
- A3. Hazardous Substance
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

The TV reduced stand-by power consumption by 30 %, in comparison with our conventional company models. It is equipped with the E.E. sensor providing soft visual image and energy conservation. It is also a universal design product equipped with an audio-supporting system on which audiences can easily hear news and lines.

Products/Model:
PD-42DV50
### Eco-products No.0045

**Home electric appliances / Lightings**

**Digital Hi-Vision Plasma TV: Energy-saving**

Matsushita Electric Industrial Co., Ltd. Panasonic AVC Networks Company  
1-15 Matsuo-cho, Kadoma City, Osaka 571-8504  
Tel: 06-6905-8356 Fax: 06-6905-4755  
E-mail: tomiyasu.seiji@jp.panasonic.com  
URL: http://panasonic.co.jp/pavc/  

Category:  
- A4. Waste  
- B5. Energy Saving  
- B7. Usage of Recycled Material  
- C1. Material Extraction  
- C5. Product Use, Maintenance and Repair

Lead-free soldering was introduced for the print board mounting. Thanks to an improved panel and driving circuit, maximum brightness was increased by about 10% in comparison with a model in the previous year. Power consumption was also reduced by about 5% and it achieved standby power consumption of about 0.2W. It realizes about 60,000 hours of panel life and contributes to effective use of resources.

**Products/Model:**  
TH-50PX300

### Eco-products No.0046

**Home electric appliances / Lightings**

**Eco Cute, energy-saving natural refrigerant water heater for household use**

SANYO Air Conditioners Co., Ltd.  
1-1-1, Sakata Oizumi Machi, Ora-Gun, Gunma 370-0596 Japan  
Tel: 0276-61-9454 Fax: 0276-61-8887  
E-mail;  
URL: http://www.sanyo.co.jp/kucho/

Category:  
- A1. Global Warming  
- A2. Air Pollution  
- B4. Higher Quality  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

Eco Cute is environmentally-friendly and helps to prevent global warming by utilizing non-toxic and non-flammable CO₂ refrigerant with ODP "0" and GWP "1". By using cheap night time electricity and a high-efficiency CO₂ compressor, Eco Cute reduces total energy consumption, leading to substantial energy savings.  
*ODP; Ozone Depleting Potential, GWP; Global Warming Potential*
Heat Pump Water Heater Using Natural Refrigerant

Matsushita Electric Industrial Co., Ltd.
800 Tsutsui-cho, Yamatokoriyama-city, Nara, 639-1188 Japan
Tel: 0743-56-8785 Fax: 0743-56-9934
E-mail;
URL: http://national.jp/sumai/hp/

One-third of the energy consumed by households is used for heating water. This highly efficient and energy-saving water heater has a heat pump that uses natural refrigerant (CO2). Its primary energy efficiency has reached 114% and CO2 emissions are only around half that of a gas water heater.

Products/Model:
HE-37K1QLS

Notebook PC supporting DVD, floppy disk, and other memory media

Sony Corporation
6-7-35 Kitashinagawa Shinagawa-ku, Tokyo, 141-0001 Japan
Tel: 03-5448-2111 Fax: 03-5448-2244
E-mail;
URL: http://www.sony.net

(1) Lead-free solder is used for soldering main printed wiring boards
(2) Cabinet plastic and main printed wiring boards do not contain halogenated flame retardants
(3) Carton is made from 100% recycled magazine paper, and is printed using VOC-free vegetable oil based ink Paper, rather than polystyrene foam, is used for the packaging
(4) cushion.

Products/Model:
Personal Computer VAIO (VGN-E50B/E70B)
"NEOSLIM-Z SQUARE" is a square fluorescent lamp designed for high frequency operation in offices (ceiling-fitment) and is industry-first in energy-saving and resource-saving. 

(1) High efficiency: we achieved lamp efficiency of 103 lm/W at 35 °C ambient temperature.

(2) High luminous flux: 7200 lm, providing brightness equivalent to that of four 20W tubular type fluorescent lamps.

(3) Long life: rated-life of 15,000 hours.(Conventional fluorescent lamps have a life of 6,000 hours for circular, 8,500-12,000 hours for tubular type, respectively.)

(4) Resource-saving: Uses a slim tube with a diameter of 16mm. Tube diameter of current fluorescent lamps is 25mm-32.5mm.)

Products/Model :
NEOSLIM-Z SQUARE・ FHG70EN

"NEOBALL-Z"(EFA15EL/13-ZJ) is a fluorescent lamp with built-in electronic ballast and E26 base, the same size and shape as conventional GLS bulb. It is replaceable with conventional GLS bulb without any problem. Features in comparison with the conventional GLS bulb:

(1) Energy consumption: Approx. 1/4,

(2) Heat dissipation: Approx. 1/4,

(3) Life: Approx. 6 times longer than that of 60W GLS.

Products/Model :
NEOBALL-Z・ EFA15EL/13-ZJ
### Eco-products No.0051

**Home electric appliances / Lightings**

**Compact Self-ballasted Fluorescent Lamp**

**Energy saving compact self-ballasted fluorescent lamp**

**Toshiba Lighting & Technology Corporation**  
Minamishinagawa JN Bldg, 2-13, Minamishinagawa 2-Chome,  
Shinagawa-ku, Tokyo, 140-8660 Japan  
Tel: 03-5463-8786 Fax: 03-5463-8829  
E-mail: takahiro.nishio@ttl.co.jp  
URL: http://www.ttl.co.jp/ttl/index_j.htm

- Category:  
  ● A1. Global Warming  
  ● B2. Longevity  
  ● B3. Resource Saving  
  ● B4. Higher Quality  
  ● B5. Energy Saving

Power consumption/energy requirement is reduced by 80% compared with an incandescent lamp. Lamp life is six times longer than that of an incandescent lamp.

Products/Model:  
EFD13D/65-E3U

### Eco-products No.0052

**Home electric appliances / Lightings**

**Induction Fluorescent Lamp**

**Long-life, energy saving Induction Fluorescent Lamp:**

**Matsushita Electric Industrial Co., Ltd.**  
1-1 Saiwai-cho, Takatsuki, Osaka 569-1193 Japan  
Tel: 072-682-5521 Fax: 072-682-7235  
E-mail:  
URL: http://panasonic.co.jp/lamp/

- Category:  
  ● A2. Air Pollution  
  ● A5. Resource Consumption  
  ● B2. Longevity  
  ● B5. Energy Saving  
  ● C5. Product Use, Maintenance and Repair

By changing from filament heat to a fluorescent lamp, this lamp offers high energy-efficiency and a long product life. Newer models have become increasingly small and applicable to many appliances. The lamp life is six times longer than incandescent bulbs, so it reduces the need for replacement.

Products/Model:  
EFA15EL/12
Eco-products No.0053

Home electric appliances / Lightings

Fluorescent Lamp

**BB-3 triple IN Type: High efficiency, long life time**

Mitsubishi Electric OSRAM Ltd.
Tobu Yokohama Bldg.No.3 (4F) 8-29, Kita-Saiwai 2-chome, Nishi-ku
Yokohama, 220-0004 Japan
Tel; 045-323-5187 Fax; 045-323-5156
E-mail;
URL: http://www.mol-omi.co.jp

The six tube type compact fluorescent lamp (FHT type) has excellent even light distribution and is appropriate for use of base lighting of facilities. In addition, it is designed only for high-frequency lights and has high efficiency and long life time. The 57 W IN type is the highest wattage type of our FHT lamps and accomplished high beam. Furthermore, the use of amalgam (mercury alloy) allows the maintenance of the best luminous efficiency even if a lamp ambient temperature becomes high. It has four kinds of light colors, incandescent color, warm white, white and day white.

Products/Model :
BB-3 triple FHT57 IN TYPE

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Eco-products No.0054

Home electric appliances / Lightings

Refrigerator

**Plasmacluster Ion refrigerator with a door opened from both sides**

SHARP CORPORATION
22-22, Nagaie-cho, Abeno-ku, Osaka, 545-8522 Japan
Tel; 06-6621-1221 Fax; 06-6628-1653
E-mail;
URL: http://www.sharp.co.jp

Non-CFC (non-chlorofluorocarbon) refrigerator that incorporates eco-friendly materials and improved energy saving functions.

- **Energy-saving** The product includes energy saving technologies that we have developed such as a high efficiency compressor and meticulous inverter control. The product incorporates a flexible power saving mode including an overnight power saving function and power saving during your absence.
- **Green material** The product does not use bromine fire retardant. It incorporates dehydrochloroethene, lead-free solder boards, lead-free wire, and recycled resin etc. Uses non-CFC refrigerant R-600a. By using advanced technology, it achieves ODP (ozone-depleting potential) of zero and 1/400th of the value of conventional CFC substitutes’ GWP (global warming potential).

Products/Model :
Refrigerator SJ-PV40H-W/Y/A/R/C
Energy saving Chlorofluorocarbon (CFC)-free refrigerator/freezer

**TOSHIBA CONSUMER MARKETING CORPORATION**
2-15,Sotokanda 2-chome,Chiyoda-ku,Tokyo, 101-0021 Japan
Tel; 03-3257-6150 Fax;
E-mail;
URL: http://www.toshiba.co.jp/tcm/

This product is one of the most advanced in a series of CFC-free refrigerators in terms of energy conservation. It features lead-free solder as well as CFC-free refrigerants to prevent global warming, and uses far less electricity. Annual power consumption is only 150 kWh/year, which means it uses only 1/7th of the power consumed by a similar type of refrigerator 10 years ago. It has a two-stage inverter compressor, DSP inverter control and vacuum insulating material.

**Eco-products No.0056**

**Home electric appliances / Lightings**
Refrigerator

**CFC-free, energy and space- saving large capacity refrigerator**

**Hitachi Home & Life Solutions, Inc.**
15-12, Nishi shimbashi 2-chome, Minato-ku, Tokyo, 105-8410 Japan
Tel; 03-3502-2111 Fax;
E-mail;
URL: http://www.hitachi-hl.com/

This eco-friendly refrigerator uses CFC-free R-600a (isobutane) as refrigerant and cyclopentane as a thermal insulation foaming agent. It achieves power consumption of 190kWh/year (one of the highest in the home appliance industry) by employing a new cooling system that consists of variable temperature control condenser, vacuum insulation material, and vector PAM control.

It incorporates lead-free boards and power cords and uses reprocessed plastic in order to prevent environmental pollution.
### Eco-products No.0057

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Refrigerator</th>
</tr>
</thead>
</table>

**Environmentally-friendly Freon-free double-door domestic refrigerator**

Matsushita Electric Industrial Co., Ltd.
6-17-15, Shinbashi, Minato-ku, Tokyo, 105-0004 Japan
Tel: 03-6403-3827  Fax: 03-6403-3912
E-mail; URL: http://national.jp

Category:
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Both refrigerant and insulation are Freon-free. The compressor used for non-Freon refrigerant achieves power consumption of 360kwh/year. We are the only domestic manufacturer of a compact Freon-free refrigerator.

![Freon-free double-door domestic refrigerator](image1)

**Products/Model:**
NR-B162R

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### Eco-products No.0058

<table>
<thead>
<tr>
<th>Home electric appliances / Lightings</th>
<th>Refrigerator</th>
</tr>
</thead>
</table>

**Environmentally -friendly Freon-free energy-saving -No.1 refrigerator**

Matsushita Electric Industrial Co., Ltd.
6-17-15, Shinbashi, Minato-ku, Tokyo, 105-0004 Japan
Tel: 03-6403-3827  Fax: 03-6403-3912
E-mail; URL: http://national.jp

Category:
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Refrigerant and insulation are made without Freon. The product features high-efficiency vacuum insulation making it about 10 times as efficient as a conventional refrigerator. Energy savings of 180kwh/year are possible thanks to the insulation and hyper-wave inverter compressor, etc.

![Freon-free energy-saving -No.1 refrigerator](image2)

**Products/Model:**
NR-E462U
**Eco-products No.0059**

**Home electric appliances / Lightings**  
**Battery Charger**

**“Pocket Energy Multi” eco-friendly solar-powered battery charging**

NTT Advanced Technology Multi Corporation  
Neocity Mitaka Bldg. 7F, 3-35-1, Shimorenjaku, Mitaka-city, Tokyo, 181-0013, Japan  
Tel: 0422-47-7895 Fax: 0422-47-8290  
E-mail: kankyou@neo.ntt-at.co.jp  
URL: http://www.keytech.ntt-at.co.jp/

“Pocket Energy Multi” consists of the body of storage and the part of power generation that can provide clean energy as it exploits solar power. Its internal battery is expected to achieve over 500 cycles (equal to 1000 AA-size alkaline batteries) making it extremely environmentally friendly.

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
Pocket Energy Multi

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**Eco-products No.0060**

**Home electric appliances / Lightings**  
**Wind and Photovoltaic Power Utilizing System**

**“Kaze-Kamome” hybrid tower using both wind and photovoltaic power**

Matsushita Ecology Systems Co., Ltd.  
4017 Takaki-chou shimonakata, Kasugai-City, Aichi, 486-8523 Japan  
Tel: 0568-81-9159 Fax: 0568-81-9935  
E-mail: ootsu.kazuteru@jp.panasonic.com  
URL: http://panasonic.co.jp/mesc

- Kaze-Kamome is a wind/sunlight hybrid power generator using natural energy.  
- A twisted savonius-type windmill can receive wind from all directions, reducing noise level.  
- Kaze-Kamome can be used for outdoor offgrid power supply such as streetlights and network cameras.

**Category:**  
- A1. Global Warming  
- A5. Resource Consumption  
- B2. Longevity  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
FY-17TWF1
### Eco-products No.0061

**Carriers / Automobiles** | **Automobile**
---|---

**“FCX,” zero emission fuel-cell car that reduces environmental impact**

**Honda Motor Co., Ltd.**
2-1-1 Minami-aoyama, Minato-ku, Tokyo, 107-8556 Japan  
Tel: 03-5412-1155 Fax: 03-5412-1154  
E-mail;  
URL; [http://www.honda.co.jp/](http://www.honda.co.jp/)

This fuel-cell vehicle is powered by electricity generated by a chemical reaction between hydrogen and oxygen and does not emit exhaust gas. It is a powerful and responsive car that uses Honda's highly efficient Ultra Capacitor as a storage system. In addition, start-up is possible at 20°C below freezing thanks to its “Honda FC STACK,” next-generation fuel cell stack.

**Category:**
- A1. Global Warming  
- A2. Air Pollution  
- B3. Resource Saving  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
FCX

### Eco-products No.0062

**Carriers / Automobiles** | **Automobile**
---|---

**New eco-friendly Prius with hybrid power**

**Toyota Motor Corporation**
1, Toyota-cho, Toyota-shi, Aichi, 471-8571  
Tel; 0565-23-1572 Fax; 0565-23-1589  
E-mail; hiromasa_hino@mail.toyota.co.jp  
URL; [http://www.toyota.co.jp](http://www.toyota.co.jp)

The new Prius model is equipped with THS, a new-generation Toyota Hybrid System known as Hybrid Synergy Drive, which means simultaneous evolution of ecology and power. It achieves world-beating fuel consumption of 35.5km/L and low emissions. The drive has been dramatically improved by the development of hybrid power. 10-15 mode drive. (Ministry of Land, Infrastructure and Transport figure)

**Category:**
- A1. Global Warming  
- A2. Air Pollution  
- A5. Resource Consumption  
- B4. Higher Quality  
- B5. Energy Saving

**Products/Model:**  
Prius
### Eco-products No.0063

<table>
<thead>
<tr>
<th>Carriers / Automobiles</th>
<th>Automobile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco-friendly Civic Hybrid car</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Category:**
- A1. Global Warming
- A2. Air Pollution
- B1. Recyclability
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Honda Motor Co., Ltd.
2-1-1 Minami-aoyama, Minato-ku, Tokyo, 107-8556 Japan
Tel; 03-5412-1155 Fax; 03-5412-1154
E-mail; URL; http://www.honda.co.jp/

The Civic Hybrid is equipped with Honda’s IMA system. An electric motor assists the engine during start up and acceleration. It achieves ultra-low fuel consumption of 29.5km/l with its 1.3L i-DSI VTEC Cylinder Cut-off System engine. (10-15 mode drive fuel consumption)

Moreover, its exhaust gas is cleaner thanks to a lean-burn-compatible NOx absorption-type catalyzer, which achieves a reduction in CO₂ and harmful substances.

**Products/Model:**
- CIVIC HYBLID

### Eco-products No.0064

<table>
<thead>
<tr>
<th>Carriers / Automobiles</th>
<th>Automobile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Idling Stop System for improved fuel consumption</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Category:**
- A1. Global Warming
- A5. Resource Consumption
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Toyota Motor Corporation
1, Toyota-cho, Toyota-shi, Aichi, 471-8571
Tel; 0565-23-1572 Fax; 0565-23-1589
E-mail; hiromasa_hino@mail.toyota.co.jp
URL; http://www.toyota.co.jp

The Toyota Vitz is a CVT* vehicle, featuring the “Toyota Intelligent Idling Stop System” which applies hybrid technology. We achieved the lowest domestic fuel consumption value of 22.5km/L, for a light car, excluding hybrids and improved fuel consumption by 8.5% compared with our current vehicle by using a lithium ion battery that allows automatic idling stop when the vehicle stops.

*CVT: Continuously Variable Transmission

**Products/Model:**
- Vitz
## Eco-products No.0065

### Carriers / Automobiles: Truck

**“Isuzu GIGA”, Heavy-Duty Truck for long haul with clean emissions and fuel economy**

<table>
<thead>
<tr>
<th>ISUZU MOTORS LIMITED</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel; 03-5471-1394 Fax; 03-5471-1039</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:takashi_kanazawa@notes.isuzu.co.jp">takashi_kanazawa@notes.isuzu.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.isuzu.co.jp">http://www.isuzu.co.jp</a></td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td></td>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

“Isuzu Giga” complies with the 2004 emission regulations thanks to the optimized combustion, electronic control, and after-treatment technology for exhaust emissions. It is officially recognized as a “Diesel Vehicle with Ultra low Particulate Matter Emission☆☆☆☆”(PM : less than 0.05g/KW/h) by the Ministry of Land, Infrastructure and Transport. Along with the excellent emission control performance, it is an environmentally-friendly vehicle that offers dramatically reduced fuel consumption with the “Smother-G” fully automatic mechanical transmission.

Products/Model :
* Isuzu GIGA " Heavy-Duty Truck

## Eco-products No.0066

### Carriers / Automobiles: Truck

**“Isuzu Forward”, clean emission medium-duty truck with fuel-efficient automatic transmission**

<table>
<thead>
<tr>
<th>ISUZU MOTORS LIMITED</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel; 03-5471-1394 Fax; 03-5471-1039</td>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:takashi_kanazawa@notes.isuzu.co.jp">takashi_kanazawa@notes.isuzu.co.jp</a></td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.isuzu.co.jp">http://www.isuzu.co.jp</a></td>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td></td>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

“Isuzu Forward” complies with the 2003 emission regulations thanks to the optimized combustion, electronic control, and after-treatment technology for exhaust emissions. It is officially recognized as a “Diesel Vehicle with Ultra low Particulate Matter Emission☆☆☆☆”(PM : less than 0.027g/KW/h) by the Ministry of Land, Infrastructure and Transport. Offering excellent emission control performance, it is an environmentally-friendly medium-duty vehicle mounted with a new two-pedal(no clutch pedal) transmission “Smother-F”, which combines the comfort of AT with the economical efficiency of MT.

Products/Model :
* Isuzu Forward " Medium-Duty Truck
### Eco-products No.0067

**Categories:** Carriers / Automobiles  ▶  Truck

#### 'Isuzu Elf' clean emission city delivery truck equipped with fuel-efficient automatic transmissions

**ISUZU MOTORS LIMITED**  
6-26-1 Minami-oi, Shinagawa-ku, Tokyo 140-8722 Japan  
Tel: 03-5471-1394  Fax: 03-5471-1039  
E-mail: takashi_kanazawa@notes.isuzu.co.jp  
URL: http://www.isuzu.co.jp

‘Isuzu Elf’ complies with the 2003 emission regulations thanks to the optimized combustion, electronic control, and after-treatment technology of exhaust emissions. It is officially recognized as a “Diesel Vehicle with Ultra low Particulate Matter Emission☆☆☆” (PM : less than 0.027g/KW/h) by the Ministry of Land, Infrastructure and Transport. Offering excellent emission control performance, it is an environmentally-friendly delivery truck equipped with a new two-pedal (no clutch pedal) transmission, ‘Smoother-E’, which combines the comfort of AT with the economical efficiency of MT.

**Category:**  
- A1. Global Warming  
- A2. Air Pollution  
- B5. Energy Saving  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

![Isuzu Elf clean emission city delivery truck](image)

**Products/Model:**  
*Isuzu Elf * Light Duty Truck

---

### Eco-products No.0068

**Categories:** Carriers / Automobiles  ▶  Truck

#### “Isuzu Elf CNG” clean-emission truck with low vibration and noise

**ISUZU MOTORS LIMITED**  
6-26-1 Minami-oi, Shinagawa-ku, Tokyo 140-8722 Japan  
Tel: 03-5471-1394  Fax: 03-5471-1039  
E-mail: takashi_kanazawa@notes.isuzu.co.jp  
URL: http://www.isuzu.co.jp

The Isuzu Elf CNG reduces NOx, CO, HC and other exhaust emissions dramatically with the CNG-powered engine and three-way catalytic converter. It offers excellent emission control performance, equivalent to the highest level of the low emission standard set by the Ministry of Land, Infrastructure and Transport, ‘Ultra low Particulate Matter Emission Level ☆☆☆’. Black smoke and particulate matter is reduced to zero level. In addition, it is much quieter and has lower vibration level than conventional diesel-powered trucks.

**Category:**  
- A2. Air Pollution  
- A5. Resource Consumption  
- B3. Resource Saving  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

![Isuzu Elf CNG](image)

**Products/Model:**  
* Isuzu GIGA * Heavy-Duty Truck
Eco-products No.0069
Carriers / Automobiles | Natural Gas Truck

Natural Gas Truck: Low-pollution vehicle that runs on compressed natural gas

Sagawa Express Co., Ltd.
68, Tsunoda-cho, Kamitoba, Minami-ku, Kyoto, 601-8104 Japan
Tel; 075-691-6500 Fax; 075-681-2349
E-mail; URL: http://www.sagawa-exp.co.jp/

Environmental countermeasure against truck as a transportation medium of comprehensive distribution industry is central to reduction of environment burden. This natural gas truck is a low-pollution vehicle that runs on compressed natural gas. Compared with conventional diesel vehicles, it drastically reduces environmental impact, with reductions of 20% in CO₂, 90% in NOₓ and 100% in PM. It is currently the most environment-friendly truck.

Eco-products No.0070
Carriers / Automobiles | Catalyst for Purifying Exhaust Gas

Intelligent catalyst for purifying exhaust gas with reduced precious metal

DAIHATSU MOTOR CO., LTD.
1-1 Daihatsu-cho, Ikeda-city, Osaka 563-8651 Japan
Tel: 072-754-3348 Fax: 072-754-3347
E-mail; environmental_dep@mail.daihatsu.co.jp
URL: http://www.daihatsu.co.jp

The Intelligent Catalyst is the world’s first automotive catalyst with a function to regenerate precious metals within automotive exhaust gases without any auxiliary treatment. It maintains its initial catalytic performance by incorporating palladium into a perovskite-type ceramic crystal, using Daihatsu’s proprietary nanotechnology. In a conventional catalyst, because the catalytic activity deteriorates during vehicle use, greater and greater amounts of precious metals must be used. By this function, we reduced the consumption of precious metals by 70% in comparison with a conventional catalyst and achieved four stars of the Japanese SULEV(Super Ultra Low Emission Vehicle)standard. This technology is one solution for the Pd supply and demand problem, and it is expected to become the global standard for automotive catalyst technology.
**Eco-products No.0071**

Carriers / Automobiles | Car Navigation
--- | ---

**Car Navigation System for economize fuel consumption**

**PIioneer Corporation**
1-4-1 Meguro, 1-Chome, Meguro-ku, Tokyo 153-8654 Japan  
Tel: 03-3494-1111  Fax: 03-3495-4428  
E-mail:  
URL: http://www.pioneer.co.jp

This navigation system continuously receives the latest map, road and service information from a server, using a communications system. The system automatically upgrades map information without the need for discs, unlike a DVD car navigation system, and this leads to resource saving. In addition, it can set a route based on the latest information on road congestion. This limits unnecessary fuel consumption and CO₂ emissions and makes journeys more enjoyable. Furthermore, it is produced with lead-free solder and easily recyclable cardboard is used for packaging.

**Products/Model:**
Off-board Car Navigation System • AVIC-T1

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**Eco-products No.0072**

Carriers / Automobiles | Sporty Scooter
--- | ---

**Cygnus X: New design 4-valve plated cylinder**

**Yamaha Motor Co., Ltd.**
Shingai, Iwata, Shizuoka 438-8501 Japan  
Tel: 0538-32-1100  Fax: 0538-37-4258  
E-mail:  
URL: http://www.yamaha-motor.co.jp/

The Cygnus X scooter features a new engine with a 4-valve combustion chamber that achieves outstanding intake/exhaust efficiency and a plated cylinder for excellent heat dissipation and reduced oil consumption. What's more, it uses the Yamaha air induction system that cleans emissions by burning unburned fuel in the exhaust and a "hot tube." As a result this model achieves 12% better fuel economy in a standardized mileage test than the existing version of the same model.

**Products/Model:**
CYGNUS X
Eco-products No.0073

<table>
<thead>
<tr>
<th>Carriers / Automobiles</th>
<th>New model “Eco Body”</th>
</tr>
</thead>
</table>

New model “Eco Body”: High-powered eco-friendly new model paying respect to global environment

Sagawa Express Co., Ltd.
68, Tsunoda-cho, Kamitoba, Minami-ku, Kyoto, 601-8104 Japan
Tel: 075-691-6500 Fax: 075-681-2349
E-mail;
URL: http://www.sagawa-exp.co.jp/

The new model “Eco Body” offers high performance while taking environmental considerations into account. To achieve enhanced durability and energy savings, we made the following changes: (1) replaced the steel plate with a composite (Zn-Al-Mg) plated steel sheet (cross member/openings), which much improves the anti-rust performance (2) covered electrical wiring for protection against de-icer in winter (3) enhanced the intensity to 1.2 times the value of a conventional vehicle through a monocoque structure with sandwich panel. Non-Freon Phenolic Foam is used as an adiabator. Interior material uses 100% recycled PS board and all of these materials are recyclable.

Eco-products No.0074

<table>
<thead>
<tr>
<th>Carriers / Automobiles</th>
<th>Automobile Tire</th>
</tr>
</thead>
</table>

Low-noise and Fuel-economy Automobile Tire

Toyo Tire & Rubber Co., Ltd.
17-18, Edobori 1-chome, Nishi-ku, Osaka-shi, Osaka, 550-8661 Japan
Tel: 06-6441-8801 Fax;
E-mail;
URL: http://www.toyo-rubber.co.jp/

The company has developed PROXES, a low-noise tire with higher vibration absorption and fuel-economy and TRANSAS TEO that is about 15% less of a resistance index than conventional products. Its fuel-economy tire in particular promotes energy conservation and resource-savings (reduced CO2).
Eco-products No.0075

OA / IT Equipments | FAX
---|---

FAX: Smallest and lightest FAX in industry for private/business users

NEC Corporation
7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan
Tel: 03-3798-6617 Fax: 03-3798-9186
E-mail;
URL: http://www.nec.com/

- Products are designed in the smallest and lightweight among all the fax products
- Design for easy dismantling with common industrial tools

Category:
- B1. Recyclability
- B3. Resource Saving
- B5. Energy Saving
- C1. Material Extraction
- C3. Design and Material Selection

Products/Model :
Speax SPX-S21/S21W

Eco-products No.0076

OA / IT Equipments | Business fax machine
---|---

High performance eco-friendly fax machine

Panasonic Communications Co., Ltd.
2-3-8 Shimomeguro, Meguro-Ku, Tokyo, 153-8687 JAPAN
Tel: 03-5434-7020 Fax: 03-5434-7904
E-mail: takenouchi.hiroyuki@jp.panasonic.com
URL: http://panasonic.co.jp/pcc/index.html

This product features a power-saving mode, which sets the heater in the printer block to standby/energy-saving mode, to use minimum required power. This design reduces power consumption at standby by 80% (compared to our conventional model, UF-A70) using power-saving circuit technology.

The machine is also a lead-free product and lead-free soldering has been used for printed boards. In addition, when two small fax documents are received, the machine prints them out on a single sheet of paper through its “2 in 1” function, to reduce paper waste.

Category:
- A1. Global Warming
- B4. Higher Quality
- B5. Energy Saving
- B7. Usage of Recycled Material
- C5. Product Use, Maintenance and Repair

Products/Model :
Panafax UF-A80MkII
**Eco-products No.0077**

**OA / IT Equipments**

**Multi-functional Machine**

**Multi-functional Machine: Eco-friendly and universal, designed for private/business users**

**NEC Corporation**

7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan
Tel: 03-3798-6617  Fax: 03-3798-9186
E-mail;
URL: http://www.nec.com/

- Reduce energy by 59% in standby mode and by 13% in operation mode compared with conventional products
- Use lead-free soldering for main motherboards
- 100% use of non-halogen flame retardant plastic for the casing of products
- Use recycled plastics, containing over 10% recycled plastics, for handles of recording paper cassette
- 100% use of hexavalent chromium less metal sheet for the products casing
- Achieve universal design

Products/Model :
MULTINA_3520

---

**Eco-products No.0078**

**OA / IT Equipments**

**Copying machine (Multi-functional copier)**

**Multi-functional copier that minimizes environmental impact**

**Canon Inc.**

30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan
Tel: 03-3758-2111  Fax: 03-3758-1160
E-mail;
URL: http://canon.jp/

This equipment, with on-demand fixing technology, uses only a quarter of the electricity consumed by our conventional heat-roller fixing equipment during standby mode. It also achieves one-fifth the warm up time of our conventional heat-roller fixing equipment. The use of recycled plastics contributes to resource savings.

Products/Model :
Digital multifunctional copier, IR 3300
**Eco-products No.0079**

**OA / IT Equipments**

*Copying machine (Multi-functional copier)*

**Document Optimizer, Multi-functional color copier - to increase office efficiency**

**Canon Inc.**

30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501, Japan  
Tel: 03-3758-2111  Fax: 03-3758-1160  
E-mail;  
URL: http://canon.jp/

Category:
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

Recycled plastic is used for some parts of the exterior cover under an economical closed recycling system. Hexavalent chromium-free components (e.g. steel plates and screws) and lead-free components (e.g. lenses and cables) are used. The compact design reduces the resources that go into making the product.

Products/Model :  
Color multifunctional copier, IR C3200

**Eco-products No.0080**

**OA / IT Equipments**

*Monochrome High-Speed Digital Multifunctional Device*

**High speed eco-friendly digital multifunctional machine**

**Fuji Xerox. Co., Ltd.**

2-17-22 Akasaka, Minato-ku, Tokyo, 107-0052 Japan  
Tel: 03-5573-2882  Fax: 03-5573-2883  
E-mail: kazuoSuzuki@fujixerox.co.jp  
URL: http://www.fujixerox.co.jp/

Category:
- A1. Global Warming
- B1. Recyclability
- B3. Resource Saving
- B5. Energy Saving
- B7. Usage of Recycled Material

- The DocuCentre 1015S has a TWAIN-compatible color network scanner as standard allowing paper documents to be converted into electronic data promote converts.
- Our "resource recycling system-Closed loop system" encompasses every stage of the production chain from the upstream product
- The Docucentre 1015S/1015/905 is labeled a recyclable product with the highest proportion of recycled, reused parts. Meets the company's high standards.
- Complies with the International Energy Star Program.

Products/Model :
DocuCentre 905
### Eco-products No.0081

**OA / IT Equipments**
Digital Color Multifunctional Machine

**Eco-friendly Intelligent multifunctional machine**

<table>
<thead>
<tr>
<th>Fujixerox. Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-17-22 Akasaka, Minato-ku, Tokyo, 107-0052 Japan</td>
</tr>
<tr>
<td>Tel: 03-5573-2882  Fax: 03-5573-2883</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:kazuo.Suzuki@fujixerox.co.jp">kazuo.Suzuki@fujixerox.co.jp</a></td>
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<tr>
<td>URL: <a href="http://www.fujixerox.co.jp/">http://www.fujixerox.co.jp/</a></td>
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</table>

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<tr>
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<tbody>
<tr>
<td>● B1. Recyclability</td>
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<td>● B3. Resource Saving</td>
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<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

Converting paper documents to electronic data is just as easy and fast as copying with the DocuCentre Color 450! It develop productivity as well as decrease environmental burden with promoting information retrieval, sharing and utilizing information.

Besides, our "resource recycling system-Closed loop system" encompasses every stage of the production chain from the upstream product.

Based on the principle that used products are precious resources rather than waste, we established a "Closed Loop System" to make best use of resources. We then introduced two concepts of "inverse manufacturing": Firstly, we lessened environmental impact by maximizing the use of used parts and secondly, we looked at achieving zero landfill by thorough disassembly and separation.

Under the resource recycling system, equipment such as copy machines, digital multifunction products and other FX devices are dismantled and parts that satisfy stringent quality standards are re-introduced into the product line. DocuCentre Color is labeled an FX recyclable product, achieving the company’s 17 standards in the usage rate of recycled and re-usable parts by manufacturing in a closed-loop production process.

The percentage of parts re-used in a machine (weight-wise) is over 73% and the percentage of renewable resources is (weight-wise) over 99.97%.

### Eco-products No.0082

**OA / IT Equipments**
Digital multi-function copier

**Energy-saving digital multi-function copier**

<table>
<thead>
<tr>
<th>SHARP CORPORATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-22, Nagaie-cho, Abeno-ku, Osaka, 545-8522 Japan</td>
</tr>
<tr>
<td>Tel: 06-6621-1221  Fax: 06-6628-1653</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL: <a href="http://www.sharp.co.jp">http://www.sharp.co.jp</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
</tbody>
</table>

This digital multi-function copier machine features power consumption as low as 1W or less in standby mode.

*Power saving* Power consumption as low as 1W or less in standby (at auto power shut-off). It also offers energy savings of almost 27% compared with previous model (AR-265S).

*Green materials* We applied lead-free solder to main boards and chromium-free steel plate to the chassis and other parts. We also used lead-free power cord/wire harness, halogen-free resin for the external cabinet. Packaging materials are made from cardboard (suitable for recycling) rather than foam polystyrene.

*This photograph contains some options.*

## Products/Model:

- DocuCentre Color f450
- Multifunction Digital Copier AR-266S
Eco-products No.0083
OA / IT Equipments  Digital multifunctional Device

High reuse/recyclable energy-saving digital multi-functional device

Konica Minolta Business Technologies, Inc.
1-6-1 Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-0005 Japan
Tel: 03-6250-2360  Fax: 03-6250-2496
E-mail: eco-support@konicanolta.jp
URL: http://konicanolta.jp

Category:
- A4. Waste
- A5. Resource Consumption
- B1. Recyclability
- B5. Energy Saving
- B7. Usage of Recycled Material

- Energy conservation during operation: Thanks to its energy-saving design, Konica Minolta's digital multi-functional workgroup achieves industry top level energy efficiency of 31Kwh/h.
- Reusable/Recyclable design: we developed the workgroup so that used products can be reused or recycled with ease, reducing environmental impact. This means that it is possible to reuse or recycle about 92% of the components and materials used.

Products/Model:
Konica Minolta 7235

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Eco-products No.0084
OA / IT Equipments  Digital Full-Color Copier

Digital Full-Color Copier

SHARP CORPORATION
22-22 Nagaike-cho Abeno-ku Osaka, 545-8522 Japan
Tel: 06-6621-1221  Fax: 06-6628-1653
E-mail;
URL: http://www.sharp.co.jp

Category:
- B1. Recyclability
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving

This copier has our unique automatic identification function for sorting original copies.
- Energy saving: It is equipped with a pre-heating function that lowers the fixing temperature during waiting time, leading to reduced running cost.
- Green materials: We applied lead-free solder to main boards and chromium-free steel plate to the chassis and other parts. We also used lead-free power cord/wire harness. Packaging materials are made from cardboard (suitable for recycling) rather than foam polystyrene.

Products/Model:
Multifunction Digital Copier AR-C261S
Eco-products No.0085

OA / IT Equipments  |  Scanner
---|---

Canon CanoScan LiDE 80 : Energy Saving, For Personal, Scanner

Canon Inc.
16-1, Shimonoge 3-chome, Takatsu-ku, Kawasaki-shi, Kanagawa, 213-8512 Japan
Tel; 044-811-2111  Fax; 044-811-9371
E-mail; koike.motoshi@canon.co.jp
URL; http://canon.jp/

With the introduction of the following energy-saving technologies, both operating and stand-by power consumption have been substantially reduced.

(1) Uses a sleep-synchronous system that shuts off power supply to image reading/motor systems during PC sleep.

(2) Uses a low-power LED read sensor from conventional fluorescent lamps as a high-sensitivity CIS system.

These energy-saving technologies have reduced daily power consumption by around 88 % in comparison with a conventional machine.

Category:
- A1. Global Warming
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Products/Model:
Canon CanoScan LiDE 80

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Eco-products No.0086

OA / IT Equipments  |  Digital stencil duplicator
---|---

Energy-saving digital stencil duplicator for schools and offices

DUPLO CORPORATION
Duplo Buildind, 1-6 Oyama 4, Sagamihara, Kanagawa 229-1180, Japan
Tel; 042-775-3600  Fax; 042-775-3636
E-mail; info@dupo.co.jp
URL; http://www.duplo.com

Since this digital stencil duplicator does not require heat during its printing process, it can be used immediately after switch on. Power consumption required, other than for printing, is minimal and a large number of prints can be produced from one original. These features contribute to major energy savings. Power consumption is also reduced during stand-by mode and an Auto shut off mode shuts down the power when the machine is not in use for a certain period of time. In producing the machine, priority has been given to materials which can be recycled.

Category:
- A1. Global Warming
- A3. Hazardous Substance
- B1. Recyclability
- B2. Longevity
- B5. Energy Saving

Products/Model:
Duprinter Series DP-460e,440e,430e,340e,330e
### Eco-products No.0087

#### OA / IT Equipments

| Digital stencil duplicator |

#### Energy-saving digital stencil duplicator for schools and offices

**DUPLO CORPORATION**

Duplo Buildind, 1-6 Oyama 4, Sagamihara, Kanagawa 229-1180, Japan  
Tel: 042-775-3600  Fax: 042-775-3636  
E-mail: info@duplo.co.jp  
URL: http://www.duplo.com

Since this digital stencil duplicator does not require heat during its printing process, it can be used immediately after switch on. Power consumption required, other than for printing, is minimal and a large number of prints can be produced from one original. These features contribute to major energy savings. Main materials used in the machine have been selected with recycling in mind.

**Category:**  
- A1. Global Warming  
- A3. Hazardous Substance  
- B1. Recyclability  
- B2. Longevity  
- B5. Energy Saving

**Products/Model:**  
DDuprinter Series DP-21S, 23S, 24S

### Eco-products No.0088

#### OA / IT Equipments

| Recycled ink cartridge |

#### Environmentally-friendly recycled product for general consumers

**Jit Co., Ltd.**

371-7, Toda, Minami Alpus-city, Yamanashi, 400-0414 Japan  
Tel: 055-280-8105  Fax: 055-280-8103  
E-mail: jit@olive.ocn.ne.jp  
URL: http://www.jit-c.co.jp

We reclaim used printer cartridges which would otherwise be disposed of. They are collected in boxes from stores and they are then rinsed and refilled with ink for resale as recycled products.

**Category:**  
- B1. Recyclability  
- B3. Resource Saving  
- B7. Usage of Recycled Material  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

**Products/Model:**  
Ecorica
**Eco-products No.0089**

OA / IT Equipments | Personal computer
---|---

Energy-efficient personal computer for office use

Logitec Corporation  
Yasukuni-Kudan-Minami Bldg 3-14, Kudan-Minami 2-Chome, Chiyoda-ku, Tokyo 102-0074 Japan  
Tel; 03-3514-1421  Fax; 03-3514-1420  
E-mail;  
URL: http://www.logitec.co.jp/

This personal computer includes a high-performance processor and features high energy efficiency, making it extremely cost-effective. There are no metal parts embedded in the mold unit, making it easy to recycle. Environmental impact is reduced by using packing boxes made from 40% recycled paper and printed with bean ink.

**Products/Model**:  
LPC-PF34GTA/B

---

**Eco-products No.0090**

OA / IT Equipments | Personal computer
---|---

Power-saving personal computer with reduced running noise

NEC Personal Products, Ltd.  
1-11, Osaki 1-chome, Shinagawa-ku, Tokyo, 141-0032 Japan  
Tel; 03-6479-5500  Fax;  
E-mail;  
URL: http://www.necp.co.jp/

This all-in-one PC takes up no more space than an LCD and offers excellent energy savings. Its energy consumption is around 62% less than our current PC thanks to a CPU that uses less power, conversion of power into AC adapter etc. Its energy-saving design controls heating and does not use a fan, leading to the reduction of noise levels to around 20dB (equivalent to the sound level of touching leaves). It also reduces the environmental burden by using non-halogen plastic or recycled plastic for the chassis, lead-free solder for component mounting to the printed board and a hexavalent-chromium-free steel sheet for internal chassis.

**Products/Model**:  
Mate MY11F/FR-E MY11F/FE-E
### Eco-products No.0091

<table>
<thead>
<tr>
<th>OA / IT Equipments</th>
<th>Personal Computer</th>
</tr>
</thead>
</table>

**Quiet water-cooled personal computer**

**NEC Personal Products, Ltd.**
1-11, Osaki 1-chome, Shinagawa-ku, Tokyo, 141-0032 Japan
Tel: 03-6479-5500 Fax;
E-mail;
URL: http://www.necp.co.jp/

Using a PC causes the CPU to generate heat. This was traditionally cooled with a fan, but this contributed to the PC’s inherent noise. We lowered PC’s noise to about 30dB by introducing the world’s first water-cooled system into a desktop PC. Furthermore, lead-free soldering was used for the PCB while recycled plastics and hexavalent chromium-free steel plate were used for the chassis to reduce environmental impact.

**Category:**
- A3. Hazardous Substance
- B3. Resource Saving
- B4. Higher Quality
- B7. Usage of Recycled Material
- C5. Product Use, Maintenance and Repair

Products/Model:
VALUESTAR TZ VZ980/9E VZ980/9D VZ500/9D

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### Eco-products No.0092

<table>
<thead>
<tr>
<th>OA / IT Equipments</th>
<th>Personal Computer</th>
</tr>
</thead>
</table>

**VERSA E2000: Eco personal computer**

**NEC Personal Products, Ltd.**
1-11, Osaki 1-chome, Shinagawa-ku, Tokyo, 141-0032 Japan
Tel: 03-6479-5500 Fax;
E-mail;
URL: http://www.necp.co.jp/

There is worldwide demand for ECP products that comply with European RoHS Directive and eliminate hazardous substances. In VERSA E2000, lead-free soldering is used for the PCB while hexavalent chromium-free steel plate is used for an internal chassis. In addition, halogen-free and recycled plastics are used for the chassis to reduce environmental impact. (New material, non-phosphorus plastic is used for LCD bezel and DIMM cap)

**Category:**
- A3. Hazardous Substance
- B3. Resource Saving
- B5. Energy Saving
- B7. Usage of Recycled Material
- C5. Product Use, Maintenance and Repair

Products/Model:
VERSA  VERSA E2000
Eco-products No.0093

OA / IT Equipments | PC
---|---

**PC: Earth-conscious and office environment-conscious PCs for business users**

NEC Corporation
7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan
Tel; 03-3798-6617  Fax; 03-3798-9186
E-mail;  URL; http://www.nec.com/

- Use environmentally conscious parts, such as lead-free soldering for all parts loaded on the motherboard
- Use hexavalent chromium free plating for casings
- Use recycled plastics with non-halogen, non-phosphorus flame retardant

Category:
- B1. Recyclability
- B5. Energy Saving
- B7. Usage of Recycled Material
- C1. Material Extraction
- C3. Design and Material Selection

Products/Model :
Fanless PC, MY 11F/FR-E

Eco-products No.0094

OA / IT Equipments | PC
---|---

**PC: Earth-conscious and office environment-conscious PCs for business users**

NEC Corporation
7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan
Tel; 03-3798-6617  Fax; 03-3798-9186
E-mail;  URL; http://www.nec.com/

- Use environmentally conscious parts, such as lead-free soldering for all parts loaded on the motherboard
- Use hexavalent chromium free plating for casings
- Use recycled plastics with non-halogen, non-phosphorus flame retardant

Category:
- B1. Recyclability
- B5. Energy Saving
- B7. Usage of Recycled Material
- C1. Material Extraction
- C3. Design and Material Selection

VERSAL E2000
Eco-products No.0095

OA / IT Equipments  Desktop PC

Eco-friendly desktop computer

Fujitsu Limited
4-1-1 Kamikodanaka, Nakahara-ku, Kawasaki-shi, Kanagawa
211-8588 (Kawasaki Research & Manufacturing Facilities) Japan
Tel: 044-754-3413  Fax: 044-754-3326
E-mail: ecobox@fujitsu.com

Category:
● A3. Hazardous Substance
● A5. Resource Consumption
● B1. Recyclability
● B3. Resource Saving
● C3. Design and Material Selection

Based on our green product development policy, the body of this product incorporates both chrome-free steel plates that do not contain toxic hexavalent chromium and halogen-free resins which do not emit dioxin when incinerated. Recycled plastic is also used in its body and it is designed for effective utilization of limited resources and energy saving. This product registered with the International Energy Star Program and conforms to the Law on Promoting Green Purchasing and the PC Green Label System.

Products/Model:
FMV-E625 FMVE21D130

Eco-products No.0096

OA / IT Equipments  Desktop PC

Eco-friendly desktop computer

Fujitsu Limited
4-1-1 Kamikodanaka, Nakahara-ku, Kawasaki-shi, Kanagawa
211-8588 (Kawasaki Research & Manufacturing Facilities) Japan
Tel: 044-754-3413  Fax: 044-754-3326
E-mail: ecobox@fujitsu.com

Category:
● A3. Hazardous Substance
● B1. Recyclability
● B5. Energy Saving
● B7. Usage of Recycled Material
● C3. Design and Material Selection

Fujitsu's proprietary 3D CAD design support tool (software) enabled a reduction of materials and components for product development. By reducing the number of screws in half, cut in the time of degradability of products, recycling efficiency and resource saving of metals are brought to fruition. This product incorporates both chrome-free steel plate that do not contain toxic hexavalent and halogen-free resins which do not emit dioxin.

Products/Model:
ETERNUS6000 Model400 E640S01A, Model600 E660S01A, Model800 E680S01A, Model1000 E6A0S01A,
### Eco-products No.0097

**Super Computer: Eco-friendly, available to analyze/forecast global climate change**

| Category: | ● B4. Higher Quality  
|          | ● B5. Energy Saving  
|          | ● B7. Usage of Recycled Material  
|          | ● C1. Material Extraction  
|          | ● C3. Design and Material Selection |

**NEC Corporation**

7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan  
Tel: 03-3798-6617  Fax: 03-3798-9186  
E-mail;  
URL: http://www.nec.com/

- Reduce the standard electric power per performance  
- Use hexavalent chromium free steel sheet for chassis of products  
- Design for space-saving, weight saving

![Super Computer](image)

**Products/Model:**  
SX-6

---

### Eco-products No.0098

**PC Server: Improved performance and energy-saving, designed for business users**

| Category: | ● B4. Higher Quality  
|          | ● B5. Energy Saving  
|          | ● B7. Usage of Recycled Material  
|          | ● C1. Material Extraction  
|          | ● C3. Design and Material Selection |

**NEC Corporation**

7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan  
Tel: 03-3798-6617  Fax: 03-3798-9186  
E-mail;  
URL: http://www.nec.com/

- Reduce the standard electric power compared with conventional products  
- Reduce space to install and product weight compared with conventional products  
- Reduce lead use amount  
- Design for easy dismantling with common industrial tools

![PC Server](image)

**Products/Model:**  
Express Server 5800/120Mf
### Eco-products No.0099

**OA / IT Equipments**

**Eco-friendly laptop computer**

Fujitsu Limited  
4-1-1 Kamikodanaka, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588 (Kawasaki Research & Manufacturing Facilities) Japan  
Tel: 044-754-3413 Fax: 044-754-3326  
E-mail: ecobox@fujitsu.com  
URL: http://jp.fujitsu.com/  
http://www.fujitsu.com/

Based on our green product development policy, the body of this product incorporates magnesium alloy and recycled plastic from our used products. It also reduces toxic substances thanks to the use of halogen-free resins which do not emit dioxin when incinerated. Lead-free solder is used in its production and it is designed to be energy saving. Its environmental data (covering the processes from design of new products to the collection of used products) is released to the public, and the company holds the “ECO-LEAF” Environmental Label.

**Products/Model:**  
FMV-7100MT5 FMV5MTBL3

### Eco-products No.0100

**OA / IT Equipments**

**Personal computer mouse made from recycled ABS**

KOKUYO Co., Ltd.  
6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan  
Tel: 06-6973-9202 Fax: 06-6973-9374  
E-mail:  
URL: http://www.kokuyo.co.jp

- Recycled ABS material is used for 80% of the product body. In addition, the user manual and packaging paper use 100% recycled paper.  
- Non-vinyl chloride materials (PU), which do not emit toxic gases when burned, are used for cable jackets and USB connecting parts.  
- Lead-free solder is used for USB connector terminals and between cables and boards.

**Products/Model:**  
USB&PS/2Mouse EAM-UE1C
**Eco-products No.0101**

**OA / IT Equipments** | **Storage**
---|---

**Storage: Compact, lightweight and energy-saving, designed for business users**

**NEC Corporation**
7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan
Tel: 03-3798-6617  Fax: 03-3798-9186
E-mail; URL: http://www.nec.com/

- Reduce the standard electric power compared with conventional products
- Reduce space to install and product weight compared with conventional products
- Reduce lead use amount
- Design for easy dismantling with common industrial tools

**Category:**
- B1. Recyclability
- B4. Higher Quality
- B5. Energy Saving
- B7. Usage of Recycled Material
- C3. Design and Material Selection

![Storage Product](image)

**Products/Model:**
- iStorage NV821X

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**Eco-products No.0102**

**OA / IT Equipments** | **Wireless Broadband Router**
---|---

**Wireless Broadband Router: Easy dismantling, designed for private users**

**NEC Corporation**
7-1, Shiba 5-chome, Minato-ku, Tokyo 108-8001 Japan
Tel: 03-3798-6617  Fax: 03-3798-9186
E-mail; URL: http://www.nec.com/

- Easy dismantling designed products, such as if a screw would be unscrewed, all the parts could be dismantled.
- With the expansion of ADSL and optic fiber, the products would improve the product performance and energy saving at a same time.

**Category:**
- B1. Recyclability
- B5. Energy Saving
- B7. Usage of Recycled Material
- C1. Material Extraction
- C3. Design and Material Selection

![Wireless Router](image)

**Products/Model:**
- Aterm WR7600H
### Eco-products No.0103

**OA / IT Equipments** | External Power-saving Device for Fax
---|---

**Fax power-saving device with zero stand-by power**

**NTT Advanced Technology Corporation**

Neocity Mitaka Bldg. 7F, 3-35-1, Shimorenjaku, Mitaka-city, Tokyo, 181-0013, Japan  
Tel: 0422-47-7842 Fax: 0422-40-1103  
E-mail: kanyakou@neo.ntt-at.co.jp  
URL: http://www.keytech.ntt-at.co.jp

Category:  
- A1. Global Warming  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

“Setsudenmushi” is a compact and lightweight device that connects to the power and communication wires of a fax. Stand-by power accounts for most of the power used by a fax and this device can reduce that to zero. The “Setsudenmushi” sensors can detect receiving and transmitting signals and automatically turns on the power switch. It can also sense completion of a printout after a transmission and turns the power off again. According to actual measurement and life cycle assessment, it can reduce the power consumption and CO2 emission of a fax by 80%.

**Products/Model:**  
Power-saving product for facsimiles SKM-G3S

### Eco-products No.0104

**OA / IT Equipments** | OMR (Mark Sheet Reader)
---|---

**OMR for schools and companies: Recycled paper and materials, power conservaction**

**SEKONIC CORPORATION**

7-24-14, Oizumi-Gakuen-cho, Nerima-ku, Tokyo, 178-8686 Japan  
Tel: 03-3978-2335 Fax: 03-3922-2144  
E-mail: omr@sekonic.co.jp  
URL: http://www.sekonic.co.jp

Category:  
- B1. Recyclability  
- B2. Longevity  
- B5. Energy Saving  
- C3. Design and Material Selection  
- C5. Product Use, Maintenance and Repair

- Supports recycled OCR paper (Content: 50%)
- Equipped with power-saving mode for energy conservation (50% power savings in comparison with our conventional machine).
- Material names are specified on exterior and resin parts to allow easy recycling of spent materials.
- Recyclable corrugated paper packaging materials.
- Produced by companies holding ISO 14001 certification.
- Product registered on information plaza for green purchasing.

**Products/Model:**  
Optical Mark Reader • SR-5500
**Eco-products No.0105**

<table>
<thead>
<tr>
<th>OA / IT Equipments</th>
<th>Printing Plate Materials</th>
</tr>
</thead>
</table>

**Toray Waterless Plate & Toray Waterless CTP Plate**

Toray Industries, Inc.
Toray Bldg., 2-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8666 Japan
Tel: 03-3245-5179 Fax: 03-3245-5459
E-mail: url: http://www.toray.co.jp

- Conventional offset printing requires dampening water containing substances that could increase environmental loads, such as etch solution and isopropyl alcohol (IPA). The Toray Waterless Plate* is an innovative printing material that allows offset printing without using dampening water, thus eliminating the generation of harmful waste fluid. In addition, the Toray Waterless CTP Plate* obviates the need to produce original picture film which is used in the conventional plate making process. Instead, digitized data is exposed by applying laser light directly onto the plate surface. Eliminating the need for films helps to conserve resources, and no waste fluid is discharged during the film developing or printing stages.

**Eco-products No.0106**

<table>
<thead>
<tr>
<th>OA / IT Equipments</th>
<th>Monochrome Laser Printer</th>
</tr>
</thead>
</table>

**Resource and energy-saving compact monochrome laser printer**

Konica Minolta Business Technologies, Inc.
1-6-1 Marunouchi 1-chome, Chiyoda-ku, Tokyo, 100-0005 Japan
Tel: 03-6250-2390 Fax: 03-3218-1386
E-mail: hideaki.takagi@konicanolta.jp
URL: http://konicanolta.jp

- Konica Minolta gives priority to product downsizing, since this conserves resources at the manufacturing stage, curtails energy use at the product delivery stage, and reduces environmental impact when products are discarded. For example, Konica Minolta’s laser printer, PagePro 1300W, (launched in Feb 2004) is approximately 28% smaller in size and approximately 13% lighter in weight compared with a conventional Konica Minolta model.
Eco-products No.0107

OA / IT Equipments  | Printer
--- | ---

Fast, Compact Printer for Home Office/Small Office

Canon Inc.
30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan
Tel; 03-3758-2111  Fax; 03-3758-1160
E-mail; URL: http://canon.jp/

On-demand fixing technology which requires no residual heat for the fixing unit provides energy-efficiency and quick-start of zero warm-up during standby mode. It is completely silent in standby mode due to its fan-less design, and quiet during printing.

Products/Model:
Laser Beam Printer, LBP-1120

Category:
- A1. Global Warming
- B5. Energy Saving
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

Eco-products No.0108

OA / IT Equipments  | Printer
--- | ---

Printer resistible to 500times- iterative printing on single paper (Ecopri)

Oki Electric Industry Co., Ltd.
1-7-12, Toranomon, Minnato-ku, Tokyo 105-8460, Japan
Tel: 03-3501-3111  Fax;
E-mail;
URL: http://www.oki.com/jp/

Ordinary printer does not permit delete of letters which is printed on OA paper with toner or ink. With this “Ecopri,” however, rethermal paper is used, which makes it possible to delete the printed letters and reuse the paper for printing new content. For practical use, this printer can reprint letters on the same sheet of paper roughly 500 times, making the quantity of paper used “practically none.” Further, since consumables such as toner and ink are not required, waste materials are not generated. When the rethermal paper is heated, the color changes to black, and slowly cooling the paper, it changes the color to white again. It is the iterative printing method making use of this property.

Category:
- A4. Waste
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C1. Material Extraction

※ Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-products No.0109

<table>
<thead>
<tr>
<th>OA / IT Equipments</th>
<th>Inkjet Printer</th>
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</thead>
<tbody>
<tr>
<td><strong>Canon i80 Inkjet printer</strong>: Energy Saving, For Home and Office</td>
<td></td>
</tr>
</tbody>
</table>

**Canon Inc.**  
16-1, Shimonoge 3-chome, Takatsu-ku, Kawasaki-shi, Kanagawa, 213-8512 Japan  
Tel: 044-811-2111 Fax: 044-811-9371  
E-mail: koike.motoshi@canon.co.jp  
URL: [http://canon.jp/](http://canon.jp/)

With the introduction of the following energy-saving technologies, power-off and stand-by power consumption have been substantially reduced.  
1. External mains low-power mode control system  
2. Shut-off power supply to a printer control part  
3. Clock stop to logic circuit  

With the introduction of these energy-saving technologies, daily power consumption has been reduced by about 80%, in comparison with Canon's conventional machine.

**Category:**  
- A1. Global Warming  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
Canon i80

### Eco-products No.0110

<table>
<thead>
<tr>
<th>OA / IT Equipments</th>
<th>Inkjet Printer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Canon i560 Inkjet printer</strong>: Uses recycled plastic, For Home and Office</td>
<td></td>
</tr>
</tbody>
</table>

**Canon Inc.**  
16-1, Shimonoge 3-chome, Takatsu-ku, Kawasaki-shi, Kanagawa, 213-8512, Japan  
Tel: 044-811-2111 Fax: 044-811-9371  
E-mail: koike.motoshi@canon.co.jp  
URL: [http://canon.jp/](http://canon.jp/)

Using general plastic (HIPS [flame-retardant grade: HB]) as raw materials, a technology was developed which upgrades the general plastic to m-PPE, higher flame-retardant grade engineering plastic. The technology realized a high-value-added plastic recycling system. Recycled plastic from this system is used to cover the power supply unit.

**Category:**  
- A5. Resource Consumption  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C6. End-of-Life

**Products/Model:**  
Canon i560
With the introduction of the following energy-saving technologies, daily power consumption was reduced by about 76%, compared with Canon's conventional machine.

1. Clock stop to logic circuit
2. Low-power mode control system
3. Introduction of synchronous rectification DC/DC converter
4. Improvement of firmware

These energy-saving technologies substantially reduced both power-off and stand-by power consumption.

Products/Model:
Canon i865

1. As a result of energy-saving functions during power-off, standby and low-power mode, it uses less daily power than the company's previous model, PM-770C.
2. A high recyclable ratio of 80% is achieved through various recycle-conscious designs.
3. The product has chromium-free steel plates and lead-free soldered boards.
4. The inks used offer improved light and water resistance ensuring lasting, quality print-outs.

Products/Model:
Colorio PX-G900 (Japan Model)
Paper environmental impact generated from a printing is a second contributor to the impact in a lifecycle of printer products. IPSiO G505/707 enabled fast two-sided printing by employing fast dry GELJET viscous ink and eliminating drying time. This two-sided printing can be expected to substantially reduce paper resources.

Products/Model:
IPSiO G505/707 (Japanese market only)

Eco-products No.0114

OA Furniture
Inkjet printer paper

The rate of used paper combination, Ink jet printer ⇒ Printing papers made of recycled waste paper

KOKUYO Co., Ltd.
6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan
Tel; 06-6973-9202 Fax; 06-6973-9374
E-mail:;
URL: http://www.kokuyo.co.jp

Category:
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C1. Material Extraction
- C4. Product Manufacture

- Eco-friendly: Compound ratio of waste paper is increased to 100%, while the coating layer is reduced down to 12 g/m², allowing the product to conform with recycling regulations.
- Clear printing: Since the surface coating of the paper uses a special processing technique, clear printing is achieved for both documents and pictures.

Products/Model:
INK-JET PRINTER PAPER KJ-S1110
Eco-products No.0115

OA Furniture | Inkjet Printing Paper

**Printing paper made from used paper and sustainable woods for “sustainability”**

Nippon Paper Industries Co., Ltd.
1-12-1, Yuraku-cho, Chiyoda-ku, Tokyo 100-0006 Japan
Tel; 03-3218-8048 Fax; 03-3213-5455
E-mail: joho@npaper.co.jp
URL: http://www.npaper.co.jp

Category:
● A1. Global Warming
● B7. Usage of Recycled Material
● C1. Material Extraction
● C2. Material and Components Production
● C4. Product Manufacture

- Industrial tree plantations have a secondary effect of absorbing carbon dioxide. Focusing on this, we use afforested wood that has been properly grown and controlled, in combination with certified chips. In addition, the paper is produced in ISO14001-certified plants using elementary chlorine-free bleaching in the pulp bleaching process, therefore our "IMAGEA" product helps to reduce environmental impact.

Products/Model:
imagea

---

Eco-products No.0116

OA Furniture | Inkjet Printing Paper

**Printing paper made from used paper and sustainable woods for “sustainability”**

Nippon Paper Industries Co., Ltd.
1-12-1, Yuraku-cho, Chiyoda-ku, Tokyo 100-0006 Japan
Tel; 03-3218-8048 Fax; 03-3213-5455
E-mail: joho@npaper.co.jp
URL: http://www.npaper.co.jp

Category:
● A1. Global Warming
● B7. Usage of Recycled Material
● C1. Material Extraction
● C2. Material and Components Production
● C4. Product Manufacture

- Industrial tree plantations have a secondary effect of absorbing carbon dioxide. Focusing on this, we use afforested wood that has been properly grown and controlled, in combination with certified chips. In addition, our ‘FCP-UP’ product is produced in ISO14001-certified plants using elementary chlorine-free bleaching in the pulp bleaching process, making it environmentally-friendly.

Products/Model:
FCP-UP
### Eco-products No.0117

**OA Furniture**

**Colored Paper**

**Pale-colored paper containing recycled paper without damaging printability and strength**

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

*Category:*  
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection  
- C4. Product Manufacture

“Saisei Color” is made from pulp consisting of 100% used paper, it is due to the primary object of development to create a product consistent with forest protection. This is environment-friendly colored paper for envelope, approved by the Eco Mark Office.

![Image of Saisei Color envelopes](image)

**Products/Model:**  
Saisei Color

---

### Eco-products No.0118

**OA Furniture**

**Colored Paper**

**Posh pastel-toned color paper containing used paper with soft texture**

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

*Category:*  
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection  
- C4. Product Manufacture

“Halftone Color” was approved by the Eco Mark Office. Its raw material consists of 70% of used paper and 30% of green pulp (not chlorine bleached)*, so it is an environment-conscious product of which “eco ratio (the procurement ratio of environment friendly material)” is 100%. *green pulp (not chlorine bleached): the pulp produced with “the ECF (Elementary chlorine Free) method” to avoid the risk of generating hazardous organic-chlorinated substance such as dioxin.

![Image of Halftone Color envelopes](image)

**Products/Model:**  
Halftone Color
# Eco-products No.0119

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Colored Paper</th>
</tr>
</thead>
</table>

**Green recycled paper (Fancy Paper) available in twenty-two pastels**

**LINTEC Corporation**
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713 Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

Category:
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection  
- C4. Product Manufacture

“Saisei 21” is an environment-conscious colored paper approved by the Eco Mark Office, of which “eco ratio (the procurement ratio of environment friendly material)” is 100%, containing used paper for 70% and green pulp (not chlorine breached) * for 30%. *green pulp (not chlorine bleached); the pulp produced with “the ECF (Elementary chlorine Free) method” to avoid the risk of generating hazardous organic-chlorinated substance such as dioxin.

Products/Model :
Saisei 21

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# Eco-products No.0120

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Printing Paper for Calendars</th>
</tr>
</thead>
</table>

**Kony Kent as top brand kent paper**

**LINTEC Corporation**
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004 Japan  
Tel: 03-3868-7713 Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

Category:
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection  
- C4. Product Manufacture

Top brand kent paper, Kony Kent, is widely deployed for various uses such as calendars, posters, catalogues, and books. The paper is environment-conscious product made from 100% eco-friendly materials, using 50% of waste paper and 50% of green pulp (chlorine-free bleached pulp). The pulp is produced with "ECF" (Elementary Chlorine Free method) to prevent emission of toxic organic-chlorine compounds such as dioxin.

Products/Model :
Kony Kent
<table>
<thead>
<tr>
<th>Eco-products No.0121</th>
<th>Printing paper for calendars</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High quality printing paper with strength and resilience Odin</strong></td>
<td></td>
</tr>
<tr>
<td>LINTEC Corporation</td>
<td>Category:</td>
</tr>
<tr>
<td>2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel; 03-3868-7713  Fax; 03-3868-7741</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:ar-kumakura@post.lintec.co.jp">ar-kumakura@post.lintec.co.jp</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>URL; <a href="http://www.lintec.co.jp">http://www.lintec.co.jp</a></td>
<td>● C3. Design and Material Selection</td>
</tr>
<tr>
<td></td>
<td>● C4. Product Manufacture</td>
</tr>
<tr>
<td></td>
<td>Products/Model :</td>
</tr>
<tr>
<td></td>
<td>Odin</td>
</tr>
</tbody>
</table>

This paper is environment-conscious product made from 100% eco-friendly materials (approved as Eco Mark Product by Eco Mark Committee), which consists of 70% of waste paper and 30% of green pulp (chlorine-free bleached pulp). The pulp is produced with "ECF" (Elementary Chlorine Free method) to prevent emission of toxic organic-chlorine compounds such as dioxin.

<table>
<thead>
<tr>
<th>Eco-products No.0122</th>
<th>Printing paper for calendars</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High quality ink-jet paper for two-side printing Good Print-IJ</strong></td>
<td></td>
</tr>
<tr>
<td>LINTEC Corporation</td>
<td>Category:</td>
</tr>
<tr>
<td>2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel; 03-3868-7713  Fax; 03-3868-7741</td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:ar-kumakura@post.lintec.co.jp">ar-kumakura@post.lintec.co.jp</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>URL; <a href="http://www.lintec.co.jp">http://www.lintec.co.jp</a></td>
<td>● C3. Design and Material Selection</td>
</tr>
<tr>
<td></td>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

This paper is environment-conscious product made from 100% eco-friendly materials (approved as Eco Mark Product by Eco Mark Committee), which consists of 70% of waste paper and 30% of green pulp (chlorine-free bleached pulp). The pulp is produced with "ECF" (Elementary Chlorine Free method) to prevent emission of toxic organic-chlorine compounds such as dioxin.
**Eco-products No.0123**

**OA Furniture**

**Beautifully colored paper containing used paper, “New Color R Series”**

LinTec Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713  Fax: 03-3868-7741
E-mail: ar-kumakura@post.lintec.co.jp
URL: http://www.lintec.co.jp

Category:
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C4. Product Manufacture

The letter “R” you can see in all product's name in this series is the initial letter of “Recycle”. “New Color R Series” consists of 70% of used paper, 20% of green pulp (not chlorine bleached)*, and 10% of nonwood pulp, which means that “eco ratio (the procurement ratio of environment friendly material)”, is 100%. It was given certifications as eco-friendly product by multiple organizations such as “the Eco Mark” certified by the Eco Mark Office of the Japan Environment Association, “the Nonwood Paper Mark” by the nonwood paper diffusion association, “the Green Mark” by the Green Mark Executive Committee of the Paper Recycling Promotion Center.

*green pulp: the pulp produced with “the ECF (Elementary chlorine Free) method” to avoid the risk of generating hazardous organic-chlorinated substance such as dioxin.

Products/Model :

**Eco-products No.0124**

**OA Furniture**

**Recyclable damp-proof packing paper**

LinTec Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713  Fax: 03-3868-7741
E-mail: ar-kumakura@post.lintec.co.jp
URL: http://www.lintec.co.jp

Category:
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C4. Product Manufacture

Damp-proof packing paper is a paper, the surface of which has received the filling processing with a recyclable coating material. Although the polyethylene laminated paper is also damp-proof, it is difficult to be recycled. On the other hand, the damp-proof packing paper has the performance of the same level as that of the polyethylene laminated paper, despite that it is a recyclable product.

Products/Model :
Recyclable packing paper which is dampproof
Eco-products No.0125

**OA Furniture** | **Dust-free Paper**

**“Clean paper”, recyclable high-quality paper suppressing dust generation**

**LINTEC Corporation**
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel; 03-3868-7713 Fax; 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL; http://www.lintec.co.jp

“Clean paper” is a high-performance paper which does not almost produce the dust. And, the paper has the excellent qualities for writing, printing and PPC. When it is wrinkled or crumpled, it emits very fine dust particles, diameter of which are less than 0.1 μm. It is made mainly from pure natural pulp, and after having been used, it becomes a used paper with a quality of easily recyclable grade.

Products/Model:
Clean paper

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Eco-products No.0126

**OA Furniture** | **Recycling system for paper**

**Recycling system suitable for confidential documents**

**Hitachi Information Systems, Ltd.**
1-16-5, Dogenzaka, Shibuya-ku, Tokyo, 150-8540 Japan
Tel; 03-3464-5110 Fax; 03-3780-6891
E-mail; URL: http://www.hitachijoho.com/

This system allows confidential documents and other papers to be safely recycled. Documents are collected in a locked collecting cabinet and the paper is then converted into pulpy material at the company’s premises. The original document information is erased making this system suitable for confidential papers. The recycled paper can be used as office or printing paper making it an excellent green product.

Products/Model:
High Security Closed-Loop System
Table made from agricultural waste

Itoki Co., Ltd.
3-6-14 Iriume, Chuo-ku, Tokyo, 104-0042 Japan
Tel; 03-3206-6011 Fax; 03-3206-6020
E-mail; eco@star.itoki.co.jp
URL: http://www.itoki.co.jp/

- This table features a table top made from non-wood agricultural waste, which contributes to resource recycling and waste reduction.
- The table top materials do not release toxic VOCs (Volatile Organic Compounds) such as formaldehyde.
- No hazardous substance is released when the table top is incinerated and it can be disposed of by alternative means since it is made from natural materials. Recycling as the same material is also possible.
- Easy-to-recycle aluminum is used for the legs.

Products/Model :
DEC-1897B-01

Eco-products No.0128

Student chair/desk

Okamura Corporation
Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan
Tel; 045-319-3401 Fax; 045-319-3515
E-mail; 
URL: http://www.okamura.co.jp

This chair/desk is suitable for lecture room use and helps to keep aisles clear thanks to Okamura’s slide structure, which makes it easy to open and close.

The product has been subjected to volatile organic compound (VOC) diffusion measurement in a large scale test chamber (data is available).

The product meets Green Purchasing Law.

Products/Model :
93R11A MH02
<table>
<thead>
<tr>
<th>Eco-products No.0129</th>
<th>OA Furniture</th>
<th>Table system</th>
</tr>
</thead>
</table>
| **Parts-sharing table system**

Okamura Corporation
Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan
Tel: 045-319-3401  Fax: 045-319-3515
E-mail;
URL: http://www.okamura.co.jp

Category:
● A4. Waste
● B1. Recyclability
● B2. Longevity
● B7. Usage of Recycled Material
● C6. End-of-Life

Sharing parts materialized “simple structure.” It is a very versatile table system for general office use.
Produced by ISO14001 registered division. Arm material, that is easier to recycle, is used as primary material. Utilize recycled materials in a positive manner (Adjuster portion: nylon 50%, post beam cap: ABS 100%)

Products/Model :
DE20AA-MG75

<table>
<thead>
<tr>
<th>Eco-products No.0130</th>
<th>OA Furniture</th>
<th>Desk system (Eco melamine)</th>
</tr>
</thead>
</table>
| **Office desk system incorporating desk, storage and low partition.**

Okamura Corporation
Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan
Tel: 045-319-3401  Fax: 045-319-3515
E-mail;
URL: http://www.okamura.co.jp

Category:
● A4. Waste
● B1. Recyclability
● B2. Longevity
● B7. Usage of Recycled Material
● C6. End-of-Life

Produced by ISO14001 registered division. Water paints used. This three-in-one system uses the following recycled materials: pen tray (PS/100%), horizontal raceway (ABS/100%), central drawer front surface (ABS/70%). The product meets Green Purchasing Law.
This is an excellent product developed using eco-melamine. Used units are reclaimed and melamine decorative laminate is recycled. The top board is also recycled.

Products/Model :
EXPERT  • DG20LB MB51

265
## Eco-products No.0131

**OA Furniture**  Desk system

### Eco-friendly MX+ Series office desk system

**KOKUYO Co., Ltd.**

6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan  
Tel; 06-6973-9202  Fax; 06-6973-9374  
E-mail;  
URL; http://www.kokuyo.co.jp

The MX+ Desk system is a standard office desk that incorporates wiring functions and a wide range of options. Reproducible material (reproducible ABS) is used for resin parts such as drawing mirror board and duct cover, allowing the product to be separated for disposal.

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

Products/Model :  
MX+ DESK SYSTEM

## Eco-products No.0132

**OA Furniture**  Office chair

### Eco-friendly recycled-resin office chair

**Okamura Corporation**

Tenri Bldg., Kitasaiwai, Nishi-ku,Yokohama, 220-0004 Japan  
Tel; 045-319-3401  Fax; 045-319-3515  
E-mail;  
URL; http://www.okamura.co.jp

Eco Mark product. Produced by ISO14001 registered division.  
We use Freon-free foam urethane to help prevent global warming. Adopting variable mold urethane.  
It is possible to post-join and upgrade elbows, contributing to longevity with easily renewed parts.  
Materialized platform of base/legs.  
Recycled materials are used as follows: seat outer shell (PP/50%), back inner shell (PP/50%), base cover (PE/gas pipe/30%). The product meets Green Purchasing Law.

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Products/Model :  
SX • CS45GS FM92
Eco-products No.0133

OA Furniture

Office chair

Eco-friendly, long life office chair

Okamura Corporation
Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan
Tel: 045-319-3401 Fax: 045-319-3515
E-mail;
URL: http://www.okamura.co.jp

Category:
● A1. Global Warming
● A4. Waste
● B2. Longevity
● B7. Usage of Recycled Material
● C6. End-of-Life

Eco Mark product. Produced by ISO14001 registered division.
By using Freon-free foam urethane, we help to prevent global warming. Adopting variable mold urethane.
It is possible to post-join and upgrade elbows, contributing to longevity with easily renewed parts.
Materialized platform of base/legs.
Recycled materials are used as follows: seat inner shell (PP/100%); back inner shell (PP/100%), covering material (recycled PET/60%). The product meets Green Purchasing Law.

Products/Model :
Carrozza · CK95GR FS16

---

Eco-products No.0134

OA Furniture

Office chair

Easy-recyclable Office chair of low-chemical substance

Okamura Corporation
Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan
Tel: 045-319-3401 Fax: 045-319-3515
E-mail;
URL: http://www.okamura.co.jp

Category:
● A1. Global Warming
● A3. Hazardous Substance
● A4. Waste
● B2. Longevity
● B7. Usage of Recycled Material

This office chair uses no adhesive at all and discharges low-chemical substances. It has a patterned material and is designed for ease of recycling.
It achieves a decomposition rate of about 85% thanks to reduced parts and fractionation design. The seat cushion is produced with molded urethane and polyester cloth. No adhesive is used to finish the upholstered surface, resulting in easy fractionation. It uses recycled materials (seat frame /PA/50%, back frame /PA/50%) for resin parts as far as possible. It is low maintenance and designed for long term use. It meets the Green Purchasing standard and is an Eco-mark product. Award-winning design. Production undertaken by ISO14001 registered division.
The first office furniture business in Japan to achieve United States’ GREEN GUARD environmental criteria.

Products/Model :
Contessa · CMS1AB FBH8
**Eco-products No.0135**

OA Furniture | Revolving chair

**Trenza series eco-friendly revolving office chair**

KOKUYO Co., Ltd.
6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan
Tel; 06-6973-9202  Fax; 06-6973-9374
E-mail; URL; http://www.kokuyo.co.jp

- **Category:**
  - A5. Resource Consumption
  - B1. Recyclability
  - B7. Usage of Recycled Material
  - C3. Design and Material Selection
  - C6. End-of-Life

Trenza is a standard-type revolving office chair. It has a backrest with a suspension structure to softly support the back. Recyclable materials (such as reproducible PP/PA) are used in resin materials for a variety of components including the seat and part of the leg support, which can be separated for recycling on disposal. In addition, the cushioned backrest can be replaced, giving the chair a longer life.

**Eco-products No.0136**

OA Furniture | Chair

**Long-lasting conference chair with easy parts replacement**

SANKEI Co., Ltd.
48, Azasukemachi, Ueno-cho, Suzuki-shi, Mie, 513-0017 Japan
Tel; 0593-78-0465  Fax; 0593-78-3719
E-mail; URL; http://www.isu-sankei.co.jp/

- **Category:**
  - B1. Recyclability
  - B2. Longevity
  - B7. Usage of Recycled Material
  - C3. Design and Material Selection
  - C6. End-of-Life

This chair has been designed for ease-of-use. It is stackable and incorporates armrests and castors. It is also designed to be long-lasting and parts can easily be replaced using just a Phillips screwdriver. Materials were assessed at the design stage for end-of-life issues such as recycling and waste segregation.
### Eco-products No.0137

**OA Furniture**

**Lightweight low partition**

<table>
<thead>
<tr>
<th>Okamura Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan</td>
</tr>
<tr>
<td>Tel: 045-319-3401 Fax: 045-319-3515</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL: <a href="http://www.okamura.co.jp">http://www.okamura.co.jp</a></td>
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<table>
<thead>
<tr>
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<tr>
<td>● A4. Waste</td>
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<tr>
<td>● B3. Resource Saving</td>
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<tr>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
</tr>
</tbody>
</table>

This low partition for office use has a variety of functions to modern office under the system based on human engineering, and also provides sound insulation for privacy and ease-of-concentration. Produced by ISO14001 registered division.

It is a resource-saving design and the material used includes PET-recycled cloth as standard. Above all, it uses superior steel. The use of insulation board ensures that the product is lightweight and therefore easier to transport. The product meets Green Purchasing Law.

Products/Model :
N8325Y

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### Eco-products No.0138

**OA Furniture**

**Kybos, eco-friendly functional frame system for offices**

<table>
<thead>
<tr>
<th>Kokuyo Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1-1, Oimazato-Minami Higasihara-ku, Osaka, 537-8686 Japan</td>
</tr>
<tr>
<td>Tel: 06-6973-9202 Fax: 06-6973-9374</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL: <a href="http://www.kokuyo.co.jp">http://www.kokuyo.co.jp</a></td>
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<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Kymbos is a functional frame system for offices. The system consists of a frame with cable laying functions and various options as a white board, partition, shelf, and lighting equipment.

It uses mainly highly recyclable aluminum, not resin materials. Furthermore, the product is not painted so its parts are reproducible, while the product can be separated and classified on disposal. Additionally, the product has a knock down structure, making it less harmful to the environment when distributed as well as less costly when disposed of.

Products/Model :
kybos
### Eco-products No.0139

**OA Furniture**  
**Storage system**

**Office storage system incorporating efficient storage (From A3 holder down to A3 width binder)**

| Okamura Corporation | Category: |
| Tenri Bldg., Kitasaiwai, Nishi-ku, Yokohama, 220-0004 Japan | ● A4. Waste  
● B1. Recyclability  
● B2. Longevity  
● B7. Usage of Recycled Material  
● C6. End-of-Life |
| Tel: 045-319-3401 Fax: 045-319-3515 |  
E-mail;  
URL: http://www.okamura.co.jp |

Produced by ISO14001-registered division. The product is designed to be easily recycled. We use recycled materials. For the main steel structure, recycled ABS resin is used and 10% for the grip unit, key functional member. The product meets Green Purchasing Law.

![Image](image1.png)

**Products/Model:**  
50MARK II

### Eco-products No.0140

**OA Furniture**  
**Storage system**

**A-Gauge Series eco-friendly office storage system**

| KOKUYO Co., Ltd. | Category: |
| 6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan | ● A5. Resource Consumption  
● B1. Recyclability  
● B7. Usage of Recycled Material  
● C3. Design and Material Selection  
● C6. End-of-Life |
| Tel: 06-6973-9202 Fax: 06-6973-9374 |  
E-mail;  
URL: http://www.kokuyo.co.jp |

The A-Gauge Series is a standard storage system, produced with an emphasis on universal design such as push latch open system and open assist system. Recyclable materials (such as reproducible PP/PA/ABS) are used in resin materials for various components including the tray, inside wall and jointing parts so they can be separated and recycled at disposal. In addition, this product has a knock down structure, making distribution easier and reducing disposal costs.

![Image](image2.png)

**Products/Model:**  
A-gauge
### Eco-products No.0141

**OA Furniture**

#### Eco-friendly aluminum-casting furniture

**KOKUYO Co., Ltd.**

6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan  
Tel: 06-6973-9202 Fax: 06-6973-9374  
E-mail:  
URL: http://www.kokuyo.co.jp

<table>
<thead>
<tr>
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</thead>
</table>
| ● A5. Resource Consumption  
● B1. Recyclability  
● B5. Energy Saving  
● C4. Product Manufacture  
● C6. End-of-Life |

The furniture is produced using an aluminum die-casting process, which enables its material to be reused.

Products/Model:  
XIZ-D1.01, ● ● ● ● ETC

### Eco-products No.0142

**OA Furniture**

#### Diaper Changing Station Series using 100% recycled wood

**Combi With Corporation**

2-6-7, Motoasakusa, Taito-ku, Tokyo, 111-0041 Japan  
Tel: 03-5828-7631 Fax: 03-5828-7630  
E-mail: with.bcs@combi.co.jp  
URL: http://www.combiwith.co.jp

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
</table>
| ● A3. Hazardous Substance  
● B1. Recyclability  
● B3. Resource Saving  
● B7. Usage of Recycled Material  
● C3. Design and Material Selection |

Wood parts are manufactured from recycled wood. We do not use raw materials containing toluene or xylene for the adhesive, decorative paper, serigraph ink etc. The connecting design allows a number of stations to be joined with the minimum of materials. It is assembled on-site, reducing the amount of packaging needed during transportation.

Products/Model:  
Angel NS Diaper Changing Station Series
Energy & paper saving digital imaging systems capable of 22 or 27 images per minute

Ricoh Company, Ltd.
1-15-5, Minami-Aoyama, Minato-ku, Tokyo, 107-8544 Japan
Tel; 03-5411-4404 Fax; 03-5411-4410
E-mail: envinfo@ricoh.co.jp
URL: http://ricoh.co.jp/ecology

In the past, the average Energy Star model needed 30 seconds recovery time from energy saver mode to start a copy job, which deterred some customers from using the energy saving function. In addition, the duplex mode was little used since it took longer and was more complicated than the simplex mode. However, these new Ricoh models can save at least 75% more energy compared with previous models, while reducing the recovery time to 10 seconds or less. The duplex speed has also been improved to the best in its class, while ease of use has been improved by a large operation panel and graphic display on Ricoh's own printer driver screen. By making more use of the duplex mode, copy paper can be saved.

Products/Model:
Ricoh Aficio1022/1027/2022/2027/2022SP/2027SP

Energy & paper saving digital imaging systems capable of 35 & 45 images per minute

Ricoh Company, Ltd.
1-15-5, Minami-Aoyama, Minato-ku, Tokyo, 107-8544 Japan
Tel; 03-5411-4404 Fax; 03-5411-4410
E-mail: envinfo@ricoh.co.jp
URL: http://ricoh.co.jp/ecology

In the past, the average Energy Star model needed 30 seconds recovery time from energy saver mode to start a copy job, which deterred some customers from using the energy saving function. In addition, the duplex mode was little used since it took longer and was more complicated than the simplex mode. However, these new Ricoh models can save at least 75% more energy compared with previous models, while reducing the recovery time to 10 seconds or less (35ipm models) and 15 seconds (45ipm models). The duplex speed has also been improved to the fastest in its class, while ease of use has been improved through a large operation panel and graphic display in Ricoh's own printer driver screen. By making use of the duplex mode, copy paper can be saved.

Products/Model:
Ricoh Aficio1035/1035P/1045/1045P/2035/2035SP/2045/2045SP
Eco-products No.0145

OA Furniture

Digital Imaging System

Digital imaging systems with the fastest duplex printing speed in the class of 60 & 75 images per minute

Ricoh Company, Ltd.
1-15-5, Minami-Aoyama, Minato-ku, Tokyo, 107-8544 Japan
Tel: 03-5411-4404 Fax: 03-5411-4410
E-mail: envinfo@ricoh.co.jp
URL: http://ricoh.co.jp/ecology

Category:
● A1. Global Warming
● A5. Resource Consumption
● B3. Resource Saving
● B4. Higher Quality
● B5. Energy Saving

Copy paper is the second biggest environmental impact followed by the low material input in the life cycle of the machine. Especially, the high end machines in this class are used very heavily, and therefore productivity is one of the most important keys to make more duplex copies/prints. Ricoh’s unique dual scanning system improves productivity by allowing duplex copies from duplex originals - which means no time is lost in changing documents. These new models also feature improvements that make them easier to use, such as a large operation panel and graphic display in Ricoh’s own printer driver screen. By making more use of duplex copies, copy paper can be saved.

Products/Model:
Ricoh Aficio1035/ 1035P/ 1045/ 1045P/ 2035/2035SP/2045/2045SP

Eco-products No.0146

OA Furniture

Writing paper

Students’ writing paper made from 100% wastepaper pulp

APICA Co., Ltd.
3174 Osawa, Koshigaya-shi, Saitama, 343-0025 Japan
Tel: 048-963-0111 Fax: 048-963-1191
E-mail: kikaku@apica.co.jp
URL: http://www.apica.co.jp/

Category:
● B3. Resource Saving
● B7. Usage of Recycled Material
● C2. Material and Components Production

Writing paper: both cover and body consist of 100% pulp made from used paper

Products/Model:
NoteBook/1GWA4,
GWA3 Report Pad/GR121A,
GR101A
**Eco-products No.0147**

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Notebook</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General-use campus student notebook with 100% recycled-paper cover page</strong></td>
<td></td>
</tr>
</tbody>
</table>

**KOKUYO Co., Ltd.**

6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan  
Tel: 06-6973-9202  Fax: 06-6973-9374  
E-mail:  
URL: http://www.kokuyo.co.jp

This notebook is environment-friendly; its cover page uses 100% waste paper reproduced from package papers of beverages, while its pages contains 80% of recycled papers.

**Category:**
- A5. Resource Consumption
- B3. Resource Saving
- B7. Usage of Recycled Material
- C4. Product Manufacture

**Products/Model :**
Campus notebook (made from recycled paper)

---

**Eco-products No.0148**

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Window Envelope</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Crystal Window”, glassine paper to be attached to window envelopes</strong></td>
<td></td>
</tr>
</tbody>
</table>

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

“Crystal Window” - this product has been developed in order to promote the recycling of window envelopes by providing them as they are to the recycling system. The material of window is glassine paper which is transparent and made from 100% pure pulp. Reading of a customer’s bar code printed on the content is possible through a glassine window.

**Category:**
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

**Products/Model :**
Crystal Window
### Eco-products No.0149

**OA Furniture**

#### Stationery file

#### Long-life office document file

**KING JIM CO., LTD.**

10-18, 2-chome, Higashi-Kanda, Chiyoda-ku, Tokyo, 101-0031 Japan  
Tel: 0120-79-8107  Fax:  
E-mail:  
URL: http://www.kingjim.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● B2. Longevity</td>
<td></td>
</tr>
<tr>
<td>● B7. Usage of Recycled Material</td>
<td></td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
</tbody>
</table>

**Recycled paper:** 100% recycled paper is used for the inner cover board and the spine paper.  
**Re-use:** The mechanism can be attached to the new file cover for re-use, while the old file cover can also be re-used by attaching the preservation mechanism for the storage purpose file.  
**Long life:** Long-term use is possible by replacing the spine paper and featuring the excellent durable file cover.  
**Olefin material:** Use the olefin material that does not emit hydrogen chloride gas.  
**Classified disposal:** Classified disposal is simple, since the mechanism can be removed from the file cover easily.

**Products/Model:**  
KING FILE SUPER DOTCH(attachable/removable)N

---

### Eco-products No.0150

**OA Furniture**

#### File

#### Eco-friendly office tube file <Eco Twin R>

**KOKUYO Co., Ltd.**  
6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan  
Tel: 06-6973-9202  Fax: 06-6973-9374  
E-mail:  
URL: http://www.kokuyo.co.jp

<table>
<thead>
<tr>
<th>Category:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● A4. Waste</td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>● B2. Longevity</td>
<td></td>
</tr>
<tr>
<td>● C3. Design and Material Selection</td>
<td></td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
</tbody>
</table>

This recyclable tube file allows the cover page to be replaced and the binding clip to be reused. The cover page is made with PP film eliminating emissions of toxic gases on incineration. It is an environmentally-friendly design and parts can be separated for disposal.

**Products/Model:**  
TUBE FILE<EKO-TWIN R>
### Eco-products No.0151

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Transparent holder with sliding rail</th>
</tr>
</thead>
</table>

#### Transparent document holder with cover page made from recycled resin

**Category:**
- A5. Resource Consumption
- B3. Resource Saving
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C4. Product Manufacture

**KOKUYO Co., Ltd.**
6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan
Tel: 06-6973-9202  Fax: 06-6973-9374
E-mail;
URL: http://www.kokuyo.co.jp

This product uses recycled PET resin which has high transparency. It is designed for bulky documents and can bind approximately 40 sheets of paper.

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### Eco-products No.0152

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Binding Lace</th>
</tr>
</thead>
</table>

#### Environmentally-friendly binding lace for government agencies/offices

**Category:**
- A5. Resource Consumption
- B1. Recyclability
- B6. Environmental Purification
- B7. Usage of Recycled Material
- C6. End-of-Life

**Mammoth Co., Ltd. Head Office**
2-1-10-163, Yanagibashi, Taito-ku, Tokyo, 111-0052 Japan
Tel: 03-5821-6411  Fax: 03-5821-6442
E-mail;
URL: http://www.mammoth-g.jp

This resource-saving product uses 100% recycled PET and does not discharge any harmful gas on incineration.
Eco-products No.0153

OA Furniture

General purpose resource-saving mechanical pencil

MITSUBISHI PENCIL Co., Ltd.
5-23-37, Higashiohi, Shinagawa-ku, Tokyo, 140-8537 Japan
Tel; 03-3458-6222  Fax; 03-3458-6217
E-mail; URL; http://www.mpuni.co.jp

This mechanical pencil is longer lasting since it can be used until only 3mm of lead remains. In addition, we make good use of resources by producing the tube and clip from recycled polycarbonate.

Category:
• B1. Recyclability
• B3. Resource Saving
• B7. Usage of Recycled Material
• C4. Product Manufacture
• C5. Product Use, Maintenance and Repair

Products/Model :
MECHANICAL PENCIL • M5-100Z

Eco-products No.0154

OA Furniture

Eco-friendly mechanical pencil for general use

Platinum Pen Co., Ltd.
2-5-10, Higashi Ueno, Taito-ku, Tokyo 110-8622, Japan
Tel; 03-3831-3412  Fax; 03-3835-7876
E-mail; URL;

This improved pencil can be used until only 0.5mm of lead remains (Previously, lead needed replaced at 12.4mm) In addition to extending its writing life by 20%, it minimizes waste of pencil lead, making more efficient use of resources. Recycled plastic is used for the barrel, making it environmentally-friendly.

Category:
• B1. Recyclability
• B2. Longevity
• B3. Resource Saving
• B7. Usage of Recycled Material
• C5. Product Use, Maintenance and Repair

Products/Model :
Zeroshin Glamour • mini/MGMQ-100
**Eco-products No.0155**

**OA Furniture** | Lead for mechanical pencil
---|---

**Resource-friendly mechanical-pencil lead for offices/schools with case & refill leads made from recycled materials**

**Tombow Pencil Co., Ltd.**
6-10-12, Toshima, Kita-ku, Tokyo, 114-8583 Japan
Tel; 03-3912-1181 Fax; 03-3912-1536
E-mail;
URL; http://www.tombow.com

Use of recycled materials helps to prevent global warming, reduces the environmental burden and makes more efficient use of resources.

**Category:**
- A3. Hazardous Substance
- A5. Resource Consumption
- B3. Resource Saving
- B7. Usage of Recycled Material
- C1. Material Extraction

![Image of recycled pencil leads](image1.png)

**Products/Model:**
Recycled Spare Leads • R5-REV/R5-REW

---

**Eco-products No.0156**

**OA Furniture** | Multi-functional Writing Instrument
---|---

**Multi-functional writing instrument combining mechanical pencil and dual ballpoint tip**

**ZEBRA Co., Ltd.**
2-9, Higashi-gokencho Shinjuku-ku Tokyo, 162-8562 Japan
Tel; 03-3268-1181 Fax; 03-3268-1590
E-mail; Info@zebra.co.jp
URL: http://www.zebra.co.jp

“SK-Sharbo Care +1” has been backing up PET (polyethylene terephthalate) resin recycling activities in positive manner by utilizing PET material recycled from waste PET bottles of soft drinks as its case. This durable pen endures a long-term usage by changing lead and cartridges, leading to the effective use of resource and the reduction of waste. Seeing whether hazardous chemical substances are included or not, the ink used in this pen complies with the European Standards EN71-3.

**Category:**
- A1. Global Warming
- A5. Resource Consumption
- B2. Longevity
- B7. Usage of Recycled Material
- C5. Product Use, Maintenance and Repair

![Image of multi-functional writing instrument](image2.png)

**Products/Model:**
SBCR1
### Eco-products No.0157

**OA Furniture**

<table>
<thead>
<tr>
<th>Washable marker</th>
</tr>
</thead>
</table>

**Long lasting, refillable highlighter for offices and schools**

**Tombow Pencil Co., Ltd.**

6-10-12, Toshima, Kita-ku, Tokyo, 114-8583 Japan  
Tel; 03-3912-1181  Fax; 03-3912-1536  
E-mail;  
URL; http://www.tombow.com

We help to reduce the environmental burden and help to prevent global warming by using resources effectively. The product reduces waste by using recycled materials.

Products/Model:  
Twin Highlighter • WA-TC

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### Eco-products No.0158

**OA Furniture**

<table>
<thead>
<tr>
<th>Pencil</th>
</tr>
</thead>
</table>

**General purpose resource-saving pencil**

**MITSUBISHI PENCIL Co., Ltd.**

5-23-37, Higashiohi, Shinagawa-ku, Tokyo, 140-8537 Japan  
Tel; 03-3458-6222  Fax; 03-3458-6217  
E-mail;  
URL; http://www.mpuni.co.jp

We process offcuts from lumber through the “joint method” which allows us to join offcuts together. Parts such as the burl are removed.  
By using lumber offcuts we make efficient use of leftover wood.

Products/Model:  
PENCIL • 9800EW(HB)
Eco-products No.0159
OA Furniture
Highlighter

Resource-saving highlighter for general use

MITSUBISHI PENCIL Co., Ltd.
5-23-37, Higashiohi, Shinagawa-ku, Tokyo, 140-8537 Japan
Tel; 03-3458-6222 Fax; 03-3458-6217
E-mail;
URL; http://www.mpuni.co.jp

Category:
- B1. Recyclability
- B3. Resource Saving
- B7. Usage of Recycled Material
- C4. Product Manufacture
- C5. Product Use, Maintenance and Repair

We make better use of resources by producing the body case and cap from recycled polypropylene and use recycled polyethylene for rear case each as a member.
The highlighter is easily refilled and ink refills are available in packs of three. The use of refills cuts down on waste.

Products/Model:
HIGH-LIGHTER • PUS-101T EWRRefill • PUSR-121

---

Eco-products No.0160
OA Furniture
Kraft adhesive tape

Neo 101RP : adhesive tape that does not need to be removed for carton recycling

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel; 03-3868-7713 Fax; 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL; http://www.lintec.co.jp

Category:
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

Neo 101RP Tape uses recycled kraft paper that has received the ECO mark.
The tape contains no plastic materials in the face stock and is coated with special adhesive and lamination agents.

Products/Model:
Neo 101RP
# Eco-products No.0161

<table>
<thead>
<tr>
<th>Category</th>
<th>Adhesive tape for office work</th>
</tr>
</thead>
</table>

**“Neo 105RP”, adhesive tape made from recycled paper**

<table>
<thead>
<tr>
<th>Company</th>
<th>Category:</th>
</tr>
</thead>
</table>
| LINTEC Corporation | ● A4. Waste  
|                  | ● B1. Recyclability  
|                  | ● B7. Usage of Recycled Material  
|                  | ● C3. Design and Material Selection  
|                  | ● C6. End-of-Life |

*Neo 105RP* adhesive tape is a Eco-Mark product made from the recycled paper that contains the used-paper pulp in the ratio of 50%. The tape is coated with the special adhesive agent and the release agent, and the face stock contain no plastics. It is not necessary to remove the tape when used envelopes are regenerated.

---

# Eco-products No.0162

<table>
<thead>
<tr>
<th>Category:</th>
<th>Kraft gummed tape</th>
</tr>
</thead>
</table>

**“RK-90”, kraft gummed tape for efficient recycling of package materials**

<table>
<thead>
<tr>
<th>Company</th>
<th>Category:</th>
</tr>
</thead>
</table>
| LINTEC Corporation | ● A4. Waste  
|                  | ● B1. Recyclability  
|                  | ● B7. Usage of Recycled Material  
|                  | ● C3. Design and Material Selection  
|                  | ● C6. End-of-Life |

Kraft gummed tape "RK-90" is used for light-weight packages and one of the ECO-mark product of our company. Forty per cent of its component is recycled-paper pulp. Kraft gummed tape is produced by coating a carefully selected kraft paper with a water-soluble adhesive. This gummed tape enable a cardboard box to be recycled without removing the tape from the box.

---

*Products/Model:*

- Neo105RP
- Kraft gummed tape RK-90
### Eco-products No.0163

**OA Furniture**

**Sticky note**

**Eco Mark labeled sticky note made of recycled paper**

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan

Tel: 03-3868-7713  Fax: 03-3868-7741

E-mail: ar-kumakura@post.lintec.co.jp

URL: http://www.lintec.co.jp

- Category:
  - A4. Waste
  - B3. Resource Saving
  - B7. Usage of Recycled Material
  - C1. Material Extraction
  - C3. Design and Material Selection

“Fit Mate 100% Recycled Paper series” acquired the Eco Mark and conformed to the Law on Promoting Green Purchasing, being made by processing 100% recycled paper so that it has self-bonding properties. Products of your own design are available. Basic colors are blue, pink, yellow, green, and white (brightness is set at 70% or less). Other twenty-one colors are available, which are lilac, peach, salmon, fresh color, orange, white brown, ivory, cream, deepen cream, pea green, holly green, jade green, pale yellow, light aqua, aerial tints, blue, silver gray, aqua, bright green, pale rose, and yellow. As for a Notebook type product that puts together different sticky notes, “Saisei 21” (containing 70% of used paper) is used as a cover.

**Products/Model:**

Fit Mate 100%-Recycled Paper Series

### Eco-products No.0164

**OA Furniture**

**Label material**

**Pressure-sensitive adhesive paper made with recycled paper**

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004 Japan

Tel: 03-3868-7713  Fax: 03-3868-7741

E-mail: ar-kumakura@post.lintec.co.jp

URL: http://www.lintec.co.jp

- Category:
  - A4. Waste
  - B1. Recyclability
  - B7. Usage of Recycled Material
  - C3. Design and Material Selection
  - C4. Product Manufacture

This pressure-sensitive adhesive paper uses recycled paper in its face material and release liner. Product without PE laminated release paper are also available.

**Products/Model:**

Pressure -sensitive adhesive paper made with recycled paper
### Eco-products No.0165

**Category:**
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

**LinTec Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

“Placon Label” is designed to be easily removed in the warm water that is usually used in the plastic-container cleaning-process. Of course, it sticks tightly to the surface of a container while the container is being used. “Placon Label” is applicable to polyethylene and polypropylene containers.

**Products/Model:**  
Placon Label

### Eco-products No.0166

**Category:**
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

**LinTec Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

Salient feature of this adhesive label-paper is to detach easily and neatly from the returnable bottles by treatment in a weak alkaline solution of above 70 ℃. This property contributes to the recycle of liquor and beer bottles through the improvement of efficiency in the washing process of bottles.

**Products/Model:**  
Returnable Label
Eco-products No.0167

**OA Furniture**

**Label Material**

### Water-soluble pressure-sensitive adhesive paper

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

**Category:**
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

Special water-soluble paper is used in this product. It is ideal for labeling receptacles that are washed and reused, such as containers and tubes.

Products/Model:
- Water-soluble pressure-sensitive adhesive paper

---

Eco-products No.0168

**OA Furniture**

**Label Material**

### Lintec Surround “Olefin film” series

**LINTEC Corporation**

2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel: 03-3868-7713  Fax: 03-3868-7741  
E-mail: ar-kumakura@post.lintec.co.jp  
URL: http://www.lintec.co.jp

**Category:**
- A2. Air Pollution
- A3. Hazardous Substance
- B6. Environmental Purification
- C3. Design and Material Selection
- C4. Product Manufacture

This product is a substitute of the polyvinyl chloride film that forms the substances that are harmful to the environment in the incineration step. By using an olefin film as the face material, it can be expected to decrease the generation of harmful substances.

Products/Model:
- Lintec Surround 「Olefin film」 series
**Eco-products No.0169**

**OA Furniture**

**Label Material**

**Pressure-sensitive adhesive paper made with recycled paper.**

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713  Fax: 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL; http://www.lintec.co.jp

This pressure-sensitive adhesive paper uses recycled paper in its face materials and release liners. Products without PE-laminated release-paper are also available. The surface, pressure-sensitive adhesive and release liners, all materials recycle be possible adhesive paper made with recycled paper.

**Category:**
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C4. Product Manufacture

**Products/Model:**
All materials recycle be possible adhesive paper made with recycled paper

---

**Eco-products No.0170**

**OA Furniture**

**Label Material**

**“Kinus series”, label sheets made from various plastics**

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713  Fax: 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL; http://www.lintec.co.jp

This makes it easy to recycle the products. For example, a formed polystyrene case with styrene labels can be recycled without moving the label. These labels are also used for recyclable plastic casing material. There are four types: KEE uses a polyethylene film as face material, KEP has a polypropylene film as face material, KES uses a polystyrene face material and KEA uses a acrylonitrile-butadiene- styrene film as face material.

**Category:**
- A2. Air Pollution
- B3. Resource Saving
- B6. Environmental Purification
- C3. Design and Material Selection
- C4. Product Manufacture

**Products/Model:**
Kinath series
Eco-products No.0171
OA Furniture | Label Material

**Label material utilizing 25% or more of recycled PET bottle for face materials**

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713  Fax; 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL; http://www.lintec.co.jp

Category:
- A4. Waste
- B1. Recyclability
- C3. Design and Material Selection
- C4. Product Manufacture

The Council for PET Bottle Recycling recognize this label. It includes 25% recycled PET for face materials. 1m² of 50μm film is equivalent to 2/5 of PET bottle(32g).

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Eco-products No.0172
OA Furniture | Labeling paper for confidential postcards

**“Ecolease system”, resources-saving and easy mailing method**

LINTEC Corporation
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004 Japan
Tel: 03-3868-7713  Fax; 03-3868-7741
E-mail; ar-kumakura@post.lintec.co.jp
URL; http://www.lintec.co.jp

Category:
- A4. Waste
- B1. Recyclability
- C3. Design and Material Selection
- C6. End-of-Life

"Ecolease System" is a mailing method of confidential postcards, the feature of which is to use a non-resticable heat-sealing type sticker to protect the private information printed on postcard. Labeler machine of the easy operation is applied to stick a sticker. The sticker is made from the recycled paper which contains used-paper pulp of 70%. Tore stickers are regenerated with postcards into recycled paper. "Ecolease System" meets contemporary needs by facilitating the reduction of communications cost and the rationalization of postal administrative tasks.

Products/Model:
The Ecolease System
**Eco-products No.0173**

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Correction tape</th>
</tr>
</thead>
</table>

**Correction tape that cuts cost and waste**

PLUS Corporation  
20-11, Otowa 1-Chome, Bunkyō-Ku, TOKYO, 112-0013 JAPAN  
Tel; 03-3942-1428 Fax; 03-3942-3085  
E-mail;  
URL; http://bungu.plus.co.jp  

| Category:  
| ● A4. Waste  
| ● B3. Resource Saving  
| ● B7. Usage of Recycled Material  
| ● C5. Product Use, Maintenance and Repair  
| ● C6. End-Of-Life |

This refillable product uses 100% recyclable resin for the refill, therefore cuts down on the amount of waste for disposal.  
Weight of disposal is approximately 3g—a quarter of that of previous conventional product. The refilling process is fast and simple.

**Eco-products No.0174**

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Correcting tool</th>
</tr>
</thead>
</table>

**W-400, Brush-type correcting fluid to minimize environmental impact**

Marujyu Kasei Co., Ltd.  
1748, Kamiseka, Ishikawa-cho, Kanzaki-gun, Hyogo 679-2303  
Tel; 0790-27-1300 Fax; 0790-27-1303  
E-mail; tactory@misonon.com  
URL; http://www.misonon.com  

| Category:  
| ● A4. Waste  
| ● B2. Longevity  
| ● B7. Usage of Recycled Material  
| ● C3. Design and Material Selection  
| ● C4. Product Manufacture |

This correction fluid uses 100% recycled polymer. The duty cycle of recycled resin is 85% of the total weight of the product. There are no harmful substances in the fluid or recycled resin. The waste fluid generated during on production is implemented with sludge removal, ph control etc, and is drained as treated water which is harmless to the environment.
### Eco-products No.0175

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Mousepad</th>
</tr>
</thead>
</table>

**Environmentally-friendly S-wood cypress mousepad**

**Shinwa Wood Industrial Co., Ltd.**
Suetyou 7-178-1, Kakamigahara-city, Gifu-prefecture, 509-0108 Japan  
Tel; 0583-84-8784 Fax; 0583-70-2859  
E-mail; LEJ5626@nifty.ne.jp  
URL; http://www.shinwa-m.com

This mousepad is made from wood waste (Japanese cypress) helping to support forest regeneration and prevention of global warming. Safe, non-toxic adhesives are used to minimize harmful VOCs and emission of dioxin/SOX when incinerated. Cared for properly, it should prove to be a long lasting product and the materials used are suitable for recycling.

Category:
- A1. Global Warming
- A2. Air Pollution
- A3. Hazardous Substance
- A4. Waste
- A5. Resource Consumption

![S-wood mousepad (a Japanese-cypress)](image)

### Eco-products No.0176

<table>
<thead>
<tr>
<th>OA Furniture</th>
<th>Wooden desk mat</th>
</tr>
</thead>
</table>

**Environmentally-friendly S-wood cypress desk mat**

**Shinwa Wood Industrial Co., Ltd.**
Suetyou 7-178-1, Kakamigahara-city, Gifu-prefecture, 509-0108 Japan  
Tel; 0583-84-8784 Fax; 0583-70-2859  
E-mail; LEJ5626@nifty.ne.jp  
URL; http://www.shinwa-m.com

Made from wood waste (Japanese cypress), this product contributes to forest regeneration and helps to prevent global warming. It features safe, non-toxic adhesives and eco polyurethane/natural paint which does not contain PRTR registered substances. This means harmful VOCs and the emission of dioxin/SOX can be minimized on incineration. Cared for properly, it has a long life and materials are suitable for recycling.

Category:
- A1. Global Warming
- A2. Air Pollution
- A3. Hazardous Substance
- A4. Waste
- A5. Resource Consumption

![S-wood my desk (a Japanese-cypress)](image)
### Eco-products No.0177

**OA Furniture**

**OA cleaner**

#### Office equipment cleaner using reproduced PE for its bottle

**KOKUYO Co., Ltd.**

6-1-1, Oimazato-Minami Higashinari-ku, Osaka, 537-8686 Japan  
Tel; 06-6973-9202 Fax; 06-6973-9374  
E-mail;  
URL: http://www.kokuyo.co.jp

- The product bottle uses 87% reproduced PE.  
- Bottles can be reused and recycled, contributing to resource-saving.  
- Clearer Cleaner refills, OA cleaner (for equipment/for Refill), EAS-CL-R25, are available.

![Product Image]

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C6. End-of-Life

---

### Eco-products No.0178

**OA Furniture**

**Diaper disposal bin**

#### Diaper disposal bin made from 100% recycled wood

**Combi With Corporation**

2-6-7, Motoasakusa, Taito-ku, Tokyo, 111-0041 Japan  
Tel; 03-5828-7631 Fax; 03-5828-7630  
E-mail; with.bcs@combi.co.jp  
URL: http://www.combiwith.co.jp

Wood parts feature only recycled wood and timbers from thinned woods. Toluene and xylene are not used in raw materials for adhesive, decorative paper or serigraph ink etc. Thanks to the design, the bin minimizes odors.

![Product Image]

**Category:**  
- A3. Hazardous Substance  
- B1. Recyclability  
- B3. Resource Saving  
- B7. Usage of Recycled Material  
- C3. Design and Material Selection

---

Products/Model :  
Angel NS Diaper Disposal Bin
Eco-products No.0179

OA Furniture

Folding chair with replaceable cushions for office

LION office products corporation
2-6-11 Higashinakano Nakano-ku Tokyo, 164-0003 Japan
Tel; 03-3369-1111 Fax; 03-3227-7810
E-mail; info@ml.lion-jimuki.co.jp
URL; http://www.lion-jimuki.co.jp

Category:
● A3. Hazardous Substance
● B1. Recyclability
● B2. Longevity
● C4. Product Manufacture
● C6. End-of-Life

Made of steel and chlorine-free resin. CFC and VOC is not used in manufacturing process. Wastewater is legally treated considering neighborhood environment. Cushions are replaceable to make the chair long-life.

Products/Model :
Folding chair No. 410SP

Eco-products No.0180

Apparel / Fabric Products

Winter Sports Jacket

Heavy work jacket using chemically recycled fiber

JICHODO Co., Ltd.
16-2, Tode, Shinichi-cho, Fukuyama-shi, Hiroshima, 729-3193 Japan
Tel; 0847-51-8111 Fax; 0847-51-8117
E-mail; honsyasoumuka@jichodo.co.jp
URL; http://www.jichodo.co.jp

Category:
● A5. Resource Consumption
● B1. Recyclability
● B7. Usage of Recycled Material
● C3. Design and Material Selection
● C6. End-of-Life

Over 60% of the outer materials of our products is made of recycled chemical fibers, which we manufacture using the same amount of energy consumption required for conventional polyester products. This means a more efficient use of resources.

Products/Model :
BLOUSON - 48140
Eco-products No.0181

Apparel / Fabric Products | Winter Trousers

Work trousers using chemically recycled fibers

JICHODO Co., Ltd.
16-2, Tode, Shinichi-cho, Fukuyama-shi, Hiroshima, 729-3193 Japan
Tel: 0847-51-8111 Fax: 0847-51-8117
E-mail: honsyasoumuka@jichodo.co.jp
URL: http://www.jichodo.co.jp

Category:
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

Over 60% of the outer materials of our products is made of recycled chemical fibers, which we manufacture using the same amount of energy consumption required for conventional polyester products. This means a more efficient use of resources.

Products/Model:
PANTS · 48141

Eco-products No.0182

Apparel / Fabric Products | Watch coat

Winter uniform using chemically recycled fiber

JICHODO Co., Ltd.
16-2, Tode, Shinichi-cho, Fukuyama-shi, Hiroshima, 729-3193 Japan
Tel: 0847-51-8111 Fax: 0847-51-8117
E-mail: honsya.soumuka@jichodo.co.jp
URL: http://www.jichodo.co.jp

Category:
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

Over 60% of the outer materials of our products is made of recycled chemical fibers, which we manufacture using the same amount of energy consumption required for conventional polyester products. This means a more efficient use of resources.

Products/Model:
COAT · 48143
### Eco-products No.0183

**Apparel / Fabric Products**

**Office uniform after reduction of oil resources use and waste**

<table>
<thead>
<tr>
<th>CHIKUMA &amp; Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-3-10, Awaji-cho, Chuo-ku, Osaka-shi, 541-0047 Japan</td>
</tr>
<tr>
<td>Tel: 06-6222-3289 Fax: 06-6222-3665</td>
</tr>
<tr>
<td>E-mail: o’<a href="mailto:alpha@chikuma.co.jp">alpha@chikuma.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.chikuma.co.jp">http://www.chikuma.co.jp</a></td>
</tr>
</tbody>
</table>

Category:

- A4. Waste
- A5. Resource Consumption
- B3. Resource Saving
- B7. Usage of Recycled Material
- C6. End-of-Life

This garment contains a minimum of 55% PET bottle-recycled polyester, which means it saves oil resources and puts used PET bottles to good use.

---

### Eco-products No.0184

**Apparel / Fabric Products**

**Office uniform that saves oil resources and reduces waste**

<table>
<thead>
<tr>
<th>CHIKUMA &amp; Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-3-10, Awaji-cho, Chuo-ku, Osaka-shi, 541-0047 Japan</td>
</tr>
<tr>
<td>Tel: 06-6222-3289 Fax: 06-6222-3665</td>
</tr>
<tr>
<td>E-mail: o’<a href="mailto:alpha@chikuma.co.jp">alpha@chikuma.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.chikuma.co.jp">http://www.chikuma.co.jp</a></td>
</tr>
</tbody>
</table>

Category:

- A4. Waste
- A5. Resource Consumption
- B3. Resource Saving
- B7. Usage of Recycled Material
- C6. End-of-Life

The cloth is made from material that incorporates at least 55% PET bottle-recycled polyester so it saves oil resources and makes use of discarded PET bottles.
### Eco-products No.0185

**Apparel / Fabric Products** | **Winter uniform**
---|---

**Office uniform that saves oil resources and reduces waste**

<table>
<thead>
<tr>
<th>CHIKUMA &amp; Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-3-10, Awaji-cho, Chuo-ku, Osaka-shi, 541-0047 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel: 06-6222-3289 Fax: 06-6222-3665</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>E-mail: o’<a href="mailto:alpha@chikuma.co.jp">alpha@chikuma.co.jp</a></td>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>URL: <a href="http://www.chikuma.co.jp">http://www.chikuma.co.jp</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

The clothing is made from material that uses a minimum of 55% PET bottle-recycled polyester. This means it doesn’t use oil resources and it reduces waste by using PET bottles.

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### Eco-products No.0186

**Apparel / Fabric Products** | **Blouse**
---|---

**Blouse made from recycled polyester manufactured in a closed-loop system**

<table>
<thead>
<tr>
<th>YAGI CORPORATION</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-80, Tonya-machi, Knanazawa-city, Ishikawa 920-8503 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel: 076-237-1124 Fax: 076-237-1275</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:abe@yagi.co.jp">abe@yagi.co.jp</a></td>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>URL: <a href="http://www.yagi.co.jp/">http://www.yagi.co.jp/</a></td>
<td>● B7. Usage of Recycled Material</td>
</tr>
<tr>
<td></td>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

Yagi Corporation manufactured the world’s first blouse made from recycled polyester created in a closed-loop recycling system, which can be repeatedly reused in the recycling system. Used polyester can be used to create high-purity polyester material, which is then used to manufacture recycled polyester fiber. The fiber has the same quality as original fiber and can be used again and again.
### Eco-products No.0187

**Apparel / Fabric Products**

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work gloves</strong></td>
</tr>
</tbody>
</table>

#### Environmentally-friendly gloves

**Fukutoku Corporation**  
2789-1, Senda, Sendacho. Fukuyama-city. Hiroshima 720-0013, Japan  
Tel: 084-955-0806  Fax: 084-955-5258  
E-mail: hosodan@tebukuroya.com  
URL: http://www.fukutoku.com

These work gloves are made of fiber recycled from PET bottles. Each pair of gloves is produced from two 500ml PET bottles.

#### Products/Model:
- Eco recycle Glove #220
- Eco recycle Glove(Non skid glove) #320

### Eco-products No.0188

**Apparel / Fabric Products**

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blackout Curtain</strong></td>
</tr>
</tbody>
</table>

#### Hyper Curtain, an intention for healthy designed with environmental preservation in mind.

**C-PRO Co., Ltd.**  
1405-3, Akishino-cho, Nara city, Nara 631-0811 Japan  
Tel: 0742-53-0050  Fax: 0742-53-8190  
E-mail: corp-info@cpro.jp  
URL: http://www.cpro.jp/

“Hyper Curtain” is a curtain material made of fibers impregnated with “Hyper Selan”, giving the material the capacity to clean air. The decomposition and reduction action of “Hyper Selan” can absorb and breakdown formaldehyde, normalizing the air in rooms where it is used. “Hyper Selan” can also absorb dust mites, mold, noxious substances, particles such as airborne bacteria, and odors in room air, decomposing and reducing these materials through the action of silver ions. “Hyper Curtain” material is made from 100% natural material, so it will not contribute to the industrial waste problem when discarded – another way in which “Hyper Curtain” material is friendly to the environment.

#### Products/Model:
- Hyper Curtain
### Eco-products No.0189

**Apparel / Fabric Products**  
**Category:** Bedclothes

**Hyper Mat, an intention for healthy designed with environmental preservation in mind.**

**C-PRO Co., Ltd.**  
1405-3, Akishino-cho, Nara city, Nara 631-0811 Japan  
Tel: 0742-53-0050  Fax: 0742-53-8190  
E-mail: corp-info@cpro.jp  
URL: http://www.cpro.jp/

“Hyper Mat” is a sleeping pad made of nonwoven cloth impregnated with “Hyper Selan”. In addition to deodorizing and antibacterial properties, “Hyper Mat” uses radiant heat to keep the bed warm and comfortable, eliminating the need for far infrared radiation electric blankets. “Hyper Mat” can keep you warm while protecting you from the hypersensitivity to electromagnetic waves that can occur with electric blanket use. This groundbreaking product keeps you cool and dry in the summer and warm and cozy in the winter.

**Products/Model:**  
Hyper Mat

### Eco-products No.0190

**Commodity / Outdoor Goods / Housing Kit**  
**Category:** Air-conditioning equipment

**Freon-free gas air-conditioning equipment / system**

**Toho Gas Co., Ltd.**  
18-19, Sakurada-cho, Atsuta-ku, Nagoya-shi, Aichi 456-8511, Japan  
Tel: 052-872-9252  Fax: 052-872-9257  
E-mail;  
URL: http://www.tohogas.co.jp/work/kankyо/

Gas absorbing water heater performs cooling through iteration of evaporation, absorption, regeneration and condensation, utilizing law of water sprinkling. The system adopts water for refrigerant, with no use of Freon, resulting in efficient protection of ozone layer.

**Category:**  
- A1. Global Warming
- A3. Hazardous Substance
- B4. Higher Quality
- B5. Energy Saving
- C6. End-of-Life

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
Environmentally friendly window film considering the emissions of CO₂ and energy saving

**LINTEC Corporation**
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 03-3868-7713  Fax: 03-3868-7741
E-mail: ar-kumakura@post.lintec.co.jp
URL: http://www.lintec.co.jp

When applied to glass surface, these transparent adhesive films reduce ultraviolet light transmission and also help to prevent pieces of glass flying through the air in the event of the glass breaking. Included in the line-up are various functional and decorative films for buildings and automotive applications.

Category:
- A1. Global Warming
- A5. Resource Consumption
- B3. Resource Saving
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Products/Model :
Lumicool

Residential solar power generation system with stylish design and performance

**Kyocera Corporation**
6, Takeda Tobadono-cho, Fushimi-ku, Kyoto, Japan 612-8501
Tel: 075-604-3500  Fax: 075-604-3501
E-mail: webmaster@kyocera.co.jp
URL: http://www.kyocera.co.jp

Kyocera’s newly developed solar power generating system “SAMURAI” achieved to effectively use energy while maintaining beauty in the appearance of the residence. To avoid detracting from residential stylish appearance, “SAMURAI” was designed with a sense of unity with the roof taken into consideration. As we all know, this product creates no environmental burden and contributes to preserve global environment as it converts solar light energy to electric energy.

Category:
- A1. Global Warming
- A5. Resource Consumption
- B3. Resource Saving
- B4. Higher Quality
- C5. Product Use, Maintenance and Repair

Products/Model :
SAMURAI SU58-02, SU43-02 東 洋一
### Eco-products No.0193

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Shampoo</th>
</tr>
</thead>
</table>

**Environment-burden-reduced product for naturalist with environment pollution feared**

**SHISEIDO CO., LTD.**  
7-5-5, Ginza, Chuo-ku, Tokyo 104-0061 Japan  
Tel; 03-3572-1111 Fax; 03-6218-5119  
E-mail: ataru.iwamoto@to.shiseido.co.jp  
URL; http://www.shiseido.co.jp

Shiseido is under research of the raw materials with small impact on environment and superb biodegradability. One such example is the development of AMT (acyl methyl taurine), the washing material with high biodegradability, which washes out the dirt of hair or skin and used for the shampoo or the facial wash. Evolving the above, we also have succeeded in the development of “taurine soap,” an ideal skin washing agent with high detergency, the flexibility of skin retained.

**Category:**  
- A4. Waste  
- B1. Recyclability  
- B4. Higher Quality  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
SUPER MILD SHAMPOO

### Eco-products No.0194

<table>
<thead>
<tr>
<th>Commodity / Outdoor Goods / Housing Kit</th>
<th>Room deodorizer</th>
</tr>
</thead>
</table>

**Environmentally-friendly room deodorizer for homes/retail premises**

**K+E+K ASSOCIATES Co., Ltd.**  
4-1-8-3F, Kaiden, Nagaokakyō-shi, Kyoto, 617-0826 Japan  
Tel; 075-957-0100 Fax; 075-957-0099  
E-mail; info@kek.co.jp  
URL; http://www.kek.co.jp

This environmentally-friendly product has strong deodorizing power. It can be safely used without any harmful effect to human health (including the elderly and children) and is safe for pets. It is biodegradable and the container does not release harmful substances even when incinerated.

**Category:**  
- B4. Higher Quality  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

**Products/Model:**  
DASH NO! • ns_d_01 ns_d_05
Eco-products No.0195

Commodity / Outdoor Goods / Housing Kit
Antibacterial hand soap

Eco-friendly antibacterial hand soap

SARAYA CO., LTD.
2-2-8 Yuzato, Higashisumiyoshi-ku, Osaka 546-0013 Japan
Tel; 06-6797-3111 Fax; 06-6797-2290
E-mail;
URL: http://www.saraya.com

This antibacterial hand soap poses little risk of pollution since it is highly biodegradable. It does not contain environmentally harmful ABS, LAS, synthetic higher pure alcohol or phosphate. It is supplied in a re-usable container and refill packs are available, leading to significant resource savings. The cost of waste treatment is also reduced compared with containers such as plastic. Eco-label certified product.

Category:
- A4. Waste
- A5. Resource Consumption
- B3. Resource Saving
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

Products/Model:
Shavonet F refill

Eco-products No.0196

Commodity / Outdoor Goods / Housing Kit
Dishwashing detergent

Eco-friendly household kitchen detergent

SARAYA CO., LTD.
2-2-8 Yuzato, Higashisumiyoshi-ku, Osaka 546-0013 Japan
Tel; 06-6797-3111 Fax; 06-6797-2290
E-mail;
URL: http://www.saraya.com

This eco-friendly kitchen detergent contains 100% hearts of palm and does not use ABS, LAS, synthetic higher pure alcohol, phosphate, flavoring or unnecessary coloring agents. It is more than 99% biodegradable so there is little risk of drainage pollution. It is kind to the skin and refill packs which can be used with the original container provide a significant resource saving. In addition, it reduces waste treatment energy compared with plastic containers. Eco-label certified product.

Category:
- A4. Waste
- A5. Resource Consumption
- B3. Resource Saving
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

Products/Model:
Yashinomi Detergent refill
Eco-products No.0197
Commodity / Outdoor Goods / Housing Kit | Spoon, fork, and glass

Environmental-friendly dishes designed for out-door leisure, EcoOne

ENTECE Co., Ltd.
375-1. Oseki, Tubame-si, Niigata 959-1287 Japan
Tel; 0256-63-3515  Fax; 0256-64-4530
E-mail; info@k-entec.co.jp
URL; http://www.k-entec.co.jp

- Category:
  - A1. Global Warming
  - A2. Air Pollution
  - A4. Waste
  - A5. Resource Consumption
  - B3. Resource Saving

Raw materials used for the dish are plants such as corns and potatoes, thereby efficiently reducing global warming influence. Also, the dish needs as low as approximately 4,000 calories when incinerated, causing no contamination of the air. The dish is biodegradable, being resolved by natural microorganism under the soil.

Products/Model :
Eco One

Eco-products No.0198
Commodity / Outdoor Goods / Housing Kit | Umbrella Stand

Umbrella-stand for offices, restaurants, shops and public facilities

Teramoto Corporation Ltd.
5-29 Itachibori 3-chome,Nishi-ku,Osaka-city,Osaka pref. 550-0012 Japan
Tel; 06-6541-3333  Fax; 06-6531-2323
E-mail; info@teramoto.co.jp
URL; http://www.teramoto.co.jp/

- Category:
  - A4. Waste
  - A5. Resource Consumption
  - B3. Resource Saving
  - B7. Usage of Recycled Material
  - C6. End-of-Life

This product uses recycled polypropylene generated by food processing plants (from the end materials of dessert containers). Each year, a single food-processing factory generates around 600-tons of this material. The umbrella stand is often used in government and municipal offices and in companies with an interest in environmental protection. It conforms to the requirements of the Law on Promoting Green Purchasing (Recycled resins account for at least 10% of total resin weight contained in a product.)

Products/Model :
UB-285-2
### Eco-products No.0199

**Commodity / Outdoor Goods / Housing Kit**

<table>
<thead>
<tr>
<th>Suntory TARUMONOGATARI</th>
</tr>
</thead>
<tbody>
<tr>
<td>“TARU-MONOGATARI” high-quality, long-life furniture</td>
</tr>
</tbody>
</table>

**Suntory Limited**
1-2-3, Motoakasaka, Tokyo 107-8430 Japan
Tel; 03-3470-5116 Fax; 03-3470-7994
E-mail; Seiei_Saitoh@suntory.co.jp
URL; http://www.suntory.co.jp/index.html

Barrels and casks made from oak trees of over 100-year-old are used for around 70 years as the cradle of whisky for aging being refilled with freshly distilled liquor several times. After finishing their duty, however, the retired containers of straight-grained oak wood had formerly been used wastefully as fuel. Through 20 years of study of trial and error, we had completed the techniques of recycling these laudable ones into furniture of high-quality and long-life. We utilize, of course, the chips of the material to make small articles such as stationery and even its sawdust turns into the glaze for tasteful ceramic ware. Through this special technique of recycling forest resource, we may say that the carbon sequestration in the wood would last almost permanently.

**Category:**
- A1. Global Warming
- A4. Waste
- B1. Recyclability
- B2. Longevity
- B3. Resource Saving

**Products/Model:**
SUNTORY “TARU-MONOGATARI”

---

### Eco-products No.0200

**Commodity / Outdoor Goods / Housing Kit**

<table>
<thead>
<tr>
<th>Natural clay pavement</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>INAX Corporation</th>
</tr>
</thead>
</table>

5-1, Koiehonmachi, Tokoname, Aichi 479-8585 Japan
Tel; Fax;
E-mail;
URL; http://inax.co.jp/

We have produced the natural clay pavement which hardly have environmental load due to the fuel energy consumption and CO₂ emission because of using materials with no oil energy. This pavement realizes energy-saving by 1/7 for cement and 1/3 for asphalt. This pavement is useful for resource-saving and carrying costs reduction because clay which is resources at hand can use effectively. This pavement material can be reused as recycled clay pavement materials because any cement and plastic are not included.

**Category:**
- A5. Resource Consumption
- B1. Recyclability
- B5. Energy Saving
- B7. Usage of Recycled Material
- C1. Material Extraction

**Products/Model:**
solidifying soil construction method
## Eco-products No.0201

**Commodity / Outdoor Goods / Housing Kit** | **Built-in Stove**
---|---

### Energy-saving inner-flame burner cooker with high heat efficiency

Rinnai Corporation  
2-26Fukuzumi-chou, Nakagawa-ku, Nagoya-shi, Aichi , 454-0802 Japan  
Tel; 052-361-8211 Fax; 052-361-8877  
E-mail; Livingstaff@hq.rinnai.co.jp  
URL; http://www.rinnai.co.jp/  

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A3. Hazardous Substance</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● C4. Product Manufacture</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

This inner-flame burner cooker achieves high heat efficiency, reducing CO₂ (greenhouse gas effect) by 11.9% in comparison with the conventional outer-flame burner model. The product also conforms to energy-saving laws, achieving an energy consumption efficiency ratio of 56.3%, which is higher than the standard target ratio of 55.6%.

Furthermore, the steel used has a lubricated film. The burner materials are coated with resin so pressing can be carried out without any oil, eliminating the degreasing process. As a result, the emission of toxic waste from cleaning liquid is eliminated, reducing environmental impact.

Products/Model :  
built-in cooker with grill RSK-N78W4GD10X-SV

## Eco-products No.0202

**Commodity / Outdoor Goods / Housing Kit** | **Gas Cooking Stove**
---|---

### Energy-saving household gas cooking stove

**Tokyo Gas Co., Ltd.**  
1-5-20 Kaigan, Minato, Tokyo 105-8527 Japan  
Tel; 03-5400-7671 Fax; 03-3432-5509  
E-mail; ichiro@tokyo-gas.co.jp  
URL; http://www.tokyo-gas.co.jp/  

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● A2. Air Pollution</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
</tbody>
</table>

Our company has extended its range of gas cooking stoves by introducing new models with high-efficiency internal-multiple-flame-port burners that control the size of the flame underneath a pot. The flames of the burners that rise inward produce excellent cooking results. It also offers other advantages such as easier cleaning and better control of low flame. In addition, the flame remains inward even when power is increased and heat does not extend to pan-handles, making them safer to use. Compared with our conventional gas stoves, the built-in stove reduces energy consumption by 11.9% and 13% for a counter top stove.

Products/Model :  
RN-M873PA
<table>
<thead>
<tr>
<th>Eco-products No.0203</th>
<th>Commodity / Outdoor Goods / Housing Kit</th>
<th>Gas stove</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Improvement of efficiency of gas stove for household</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tel; 06-6202-2221 Fax; E-mail; URL: <a href="http://www.osakagas.co.jp/index.htm">http://www.osakagas.co.jp/index.htm</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is a gas stove for household use with efficiency raised, proceeding on with a variety of technology developments such as artifice for burner configuration or optimization of footman height. The conventional 45% heat efficiency has been raised to 50%, decreasing energy consumption by roughly 10%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

<table>
<thead>
<tr>
<th>Eco-products No.0204</th>
<th>Commodity / Outdoor Goods / Housing Kit</th>
<th>Dishwasher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dishwasher: money-saving and water-saving</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTO Ltd.</td>
<td>1-1, Nakashima 2-chome, Kokurakita-ku, Kitakyushu-City, Fukuoka 802-8601, Japan</td>
<td>Category: ● B5. Energy Saving</td>
</tr>
<tr>
<td>Tel; 093-951-2707 Fax; 093-922-6789 E-mail; URL: <a href="http://www.toto.co.jp">http://www.toto.co.jp</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This dishwasher achieves a high-pressure jet with the minimum of water by reducing the nozzle size and installing a rolling ball. As a result, it provides saving in both water and gas, equivalent to 750 bathtubs of water a year and 77,000 yen a year in cost reduction, compared with handwashing.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Eco-products No.0205**

**Commodity / Outdoor Goods / Housing Kit**  |  **Home Water Purifier**
---|---

**“Torayvino” Home Water Purifier**

Toray Industries, Inc.
Toray Bldg., 2-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8666 Japan
Tel: 03-3245-5179 Fax: 03-3245-5459
E-mail: URL: http://www.toray.co.jp

Toray’s Torayvino® home water purifiers use the company’s hollow-fiber membrane and activating carbon technologies. Torayvino® purifiers offer excellent performance in eliminating chlorine, turbidity, red rust and other micro particles. The Torayvino® lineup includes cartridges capable of removing trihalomethane. Also available are the Super Luce® faucet-connection type where a liquid-crystal indicator provides a warning when the cartridge needs changed; the sink-top type; the undersink type; and the ionized alkaline water fountain. In this and other ways, Toray is making efforts to contribute to the creation of a safe and favorable water environment.

---

**Eco-products No.0206**

**Commodity / Outdoor Goods / Housing Kit**  |  **Energy-saving housing**
---|---

**Environmentally friendly, energy-saving housing**

Misawa Homes Co., Ltd.
2-4-5, Takaido Higashi, Suginami-ku, Tokyo, 168-8533 Japan
Tel: 03-3247-2104 Fax: 03-5370-7306
E-mail: kankyo@misawa.co.jp
URL: http://www.misawa.co.jp/

There is almost no heat loss from this home due to its adiathermancy and airtightness. This coupled with high-efficiency air-conditioning, ventilation, hot water supply and kitchen and lighting facilities means energy consumption is minimized. It is airy in summer but well insulated in winter and the energy needed is generated by a solar battery covering the entire roof.

When necessary, such as at night or in cloudy conditions, the home automatically uses power from the power company but conversely, any excess power produced can be sold to the power company - avoiding energy wastage. Equipment that uses “cheap night-time power” cuts down on cost and allows the householder to benefit from selling excess power.
**Eco-products No.0207**

<table>
<thead>
<tr>
<th>Commodity / Outdoor Goods / Housing Kit</th>
<th>Rechargeable Nickel-Metal Hydride Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nickel-Metal Hydride Battery: High-capacity, rechargeable, recyclable and eco-friendly</strong></td>
<td></td>
</tr>
</tbody>
</table>

SANYO Electric Co., Ltd. Component Group Mobile Energy Company  
222-1, Kaminaizenn, Sumoto City, Hyogo, 656-8555 Japan  
Tel: 0799-24-4111 Fax;  
E-mail;  
URL: http://www.sanyo.co.jp

This rechargeable nickel-metal hydride battery can be repeatedly used. By using it as an alternative to a single-use dry cell battery, refuse generation is reduced. In addition, there is a recycling system for nickel-metal hydride batteries that eliminates the waste of resources. Furthermore, environmental impact is reduced by the use of non-PVC materials in an armored tube.

Category:  
- A4. Waste  
- B1. Recyclability  
- B4. Higher Quality  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

![Battery Image]

Products/Model:  
Rechargeable Nickel-Metal Hydride Battery · HR-3UF

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**Eco-products No.0208**

<table>
<thead>
<tr>
<th>Commodity / Outdoor Goods / Housing Kit</th>
<th>Heat-exchange ventilation system for housing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heat exchange type ventilation system for indoor thermal-condition-oriented housing</strong></td>
<td></td>
</tr>
</tbody>
</table>

Misawa Homes Co., Ltd.  
2-4-5, Takaio Higashi, Suginami-ku, Tokyo, 168-8533 Japan  
Tel: 03-3247-2104 Fax: 03-5370-7306  
E-mail: kankyoa@misawa.co.jp  
URL: http://www.misawa.co.jp/

A central floor ventilation system ventilates every room with outdoor fresh air and disposes of stale air. Due to heat exchange between emitted air and outdoor air, the temperature of air from vents in each room is close to ambient temperature, resulting in greater comfort. The introduction of a total heat exchanger minimizes discomfort from both winter dryness and summer damp. Heating and cooling efficiency is improved through heat exchange, saving air-conditioning energy.

Category:  
- A1. Global Warming  
- A5. Resource Consumption  
- B4. Higher Quality  
- B5. Energy Saving  
- C4. Product Manufacture

![Ventilation System Image]

Products/Model:  
Floor type central ventilation system
Healthy Shizuka, Natural environmentally-friendly Material Products

Koyo Sangyo, Co., Ltd.
Ishikawa LK-Building 1-9-9, Kaji-cho, Chiyoda-ku, Tokyo, 101-0044 Japan
Tel: 03-3252-1706 Fax: 03-3252-1707
E-mail: shintani@koyoweb.com
URL: http://www.koyoweb.com/

Kaolian fruit is traditionally consumed but the plant stems are rarely used. Kaolian board is made from the stems, providing an eco-friendly natural material without using wood. Two-thirds of the wood used in Japan is imported from foreign countries and tropical rain forests occupying half of Honshu Island are further depleted every year. As a country, Japan imports and uses the most tropical timber in the world.

Category:
- A1. Global Warming
- A4. Waste
- A5. Resource Consumption
- B1. Recyclability
- B5. Energy Saving

Products/Model:
Healthy shizuka

Environmetnally-friendly Photovoltaic battery modules

Mitsubishi Electric Corporation
2-2-3 Marunouchi, Chiyoda-ku, Tokyo, 100-8310 JAPAN
Tel: 03-3218-9024 Fax: 03-3218-2465
E-mail: eqd.eco@hq.melco.co.jp

We began mass production of a photovoltaic battery module with lead-free solder ahead of our industry competitors. Approximately 864g of lead solder is used per house for a conventional photovoltaic battery module (*1). Our modules do not include any lead in the solder (*2). This product not only reduces possible environmental impact but also improves conversion efficiency as the basic function of photovoltaic battery.

*1: Per house (for 3kW system): assuming 24 modules
*2: Quantity of lead required for soldering joints

Category:
- A1. Global Warming
- A3. Hazardous Substance
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Products/Model:
Photovoltaic Module
Eco-products No.0211

Commodity / Outdoor Goods / Housing Kit: Elevator

Environmentally-friendly elevator without machine room for office/residential use

Mitsubishi Electric Corporation
2-2-3 Marunouchi, Chiyoda-ku, Tokyo, 100-8310 JAPAN
Tel: 03-3218-9024 Fax: 03-3218-2465
E-mail: eqd.eco@hq.melco.co.jp

The “ELEPAQ-i” elevator does not require a machine room, allowing rooms needed for existing elevators to be removed. The control panel and traction motor, which were previously installed in a machine room, have been downsized and can be installed in the space between the shaft wall and the elevator car. It has been downsized by 28% and uses 60% less power compared with our previous products (at 1983). ELEPAQ-i also reduces environmentally toxic substances by reducing the use of vinyl chloride (PVC) and by using water based paint which does not contain VOCs.

Products/Model:
Machine-Room-Free Elevator “ELEPAQ-i”

Eco-products No.0212

Commodity / Outdoor Goods / Housing Kit: Insulation Board

Energy-saving Insulation Board for Housing and Building

Toyo Tire & Rubber Co., Ltd.
17-18, Edobori 1-chome, Nishi-ku, Osaka-shi, Osaka, 550-8661 Japan
Tel: 06-6441-8801 Fax;
E-mail;
URL: http://www.toyo-rubber.co.jp/

The product has thermal conductivity about a half as steel heat insulators and the highest insulating performance of existing insulators. It is lightweight and good processability increase the efficiency of site work. The surface is laminated with polyethylene film, making the product highly moisture-proof and extremely effective in energy conservation (saved heating and cooling cost \rightarrow reduction of CO₂).

Products/Model:
Soffian Board SP-2
Eco-products No.0213

Commodity / Outdoor Goods / Housing Kit | Wiping Towel

Wiping towel for adult care: Wiping fine dirt from excrement

Unicharm Corporation
Keikyu 2nd Building, 25-23 Takanawa 3-chome, Minato-ku, Tokyo
Tel: 03-3449-3571 Fax: 03-3448-9335
E-mail;
URL: http://www.unicharm.co.jp

Traditionally, a non-woven cloth was discarded, but parts not used were collected in a sanitary manner and pulverized in a special way to form cotton fibers. This new process allows discarded non-woven cloth to be recycled. Fine dirt from excrement can be gently cleaning liquid wiped with this new product as being treated with towel. If it is used with a special, it may not be rinsed with water after use.

Category:
● A4. Waste
● B1. Recyclability
● B2. Longevity
● C3. Design and Material Selection
● C4. Product Manufacture

Products/Model :
Liferee wiping towel

Eco-products No.0214

Commodity / Outdoor Goods / Housing Kit | Disposable Diaper

Disposable Diaper: Biodegradable plastic package

Unicharm Corporation
Keikyu 2nd Building, 25-23 Takanawa 3-chome, Minato-ku, Tokyo
Tel: 03-3449-3571 Fax: 03-3448-9335
E-mail;
URL: http://www.unicharm.co.jp

We developed a disposable diaper for infants made from biodegradable plastic. Package that can be used like normal plastic but can be buried in soil and decomposes into carbon dioxide and water with soil microorganism after use. In addition, adding elastic functionality (about twice as stretchy as conventional products) to the diaper substantially reduced its cut loss during manufacture.

Category:
● A4. Waste
● A5. Resource Consumption
● B6. Environmental Purification
● C4. Product Manufacture
● C6. End-of-Life

Products/Model :
Moony
### Eco-products No.0215

**Commodity / Outdoor Goods / Housing Kit**

**Disposable diaper: Compact size for disposal**

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A4. Waste</td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

**Unicharm Corporation**

Keikyu 2nd Building, 25-23 Takanawa 3-chome, Minato-ku, Tokyo

Tel; 03-3449-3571 Fax; 03-3448-9335

E-mail; URL: http://www.unicharm.co.jp

Providing treatment tapes at each side of the diaper makes them more compact for disposal than traditional diapers, substantially reducing the amount of garbage from homes with infants. In addition, the introduction of LIME was found to reduce the amount of raw materials compared with an older product, reducing environmental impact.

![Disposable diaper](image1)

**Products/Model:**

Moony Man

---

### Eco-products No.0216

**Commodity / Outdoor Goods / Housing Kit**

**Aluminum composite insulating window with energy-saving and fire-proof functions**

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

**TOSTEM CORPORATION**

1-1, Ojima 2-chome, Koto-ku, Tokyo 136-8535 Japan

Tel; 03-3638-8187 Fax; 03-3638-8352

E-mail; URL: http://www.tostem.co.jp/

The product is a composite structure insulating window frame, which uses aluminum material (with durability and fireproof functions) for outside and resin material (with thermal insulation and ornamental design functions) for inside. The product contributes to energy saving by reducing air-conditioner's load at a residential house with a help of double glazed glass. When saved amount of energy is converted into carbonic acid gas, a high-insulation/airproof house using Symphony can reduce carbonic acid gas by approximately 960 kg a year per house in contrast to a conventional house. Thanks to these effects, increased carbonic acid gas by increased materials of the product (such as for sash, glass, and thermal insulation) can be offset within approximately 1.6 years, thus showing enough efficiency in terms of LCA standard. Furthermore, to improve its recyclability, the product has a simple disassemble structure where aluminum/resin materials are fixed with screws. The product is selected as one of the products with our own "Type II Eco-Label", based on our internal standard.

![Aluminum composite insulating window](image2)

**Products/Model:**

Symphony
Eco-products No.0217

**Commodity / Outdoor Goods / Housing Kit**

**Wooden deck**

**Out-door artificial-wooden deck considering long-term use and resource saving**

**TOSTEM CORPORATION**

1-1, Oijima 2-chome, Koto-ku, Tokyo 136-8535 Japan

Tel: 03-3638-8187  Fax: 03-3638-8352

E-mail;

URL: http://www.tostem.co.jp/

The product uses artificial wood produced by compounding wood flour into resin, thus realizing long life with higher weather-proof than conventional natural wood products as well as with less color fading or rotting. Compounded wood flour used for the product is wood waste produced at manufacturing process of various wood products, thereby rendering it resource saving product with effective exploitation of precious wood materials. The product is selected as one of the products with our own “Type II Eco-Label”, based on our internal standard.

**Products/Model :**

RecoStage

---

Eco-products No.0218

**Commodity / Outdoor Goods / Housing Kit**

**Heater/ Bath Water Heater**

**Energy-saving latent heat recovery-type heater for residential use**

**Tokyo Gas Co., Ltd.**

1-5-20 Kaigan, Minato, Tokyo 105-8527 Japan

Tel: 03-5400-7671  Fax: 03-3432-5509

E-mail; ichiro@tokyo-gas.co.jp

URL: http://www.tokyo-gas.co.jp/

Our company has developed a high-efficiency water heater system that recovers previously wasted latent heat contained in the exhaust’s water vapor. With this system, water heating efficiency is improved from about 80% (at most) to about 95%, and the efficiency of a unit used for room heating is also increased from about 80% to about 89%.

This system contributes to energy savings and to the reduction of green house gas emissions by cutting gas consumption by (up to) about 13%.

**Products/Model :**

IT4203ARSAW6CU
**Eco-products No.0219**

**Commodity / Outdoor Goods / Housing Kit**  |  **Bath Water Heater**

**Household energy-saving latent heat recovery-type heater**

**Tokyo Gas Co., Ltd.**

1-5-20 Kaigan, Minato, Tokyo 105-8527 Japan  
Tel: 03-5400-7671  Fax: 03-3432-5509  
E-mail: ichiro@tokyo-gas.co.jp  
URL: http://www.tokyo-gas.co.jp/

Our company has developed a high-efficiency water heater system that recovers previously wasted latent heat contained in the exhaust’s water vapor. With this system, water heating efficiency is improved from about 80% (at most) to about 95%. This system contributes to energy savings and to the reduction of green house gas emission by cutting down fuel gas consumption by (up to) about 13%.

![Image](image1)

**Products/Model:**  
TP-S824RFWA-RA

---

**Eco-products No.0220**

**Commodity / Outdoor Goods / Housing Kit**  |  **Electric Water Heater**

**Eco-friendly water heater for residential use**

**Tokyo Electric Power Company, Denso Corporation,**  
The Central Research Institute of Electric Power Industry (CRIEPI)  
1-3, Uchisaiwai-cho 1-chome, Chiyoda-ku, Tokyo, 100-8560 Japan  
Tel: 03-4216-1111  Fax: 03-4216-3479  
E-mail: EITOKU.YASUNORI@tepco.co.jp  
URL: http://www.tepco.co.jp

Eccute is a household water heater that offers dramatic energy savings on the use of hot water, which normally accounts for about a third of a household’s entire energy consumption. It generates hot water using atmospheric heat by means of a heat pump system and offers energy savings of around 30% compared with a conventional combustion type water heater together with a reduction in green house gas emission. The use of natural refrigerant CO₂ contributes to environmental conservation including the prevention of global warming.

![Image](image2)

**Products/Model:**  
CO₂ refrigerant heat pump water heater for residential use
### Eco-products No.0221

**Commodity / Outdoor Goods / Housing Kit**

**Gas water heater**

#### High efficiency household gas water heater

**Rinnai Corporation**

2-26 Fukuzumi-chou, Nakagawa-ku, Nagoya-shi, Aichi, 454-0802 Japan  
Tel: 052-361-8211 Fax: 052-361-8877  
E-mail: Livingstaff@hq.rinnai.co.jp  
URL: http://www.rinnai.co.jp/

This water heater has a sub-heat exchanger to recover latent heat, increasing heat efficiency from approximately 80% (existing models) to 95%. Accordingly, its gas consumption is reduced, decreasing CO₂ emission by 16%. The product is also environmentally friendly; the use of a ceramic burner helps to reduce NOx emission by half -- from 60 ppm to 30 ppm -- compared with conventional models.

**Category:**  
- A1. Global Warming  
- A2. Air Pollution  
- B5. Energy Saving  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

Products/Model:  
- RUX-K2400W, RUXC-K2400W  

### Eco-products No.0222

**Commodity / Outdoor Goods / Housing Kit**

**Bathroom system**

#### Energy-saving bathroom

**TOTO Ltd.**

1-1, Nakashima 2-chome, Kokurakita-ku, Kitakyushu-City, Fukuoka 802-8601, Japan  
Tel: 093-951-2707 Fax: 093-922-6789  
E-mail;  
URL: http://www.toto.co.jp

Wrapping the bathtub with double thermal insulation can keep the bath water warm, similar to the way a thermos retains the heat of drinks. This means another person can use the warm bath water for up to six hours, four times as long as existing products. This means bathwater does not need to be reheated, resulting in energy savings.

**Category:**  
- B5. Energy Saving
Resource/energy-saving conscious unit bathroom equipment for residential houses

**Eco-products No.0223**

**Commodity / Outdoor Goods / Housing Kit** | **Bathroom**
---|---

TOSTEM CORPORATION  
1-1, Ojima 2-chome, Koto-ku, Tokyo 136-8535 Japan  
Tel; 03-3638-8187  Fax; 03-3638-8352  
E-mail;  
URL: http://www.tostem.co.jp/

Category:  
- A1. Global Warming  
- B3. Resource Saving  
- B4. Higher Quality  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

This product contributes to water and energy saving; the bathroom saves 90 liters of water (approximately 20%) when its bathtub is full in contrast to conventional products, while providing same level of comfortable bathing time as a result of tests and studies based on human engineering. In addition, the product employs a wall panel which sandwiches insulating material and an insulating window, which realizes excellent thermal insulating effect, thus contributing to energy saving and comfort improvement. The product is selected as one of the products with our own "Type II Eco-Label", based on our internal standard.

**Eco-products No.0224**

**Commodity / Outdoor Goods / Housing Kit** | **Lavatory stool for bathroom**
---|---

**INAX Corporation**  
5-1, Koiehonmachi, Tokoname, Aichi 479-8585 Japan  
Tel;  
Fax;  
E-mail;  
URL: http://inax.co.jp/

Category:  

This stool features compact size and energy consumption reduction by 21 % and CO₂ emission reduction by 24 % compared to existing products. This stool can save water for 8 liters for cleaning solid waste and 6 liters for liquid waste (4.5 liters for men's liquid waste) are available, thereby realizing about 53% water-saving and about 46% energy-saving compared to existing products through the super energy-saving mode. Additionally, use of detergent is reduced by 72% at cleaning a toilet by pro-guard which features easier cleaning on the toilet surface. The way to hold on the toilet with welding is changed to screw method, so that it is easier to disassemble after discard. The stool is easier to be recycled because of the marking of plastic materials.
### Eco-products No.0225

**Commodity / Outdoor Goods / Housing Kit**  |  **Automatic faucet (generating-power type)**  
---|---

#### Water and electricity saving automatic faucet

**TOTO Ltd.**  
1-1, Nakashima 2-chome, Kokurakita-ku, Kitakyushu-City, Fukuoka 802-8601, Japan  
Tel; 093-951-2707  Fax; 093-922-6789  
E-mail;  
URL: http://www.toto.co.jp  

The automatic faucet is economical because it saves water thanks to its automatic spout and stop sensor. Installing hydroelectric power units within the faucet enables water energy to be used effectively and the mechanism saves electricity. In addition, an automatic faucet can be installed without electrical work.

---

### Eco-products No.0226

**Commodity / Outdoor Goods / Housing Kit**  |  **Closet stool**  
---|---

#### Closet stool featuring water, energy, and power savings

**TOTO Ltd.**  
1-1, Nakashima 2-chome, Kokurakita-ku, Kitakyushu-city, Fukuoka 802-8601, Japan  
Tel; 093-951-2707  Fax; 093-922-6789  
E-mail;  
URL: http://www.toto.co.jp  

This closet stool features “Tornado Cleaning,” which cleans the entire stool with jet water from a nozzle at the back of the stool. While high washing function is maintained, it achieves water savings of up to 49%. In addition, power use to heat the water to wash the hips is reduced to half that needed for existing technology thanks to the “Wonder Wave Cleaning” function which repeats strong and weak spouting more than 70 times a minute. It is an energy-saving design which features a ceramic heater with high-heat-efficiency for a flash water heater that warms water only when needed. Moreover, the electricity cost is more than halved compared with the existing products because the stool learns a life pattern only by a switch.  

Translation query: Do not follow the meaning of the last line of text.
### Eco-products No.0227

**Commodity / Outdoor Goods / Housing Kit**  
**Urinal**

**Sensor-attached urinal featuring water-saving and energy-saving**

<table>
<thead>
<tr>
<th>INAX Corporation</th>
<th>Category:</th>
</tr>
</thead>
</table>
| 5-1, Koiehonmachi, Tokoname, Aichi 479-8585 Japan  
Tel;  
Fax;  
E-mail;  
URL; http://inax.co.jp/ | ● B3. Resource Saving  
● B4. Higher Quality  
● B5. Energy Saving  
● C5. Product Use, Maintenance and Repair |

This sensor-attached urinal includes the power generation function that effectively converts spouting power into electrical energy. Accordingly, this urinal can operate with the energy from its power generation. Cleaning the urinals using 1 to 2 liters of water depending on the condition of use results in the effect about 70% water-saving compared to existing products.

Products/Model :
“Sensor urinal, AWU-506RAMP etc”

### Eco-products No.0228

**Commodity / Outdoor Goods / Housing Kit**  
**Shower head attachment**

**TOTO Ltd.**  
1-1, Nakashima 2-chome, Kokurakita-ku, Kitakyushu-City, Fukuoka 802-8601, Japan  
Tel; 093-951-2707  
Fax; 093-922-6789  
E-mail;  
URL; http://www.toto.co.jp

This shower allows you to start and stop the water flow by simply pushing the shower head button. This avoids continuous running of water while you are washing your hair etc, resulting in significant savings in water and gas. In addition, since a thermostatic faucet automatically adjusts the water temperature, it avoids the waste of water while you are waiting for the temperature to adjust.
## Eco-products No.0229
### Commodity / Outdoor Goods / Housing Kit
#### Faucet Fittings

### e Modern: Faucet designed with water saving in mind

<table>
<thead>
<tr>
<th>INAX Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1, Koiehonmachi, Tokoname, Aichi, 479-8585 Japan</td>
</tr>
<tr>
<td>Tel; Fax;</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL; <a href="http://inax.co.jp/">http://inax.co.jp/</a></td>
</tr>
</tbody>
</table>

This faucet is equipped with “Eco Dial”, which has newly developed water saving function to prevent water from running freely. All you have to do is to choose “eco mode” of “Eco Dial”, and you can save water up to 50%.

Products/Model :
e Modern faucet, LF-E340SC etc

---

## Eco-products No.0230
### Commodity / Outdoor Goods / Housing Kit
#### Faucet attachment

### Automatic faucet considering water and energy saving "Automage"

<table>
<thead>
<tr>
<th>INAX Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1, Koiehonmachi, Tokoname, Aichi 479-8585 Japan</td>
</tr>
<tr>
<td>Tel; Fax;</td>
</tr>
<tr>
<td>E-mail;</td>
</tr>
<tr>
<td>URL; <a href="http://inax.co.jp/">http://inax.co.jp/</a></td>
</tr>
</tbody>
</table>

This automatic faucet includes the self-power generation function that converts effectively spouting power into electrical energy, thereby operating with the energy from this self-power generation. Additionally, because of structure of tiny mist spouting, splashing of water around the faucet is less and you can wash your hands well with less water.

Products/Model :
Automatic faucet, AM-91K etc.
### Eco-products No.0231

**Category**

Building and Civil Engineering | Pipe

**Sewer pipe renovation method for sewers with high acid resistance**

**KAJIMA CORPORATION**

2-7, Motookasaka 1chome, Minato-ku, Tokyo, 107-8388 Japan  
Tel: 03-3404-3311  Fax: 03-3470-1444  
E-mail; URL: http://www.kajima.co.jp/

This renovation method is suitable for sewerage pipeline where the concrete pipe has been damaged due to sulfuric acid. The renovation pipe (RC and FRPM pipes are available) is resistant to acids, including sulfuric acid. The renovation pipe is structurally durable and can withstand high earth and water pressures, making it excellent for weakened existing sewer line. The renovation involves penetrate the RC or FRPM pipes inside the existing pipe through propulsion, effectively extending the life of the existing sewer.  

Furthermore, one step smaller size of internal flowing area or larger is secured even after the renovation.

**Category:**  
- B1. Recyclability  
- B2. Longevity  
- B4. Higher Quality  
- C3. Design and Material Selection  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
BUCKS Pipe

---

### Eco-products No.0232

**Category**

Building and Civil Engineering | Interlocking blocks

**Concrete pavement block incorporating over 50% refuse ash liquid slag**

**MATUYA INDUSTRY CORPORATION**

4-6, Koura-machi, Nagasaki, 850-0067 Japan  
Tel: 095-865-1522  Fax: 095-865-0441  
E-mail; matuya@d2.dion.ne.jp  
URL: http://www.d2.dion.ne.jp/~matuya/

This pavement block is produced with liquid slag from refuse incineration of mixed ash which reduces waste. After use it can be broken up and recycled as a raw material. It meets Environment Agency criteria for the the elution of heavy metals. It also meets environmental standards on carry-in, production and product transport and is an EcoMark-certified product.

**Category:**  
- A1. Global Warming  
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C6. End-of-Life

**Products/Model:**  
MT ECO INTERROCKING BLOCK
### Eco-products No.0233

**Building and Civil Engineering | Pavement Material**

**“NOaxter” Pavement block to help combat air pollution**

**MITSUBISHI MATERIALS CORPORATION**
19F Otemachi First Square West, 1-5-1, Otemachi, Chiyoda-ku, Tokyo, 100-8117 Japan
Tel: 03-5252-5331 Fax: 03-5252-5344
E-mail: noxer@mmc.co.jp
URL: http://www.mmc.co.jp/

“NOaxter” pavement blocks remove nitrogen oxides (NOx) from the air using the energy of ultraviolet radiation from sunlight. The clean-up system works as follows: The cement mortar layer on the surface of the blocks contains dispersed titanium dioxide powder, which causes a catalytic reaction when exposed to ultraviolet radiation.

This multifunctional product can be colored in a similar way to conventional interlocking blocks and concrete plates, and processed to make it permeable.

**Products/Model:**
NOaxter

---

### Eco-products No.0234

**Building and Civil Engineering | Continuous Subterranean Diaphragm Wall Members**

**Continuous subterranean diaphragm wall members for urban areas**

**Nippon Steel Corporation**
2-6-3 Otemachi Chiyodaku Tokyo, 100-8071 Japan
Tel: 03-3275-5144 Fax: 03-3275-5979
E-mail: kankyo@hq.nsc.co.jp
URL: http://www0.nsc.co.jp/kankyou/index.html

Nippon Steel's NS-BOX (continuous subterranean diaphragm wall members) for the walls of urban subterranean structures reduces the generation of waste soil by reducing wall thickness. It also shortens the construction period by eliminating the need for concrete reinforcing bars, reduces the space required at construction sites, and eases traffic congestion in urban areas.

**Category:**
- A4. Waste
- A5. Resource Consumption
- B5. Energy Saving
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair
Eco-products No.0235

Building and Civil Engineering  Wet pavement system

Sidewalk ‘Wet’ pavement system to counter heat island phenomenon

Obayashi Corporation, Technical Research Institute
640, Shimokiyoto 4-chome, Kiyose-shi Tokyo, 204-8558 Japan
Tel: 0424-95-1044  Fax: 0424-95-1260
E-mail: komiya.hidetaka@obayashi.co.jp
URL: http://www.obayashi.co.jp/

The ‘wet pavement’ system (water sprinkling road system), can reduce summer daytime temperature of road surfaces by approximately 25°C lower than asphalt pavement. The wet pavement surface reduces sunlight reflection, relieving both heat and glare. A dripping water supply pipe provides a continuous cooling effect even if fine weather continues for several days. Water quantity required is 5-6 m³/m for a typical fine day in summer.

Products/Model : Wet Pavement System (Uchimizu-Pave)

Eco-products No.0236

Building and Civil Engineering  Seismic Isolation Retrofit

Seismic Isolation Retrofit construction method to improve earthquake resistance of existing buildings

SHIMIZU CORPORATION
No.2-3, Shibaura 1-chome, Minato-ku, Tokyo 105-8007 JAPAN
Tel: 03-5441-1111  Fax: 03-5441-0358
E-mail: env@shimz.co.jp
URL: http://www.shimz.co.jp/

This technology involves the installation of a seismic isolator to improve a structure’s resistance to earthquakes and so extend its lifespan.

It makes a significant contribution to resource-savings associated with the replacement of buildings that might otherwise collapse during an earthquake. It also reduces the potential for waste generation since there is little chance of a retrofit building collapsing during a severe earthquake.

Products/Model : SHIMIZU SEISMIC ISOLATION RETROFIT
Eco-products No.0237

Building and Civil Engineering | Concrete Recycling Technology

**Recycling system that allows concrete to be continually re-used, cutting down on waste**

**SHIMIZU CORPORATION**
SEAVANS SOUTH, 1-2-3, Shibaura, Minato-ku, Tokyo 105-8007 JAPAN
Tel; 03-5441-1111 Fax; 03-5441-0358
E-mail; env@shimz.co.jp
URL; http://www.shimz.co.jp/

This technology re-uses recycled aggregate as concrete aggregate for construction, impalpable powder as raw material of cement or foundation improvement material or the like. It converts a lump of concrete into high quality recycled aggregate (gravel or sand) and impalpable powder (used mainly as a cement ingredient) once its suitability for recycling has been confirmed. Maintaining the quality of aggregate makes it possible to repeatedly re-use it for the same application. In addition, it is ensures 100% reutilization of a lump of concrete.

Category:
- A5. Resource Consumption
- B1. Recyclability
- B7. Usage of Recycled Material
- C4. Product Manufacture
- C6. End-of-Life

Products/Model :
Closed-Loop Concrete System

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Eco-products No.0238

Building and Civil Engineering | ECO Drainage

**Eco-friendly reformed asphalt drainage pavement for improved safety**

**Showa Shell Sekiyu K.K.**
Daiba Frontier Building 3-2, Daiba 2 chome Minatoku, Tokyo, 135-8074 Japan
Tel; 03-5531-5765 Fax; 03-5531-5769
E-mail;
URL; http://www.showa-shell.co.jp

The use of asphalt pavement with larger surface voids reduces the level of rainwater on the pavement surface, improving traffic safety. Another benefit, for residential areas, is its noise reduction capacity. In addition, ECO Drainage allows production of asphalt hot mixes at lower temperatures than competitors’ products and so contributes to the prevention of global warming. The pavement has a long life due to its high durability and this lowers its life cycle cost.

Category:
- A1. Global Warming
- B2. Longevity
- B6. Environmental Purification
- C4. Product Manufacture
- C5. Product Use, Maintenance and Repair

Products/Model :
Drainage ECO

319
### Eco-products No.0239

**Building and Civil Engineering**

**Eccacement for civil engineering /construction materials made from recycled ash**

**Taiheiyo Cement Corporation**  
St.Luke's Tower, 8-1, Akashi-cho, Chuo-ku, Tokyo 104-8518 Japan  
Tel; 03-6226-9088 Fax; 03-6226-9173  
E-mail; hirotaka_semba@taiheiyo-cement.co.jp  
URL; http://www.taiheiyo-cement.co.jp/

**Category:**  
- A3. Hazardous Substance  
- A4. Waste  
- B1. Recyclability  
- B6. Environmental Purification  
- C4. Product Manufacture

Municipal incineration ash is often sent to land-fill, raising concerns that its heavy metal content could cause environmental damage. Ecocement recycles this municipal incineration ash as a raw material. Harmful substances in the ash are broken down and detoxified and heavy metals are reclaimed for recycling. Ecocement reduces the amount of ash sent to land-fill, saves resources and makes a major contribution to recycling.

### Eco-products No.0240

**Building and Civil Engineering**

**Recycled Aggregate Concrete for Civil Engineering**

**Taisei Corporation**  
1-25-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo, 163-0606 Japan  
Tel; 03-3348-1111 Fax;  
E-mail;  
URL; http://www.taisei.co.jp/

**Category:**  
- A4. Waste  
- B1. Recyclability  
- C6. End-of-Life

In Japan, construction waste accounts for 20% of all industrial waste. In particular, concrete waste is expected to rapidly increase in the future. Most demolished concrete blocks are currently re-used as base road materials. It is now very important to develop new applications other than base road materials. In this development, recycled aggregate of good quality is collected from demolished concrete blocks following demolition and re-used as structural concrete. This recycled aggregate concrete offers the same quality as conventional aggregate concrete but promotes concrete recycling.
**Eco-products No.0241**

**Category**
- Building and Civil Engineering
- Concrete Bridge

**High-performance DUCTAL PC BRIDGE offering resource savings for Social Infrastructure**

**Taisei Corporation**
1-25-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo, 163-0606 Japan
Tel: 03-3348-1111 Fax:
E-mail; URL: http://www.taisei.co.jp/

**Category:**
- A1. Global Warming
- A5. Resource Consumption
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality

**DUCTAL** is a new material from concrete series and is five times stronger and 10 times more durable than conventional concrete. The application of DUCTAL to bridges reduces component thickness to a quarter of conventional thickness and cuts the weight by 75%. In addition, its durability gives it an expected lifespan of at least 100 years. Less volume of material is needed and it has a long life, so the environmental loads to can be substantially reduced. A trial calculation shows a 70% reduction of CO2 emissions.

**Eco-products No.0242**

**Category**
- Building and Civil Engineering
- Spray-on heat insulating material

**Ceramilit-e-eco: Non-Freon spray-on flame retardant heat insulating material using recycled product from foam polystyrene as an aggregate**

**Obayashi Corporation, Technical Research Institute**
640 4-chome, Shimokiyoto, Kiyose-shi, Tokyo 204-8558 Japan
Tel: 0424-95-0970 Fax: 0424-95-0908
E-mail; URL: http://www.obayashi.co.jp/

**Products/Model :**
- DUCTAL PC BRIDGE
- Ceramilit-e-eco, Ceramilit-e-ecoG

**In this construction method, we use spray-on heat insulating material on-site. It does not use Freon-gas, Freon-gas substitute or VOCs which cause ‘sick house’ syndrome. It also contributes to environmental conservation by using recycled products from fractured styrene foam waste as an aggregate for adding adiabaticity.**
# Eco-products No.0243

<table>
<thead>
<tr>
<th>Building and Civil Engineering</th>
<th>Brick</th>
</tr>
</thead>
</table>

## Recycled non-burned brick for local autonomous bodies and businesses etc.

**Tokyo Electric Power Environmental Engineering Co. Inc.**

6-14, 4-Chome, Shibaura, Minatoku, Tokyo, 108-8537 Japan  
Tel: 03-4511-7844 Fax: 03-3452-4617  
E-mail: kanzaki-hiroshi@mail.tee-kk.co.jp  
URL: http://www.tee-kk.co.jp

“Earthen Bricks” are non-burned bricks using recycled materials from the by-products and waste products discharged from businesses and local autonomies. Recycled material accounts for over 80% of the total ingredients. Furthermore CO₂ emission is reduced by about 40% with this product, compared with conventional burned bricks thanks to a new technology called “non-burned caking technology”, which enables densification and caking with air-drying. This product plays an important part in building a recycling-based society with zero emissions.

### Products/Model:

Earthen Bricks/ SS, SC

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# Eco-products No.0244

<table>
<thead>
<tr>
<th>Building and Civil Engineering</th>
<th>Road Material</th>
</tr>
</thead>
</table>

## Recyclable Road Material (for JH)

**Toyo Tire & Rubber Co., Ltd.**

17-18, Edobori 1-chome, Nishi-ku, Osaka-shi, Osaka, 550-8661 Japan  
Tel: 06-6441-8801 Fax;  
E-mail;  
URL: http://www.toyo-rubber.co.jp/  

Recycled polyethylene resin waste is used for road materials (medial strip) by the Japan Highway Public Corporation. It has been awarded the eco-mark certificate by the Japan Environment Association. About 2000 materials are produced per month. They are fully recycled.

### Products/Model:

TOYO ECO BLOCK TYPE A
### Eco-products No.0245

**Building and Civil Engineering**

**Collapsible Returnable Container**

**Environment-friendly returnable container used in factories, etc for transporting components**

<table>
<thead>
<tr>
<th>APPAX Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1228-69 Osashimacho, Ena-shi, Gifu, 509-7205 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel; 0573-26-3155 Fax; 0573-25-6132</td>
<td></td>
</tr>
<tr>
<td>E-mail; <a href="mailto:yoshikazu_yoshimura@appax.com">yoshikazu_yoshimura@appax.com</a></td>
<td></td>
</tr>
<tr>
<td>URL; <a href="http://www.appax.com">http://www.appax.com</a></td>
<td></td>
</tr>
</tbody>
</table>

Plastic chips discarded in our factories are recycled to make components. “Apacon” that is no longer in use by customers is crushed and restored to petroleum by means of waste plastic recycling equipment, and then, converted to electric power with a dynamo. Electric power generated that way is distributed and consumed in our factories (thermal recycle).

![APACON container](image)

**Products/Model:**

APACON

---

### Eco-products No.0246

**Building and Civil Engineering**

**Biodegradable material**

**Biodegradable foamed sheet used in packaging and wrapping**

<table>
<thead>
<tr>
<th>The Furukawa Electric Co., Ltd.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan</td>
<td>● A4. Waste</td>
</tr>
<tr>
<td>Tel; 03-3286-3467 Fax; 03-3286-3472</td>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:mr921931@mr.furukawa.co.jp">mr921931@mr.furukawa.co.jp</a></td>
<td>● C6. End-of-Life</td>
</tr>
<tr>
<td>URL; <a href="http://www.furukawa.co.jp">http://www.furukawa.co.jp</a></td>
<td></td>
</tr>
</tbody>
</table>

When these foamed sheets used in packaging and wrapping are disposed of in landfills, they are completely broken down by the action of microorganisms in approximately one year. We have developed an environment-friendly foaming process based on our proprietary technology.

![Biodegradable Resin Foam](image)

**Products/Model:**

Biodegradable Resin Foam • BIO ACE
### Eco-products No.0247

**Building and Civil Engineering** | **External wall with high-thermal insulation**
--- | ---

**Daiwa House Industry Co., Ltd.**
3-5, 3-chome, Umeda, kita-ku, Osaka, 530-8241 Japan
Tel: 06-6342-2111  Fax;  
E-mail;  
URL; http://www.daiwahouse.co.jp/

This wall is typically used for houses in Hokkaido and Northern Tohoku and includes rigid urethane foam as thermal insulation material. The urethane form is superior in thermal insulation compared with fiber thermal insulation such as glass wool. Moreover, there is no thermal insulation degradation because of low water absorption and humidity. High air tightness and thermal isolation is realized because the void is fully packed. This urethane foam is made by water foaming without using Freon, thereby helping to prevent ozone layer destruction.

**Category:**
- A1. Global Warming
- A3. Hazardous Substance
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

### Eco-products No.0248

**Building and Civil Engineering** | **Insulating panel for residential houses**
--- | ---

**TOSTEM CORPORATION**
1-1, Ojima 2-chome, Koto-ku, Tokyo 136-8535 Japan
Tel; 03-3638-8187  Fax; 03-3638-8352  
E-mail;  
URL: http://www.tostem.co.jp/

The insulating panel not only contributes to energy-saving through load reduction of air-conditioners at residential houses, but also promotes high durability of the houses through its earthquake-proof panel structure. Its insulation materials deploy "non-CFC forming polyurethane," which uses carbonic acid gas with ozone layer depletion coefficient 0 and global warming coefficient 1. In consideration of measures against sick house, the materials also use OSB (oriental stand board) with F four stars (F☆☆☆☆) grade which emits least formaldehyde. The product is selected as one of the products with our own "Type II Eco-Label", based on our internal standard.

**Category:**
- A1. Global Warming
- B2. Longevity
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

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*Products/Model : External house wall*

*Products/Model : Insulating panel for residential houses*
**Eco-products No.0249**

**Building and Civil Engineering**

**Woodchip-board [Artificial soil for re-vegetation with recycled woodchips]**

Obayashi Corporation
Tel: 03-5769-1322 Fax: 03-5769-1978
E-mail: hamai.kunihiko@obayashi.co.jp
URL: www.obayashi.co.jp

This product recycles woodchips from trees that have been cut down and abandoned after land formation. A grout coating ensures that the chips combine firmly, producing a woodchip board with outstanding durability. It has consecutive voids, providing an environment where plants can grow even in severe conditions such as acid soil or concrete walls.

Products/Model :
tip-board(500x500x30mm)

**Eco-products No.0250**

**Building and Civil Engineering**

**Building exterior paint invented with energy conservation in mind**

Nagashima Special Paint Co., Ltd.
2-1-5-8F Arakawa, Arakawa-ku, Tokyo, 116-8552 Japan
Tel: 03-5615-5411 Fax: 03-5615-5410
E-mail: kinou@nspg.co.jp
URL: http://www.nspg.co.jp/

Coating with “Miracool” reflects sunlight about 90%, which curb the rise of the temperature at building roof and wall. In addition, it drastically reduces heat quantity of transmission owing to its low coefficient of thermal conductivity and high long-wave emissivity. Because of these functions, “Miracool” can contribute to energy conservation by making building’s cooling load reduced. Not only for energy conservation of building itself, it can also be helpful for mitigating the heat island phenomenon, an extraordinary high temperature in the urban area as a whole, as it is able to control the absorption of solar energy. We can provide “Miracool way” for asphalt-paved road, other than the one for building.

Products/Model :
Miracool
<table>
<thead>
<tr>
<th>Eco-products No.0251</th>
<th>Exterior house wall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>House offering improved internal air quality</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Daiwa House Industry Co., Ltd.</strong></td>
<td></td>
</tr>
<tr>
<td>3-5, 3-chome, Umeda, Kita-ku, Osaka, 530-8241 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 06-6342-2111 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL; <a href="http://www.daiwhouse.co.jp/">http://www.daiwhouse.co.jp/</a></td>
<td></td>
</tr>
</tbody>
</table>

This house uses building materials and equipment that release the lowest levels of formaldehyde and VOCs. The materials used are of the highest quality and they do not use chemicals specified by the Ministry of Health, Labor and Welfare with respect to VOCs. Low emission and insect repellant material such as pine material or bamboo material is used for flooring material. In addition, there are chitosan cloth and Bincho charcoal cloth.

<table>
<thead>
<tr>
<th>Eco-products No.0252</th>
<th>My Roofer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solvent-free waterproof coating material that helps to control air pollution</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MITSUBISHI CHEMICAL FUNCTIONAL PRODUCTS, INC.</strong></td>
<td></td>
</tr>
<tr>
<td>8-2, Marunouchi 1-chome, Chiyoda-ku, Tokyo, 100-0005 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; Fax;</td>
<td></td>
</tr>
<tr>
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<tr>
<td>URL; <a href="http://www.yes-mks.co.jp">http://www.yes-mks.co.jp</a></td>
<td></td>
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</tbody>
</table>

This acryl emulsion waterproof coating material does not contain solvents or hydrocarbon compounds such as thinner, toluene, or xylene. It doesn’t use lead, cadmium, chrome or other toxic substances as pigment. It can be painted over an existing waterproof layer, and so reduces industrial waste. In addition, we have introduced returnable resin containers to reduce the number of discarded containers.
### Eco-products No.0253

**Building and Civil Engineering**  
**Non-flammable synthetic building material**

**VOC-absorbing MOISS interior building material**

Mitsubishi Materials Corporation  
19F WEST OFS, 1-5-1, OTEMACHI, CHIYODA-KU, TOKYO, 100-8117 JAPAN  
Tel: 03-5252-5331 Fax: 03-5252-5344  
E-mail: fukushi@mmc.co.jp  
URL: http://www.mmc.co.jp

MOISS is a non-flammable synthetic building material. Since it is porous and has a large surface area, it helps to absorb and stabilize harmful Volatile Organic Compounds (VOCs). Its surroundings benefit from its moisture controlling and deodorizing properties. Surplus material can be recycled as silicic acid fertilizer for plants.

**Category:**  
- A5. Resource Consumption  
- B1. Recyclability  
- B4. Higher Quality  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

### Eco-products No.0254

**Building and Civil Engineering**  
**Handrail**

**Handrail for construction made of wood waste and non-PVC plastics**

Nagase&Co., Ltd.  
5-1,Nihonbashi-kobunacho,Chuo-kuTokyo, 103-8355 JAPAN  
Tel: 03-3665-3231 Fax: 03-3665-3026  
E-mail: pwshop@ex-nagase.co.jp  
URL: http://www.nagase-direct.co.jp/pluswood/

Pluswood is a compound of wood flour and non-PVC plastic. The wood flour is produced by pulverizing unused wood waste and scrap wood, contributing to forest preservation and the reduction of waste. Since plastics used in the product are non-PVC and do not contain chlorine which may generate dioxins, it helps to prevent environmental pollution. Further, the handrail is highly recyclable with no strength deterioration even at 100% recycling so recycled parts can be re-used for the same product once again.

**Category:**  
- A5. Resource Consumption  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C1. Material Extraction  
- C6. End-of-Life

**Products/Model:**  
MOISS

**Products/Model:**  
Pluswood Handrail
### Eco-products No.0255

**Building and Civil Engineering**  |  Wooden interior materials

#### Eco-friendly S-wood interior-board

Shinwa Wood Industrial Co., Ltd.  
Suetyou 7-178-1, Kakamigahara-city, Gifu-prefecture, 509-0108 Japan  
Tel; 0583-84-8784  Fax; 0583-70-2859  
E-mail: LEJ5626@nifty.ne.jp  
URL: http://www.shinwa-m.com

Category:
- A1. Global Warming
- A2. Air Pollution
- A3. Hazardous Substance
- A4. Waste
- A5. Resource Consumption

This product uses wood waste (Japanese cypress) and therefore contributes to forest regeneration and helps to prevent global warming. It is made with safe, non-toxic adhesives and eco polyurethane/natural paint which does not contain PRTR registered substances. This helps to minimize harmful VOCs and the emission of dioxin/SOX on incineration. Cared for properly, it will give long term use and the materials are then suitable for recycling.

#### Products/Model:
S-wood interior-board (cypress or cedar)

### Eco-products No.0256

**Building and Civil Engineering**  |  High-tech Interior Wall Material

#### Selan Cloth, an intention for healthy designed with environmental preservation in mind.

C-PRO Co., Ltd.  
1405-3 , Akishino-cho , Nara city , Nara 631-0811 Japan  
Tel; 0742-53-0050  Fax; 0742-53-8190  
E-mail: corp-info@cpro.jp  
URL: http://www.cpro.jp/

Category:
- A1. Global Warming
- A4. Waste
- B4. Higher Quality
- B5. Energy Saving
- C4. Product Manufacture

“Selan Cloth” is a nonwoven wallpaper impregnated with “Keisou Stone”, a material consisting of diatom earth to which “Hyper Selan” has been added. The result is a material combining the absorbency of porous diatom earth with the decomposition and reduction functions of “Hyper Selan”. As a result, “Selan Cloth” can absorb and breakdown formaldehyde, normalizing the air in rooms where it is used. “Selan Cloth” can also absorb dust mites, mold, noxious substances, particles such as airborne bacteria, and odors in room air, decomposing and reducing these materials through the action of silver ions. “Selan Cloth” is made from 100% natural material, so it will not contribute to the industrial waste problem when discarded — another way in which “Selan Cloth” is friendly to the environment.
### Eco-products No.0257

**Building and Civil Engineering** | **High-tech Interior Wall Material**
---|---

#### Selan Tile, an intention for healthy material designed with environmental preservation in mind

**C-PRO Co., Ltd.**  
1405-3, Akishino-cho, Nara city, Nara 631-0811 Japan  
Tel: 0742-53-0050  Fax: 0742-53-8190  
E-mail: corp-info@cpro.jp  
URL: http://www.cpro.jp/

**Category:**  
- A4. Waste  
- B5. Energy Saving  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

“Selan Tile” is a fired tile consisting of “Hyper Selan” and clay and having outstanding water absorption properties. When used as flooring tile for bath and shower areas, this water absorption property helps prevent slipping, and, the material can absorb dust mites, mold, noxious substances, particles such as airborne bacteria, and odors in room air, decomposing and reducing these materials through the action of silver ions. “Selan Tile” is made from 100% natural material, so it will not contribute to the industrial waste problem when discarded – another way in which “Selan Tile” is friendly to the environment.

Products/Model:  
Selan Tile

### Eco-products No.0258

**Building and Civil Engineering** | **High-tech Interior Finish Material**
---|---

#### Keisou Stone, an interior finishing material designed with environmental preservation in mind

**C-PRO Co., Ltd.**  
1405-3, Akishino-cho, Nara city, Nara 631-0811 Japan  
Tel: 0742-53-0050  Fax: 0742-53-8190  
E-mail: corp-info@cpro.jp  
URL: http://www.cpro.jp/

**Category:**  
- A4. Waste  
- B5. Energy Saving  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair  
- C6. End-of-Life

“Keisou Stone” is a product made by adding “Hyper Selan” to diatom earth. The result is a material combining the absorbency of porous diatom earth with the decomposition and reduction capacity of “Hyper Selan”. As a result, “Keisou Stone” can absorb and breakdown formaldehyde, normalizing the air in rooms where it is used. Keisou Stone can also absorb dust mites, mold, noxious substances, particles such as airborne bacteria, and odors in room air, decomposing and reducing these materials through the action of silver ions. “Keisou Stone” is made from 100% natural material, so it will not contribute to the industrial waste problem when discarded – another way in which “Keisou Stone” is friendly to the environment.

Products/Model:  
Keisou Stone
### Eco-products No.0259

| Building and Civil Engineering | Green molding for rooftop |

**Growing substrate with recycled rock wool for rooftop use**

**Toda Corporation**  
5-34, Akasaka 8-Chome, Minato-Ku, Tokyo, 107-0052 JAPAN  
Tel: 03-5785-1541 Fax: 03-5785-1506  
E-mail: akihiro.miwatoda.co.jp  
URL: http://www.toda.co.jp

Waste rock wool, separated from the ceiling materials of scrap and repair by board separator, undergoes special processing to make it suitable for plant cultivation. It is then mixed with organic materials such as peat moss. The substrate for cultivation features: light specific gravity of 0.18 and high water retention performance of over 60%. The substrate consists of three phases - 6% of solid phase, 54% of vapor phase, and 40% of liquid phase. The substrate is lightweight and has high water retention capability, and high roothold ability because of the high ratio of vapor and liquid phases. Since we are using recycled materials, we examine the substrate performance (composition analysis and effluent analysis) of each product lot in order to maintain the performance and quality.

**Category:**  
- A1. Global Warming  
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C2. Material and Components Production

**Products/Model:**  
Roof tree planting culture medium

### Eco-products No.0260

| Building and Civil Engineering | Steel tube pile |

**Screw-penetrating steel-tube-pile for engineering with no surplus excavation soil generated**

**Sumitomo Metal Industries, Ltd.**  
1-8-11 Harumi cho-ku, Tokyo, 104-6111 Japan  
Tel: 03-4416-6111 Fax: 03-4416-6793  
E-mail: chikyu-kan@sumitomometals.co.jp  
URL: http://www.sumitomometals.co.jp

Since it penetrates in rotary fashion and generates no surplus excavation soil, the Geo Wing Pile is an environmentally-friendly foundation pile. Since it is easily withdrawn in reverse, it can be easily deployed and redeployed. The end of the Geo Wing Pile is a closed-off cone and it has three wings on the steel tube near the tip. Diameter can be freely defined within a range of 1.5 to 2.0 times the diameter of the steel tube. Geo Wing Pile is much faster than conventional rotary piles when aligning the center of the pile, and the three wings are designed to give improved penetration.

**Category:**  
- A4. Waste  
- B1. Recyclability  
- B4. Higher Quality  
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
Geo Wing Pile
Eco-products No.0261

Building and Civil Engineering

Perfect impermeable pile for waste-disposal facilities to prevent pollutant groundwater run-off

Sumitomo Metal Industries, Ltd.
1-8-11 Harumi chuo-ku, Tokyo, 104-6111 Japan
Tel; 03-4416-6111 Fax; 03-4416-6793
E-mail; chikyu-kan@sumitomometals.co.jp
URL; http://www.sumitomometals.co.jp

By welding the splice junction of the SM-J pile with its proprietary steel material, Sumitomo Metals has developed a lateral perfect impermeable method that may be used as a vertical wall, preventing the run-off of pollutants into groundwater in offshore and onshore waste disposal facilities, reducing soil pollution. When used in offshore land fills, double impermeability can be obtained by draining a box-shaped J pile and welding the junction. It is then easy to inspect and maintain the impermeability, and the box space can also be used to monitor water quality.

Category:
- A4. Waste
- B4. Higher Quality
- C5. Product Use, Maintenance and Repair

Products/Model :
SM-J Pile

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Eco-products No.0262

Building and Civil Engineering

Environmentally-friendly recyclable electric wire/cable that doesn’t contain halogen or heavy metal

Fujikura Ltd.
1-5-1 Kiba, Koto-ku, Tokyo 135-8512 Japan
Tel; 03-5606-1272 Fax; 03-5606-1549
E-mail; wwwadmin@fujikura.co.jp
URL; http://www.fujikura.co.jp/

- This product doesn’t generate dioxin, halogen gas or other toxic substances on incineration.
- It does not contain lead and so eliminates concern about the elution of heavy metal if disposed by landfill.
- It is recyclable and easy to recover separately from polyvinyl chloride using water because the specific gravity of its material is about 1.1 s.g., smaller than that of polyvinyl chloride (about 1.4 s.g).
- It uses polyolefin material, which can be dyed and is as flexible and as flame retardant as polyvinyl chloride.
- In the event of fire, it does not generate excessive smoke or toxic gases such as halogen.

Category:
- A3. Hazardous Substance
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- A4. Waste

Products/Model :
EM IE/F EM-CE/F etc
**Eco-products No.0263**

**Building and Civil Engineering**

**Underground Cable Duct**

**The underground cable duct made from recycled plastic**

The Furukawa Electric Co., Ltd.

6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan

Tel: 0463-24-8350  Fax: 0463-24-8347

E-mail: r-d@ho.furukawa.co.jp

URL: http://www.furukawa.co.jp

**Category:**

- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C1. Material Extraction
- C6. End-of-Life

This multiple-bore underground cable duct makes effective use of waste plastic. The product, "KOHTA KUN", has acquired the ECO mark.

"KOICHI KUN" duct is also excellent for the information box use.

**Products/Model:**

Underground Cable Duct Made of Cable Waste

"KOHTA KUN", "KOICHI KUN", Green Trapn

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**Eco-products No.0264**

**Machines and Equipments**

**X-ray Computed Tomography (CT)**

**Environmentally-friendly multi-slice helical CT scanner**

TOSHIBA MEDICAL SYSYEMES CORPORATION

1385, Shimoishigami, Otawara-Shi, Tochigi, 324-8550 Japan

Tel: 0287-26-6673  Fax: 0287-26-6053

E-mail: katsuyoshi.ishii@toshiba.co.jp

URL: http://www.toshiba-medical.co.jp/tmd/

**Category:**

- A4. Waste
- B3. Resource Saving
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

This device achieves a total resource saving of 50% due to the development of a new data acquisition unit, large volumetric and high-speed reconstructive equipment, and new image reconstruction. In addition, it has been developed using alternatives to cadmium and other materials that can damage the environment.

**Products/Model:**

CT Scanner Aquilion (TSX-101A)
**Eco-products No.0265**

**Machines and Equipments** | **Heat Pump Type Chiller**
---|---

**High efficiency heat pump type chiller using natural refrigerant**

**TOYO ENGINEERING WORKS**
1634, Shimoturuma, Yamato City, Kanagawa, 242-0001 Japan
Tel: 046-272-3053 Fax: 046-272-3967
E-mail: tew2050@toyo-ew.co.jp
URL: http://www.h.toyo-ew.co.jp/

This heat pump type chiller uses ammonia, a natural coolant that scores zero in both ozone-depleting potential (ODP) and global warming potential (GWP). It achieves high efficiency of 5.1/4.9 in COP (50/60Hz in operating period) and reduced CO₂ emission by means of ammonia refrigerant with high theoretical COP, a high efficiency compressor, and a water-spray type air heat exchanger that enhances the cooling effect.

**Category:**
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

Products/Model:
The efficient heat pump chiller of R717

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**Eco-products No.0266**

**Machines and Equipments** | **Bio-Diesel Fuel Plant**
---|---

**BDF Plant for Diesel Oil Alternative Fuel to fight Global Warming**

**Cosmo Engineering Co., Ltd.**
2-5-8 Higashi-shinagawa Shinagawa-ku, Tokyo, 140-0002 Japan
Tel: 03-5462-0150 Fax: 03-5462-0159
E-mail; http://www.cosmoeng.co.jp

Bio-diesel fuel is a diesel oil alternative fuel that uses esterified animal and plant oil for short chain alcohol. The fuel has received attention as a result of efforts to prevent global warming, because it reduces CO₂ emissions. In addition, its flue gas is cleaner than that of diesel oil, making it eco-friendly. This plant improves the production efficiency of bio-diesel fuel, using high-productivity palm oil as stock oil and a high-efficiency reactor.

**Category:**
- A1. Global Warming
- A2. Air Pollution
- A3. Hazardous Substance
- B5. Energy Saving
- B6. Environmental Purification
Eco-products No.0267
Machines and Equipments | Fuel Cell System

**Eco-friendly 850VA fuel cell system**

**Ebara Corporation**
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel; 03-5735-3029 Fax; 03-5735-3170
E-mail: yanagida.hiroyuki@ebara.com
URL; http://www.ebara.co.jp

FCBox is an 850VA (AC 100V) fuel cell system that uses pure hydrogen as fuel. The system emits only by-products of heat and water after power generation, so avoids environmental impact from substances such as CO₂, NOx and SOx. It is very useful for a variety of applications such as providing back-up power for information and communication systems, emergency power during disasters and mains power for construction and other types of work.

Products/Model : FCBox

Eco-products No.0268
Machines and Equipments | Fuel Cell Module

**DC 1200W fuel cell module**

**Ebara Corporation**
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel; 03-5735-3029 Fax; 03-5735-3170
E-mail: yanagida.hiroyuki@ebara.com
URL; http://www.ebara.co.jp

Nexa is a DC 1200W fuel cell module that uses pure hydrogen as fuel. The system emits by-products of only heat and water after power generation, avoiding environmental impact associated with substances such as CO₂, NOx and SOx. It can be incorporated into a variety of applications such as compact generators and small cars and used as generation parts.

Products/Model : Nexa
Eco-products No.0269
Machines and Equipments | Micro Gas Turbine

Eco-friendly Ebara Micro Gas Turbine TA100: Offers energy-savings and cost-savings

Ebara Corporation
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel: 03-5461-6111 Fax: 03-3745-0822
E-mail: ma-microgasturbine@ebara.co.jp
URL: http://www.ebara.co.jp

Category:
- A1. Global Warming
- A2. Air Pollution
- A4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

The Ebara Micro Gas Turbine TA100 is a co-generation system that produces 95kW electric power and 163 kW heat at the same time. Total efficiency exceeds 70% and which provides energy savings of around 16% while reducing CO₂ by 26% in comparison with conventional systems. It can be used for a variety of applications such as hot water supply, direct application of exhaust gas to drying and air conditioning with a combination of an exhaust gas absorption chiller/heater.

Products/Model:
Ebara Micro Gas Turbine TA100 Co-generation Package

---

Eco-products No.0270
Machines and Equipments | Home Fuel Cell System

Residential solid oxide fuel cell co-generation system: Reduction of CO₂

Ebara Corporation
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel: 03-5735-3029 Fax: 03-5735-3170
E-mail: yanagida.hiroyuki@ebara.com
URL: http://www.ebara.co.jp

Category:
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

This co-generation system uses hydrogen city gas and kerosene to generate power for a hot water supply and floor heating. It effectively uses energy from city gas to provide as electricity and heat (hot water). Since most of the energy from city gas can be effectively used at home as electricity and heat (hot water), this system reduces the environmental impact of substances such as CO₂, NOx and SOx, while achieving excellent energy conservation.

Products/Model:
Residential 1kW PEFC Cogeneration System
Eco-products No.0271

**Large wind generator: Wind energy converter, renewable energy**

**Ebara Corporation**
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel; 03-5735-3097 Fax; 03-5735-3167
E-mail; okazaki.hiroshi@ebara.com
URL; http://www.ebara.co.jp

A wind generator is a machine that rotates windmills with wind and generates electricity. Since the generator uses renewable energy (wind), it emits no hazardous chemical substances or CO2 from power generation, and allows construction of power stations with less environmental impact.

Three blades with a diameter of 50 to 70m rotate a shaft with wind force. This shaft is connected to the generator and its rotation generates electricity. Electricity generated is supplied to local electric power companies.

**Products/Model :**
Wind turbine / EPW1570

---

Eco-products No.0272

**“JFE woody biomass gasification system”, distributed power generation plant**

**JFE Engineering Corporation**
1-1-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
Tel; 03-3217-3912 Fax; 03-3214-9650
E-mail;
URL; http://www.jfe-eng.co.jp/

Sending hot air into the upper layer of an incinerator effectively can create and maintain a stable flame just above the garbage layer and obtain ideal combustion with less CO2 even in the case of low excess air combustion, coming off a significant reduction in the amount of exhaust gas. By combining an incinerator and ash handling system, energy efficiency is improved by exploiting the heat of ash and recovering waste heat generated in an ash-handling furnace. Incinerated ash is molded to slag that can be used for base course material and aggregate.
**Eco-products No.0273**

**Machines and Equipments** | **NAS battery energy storage system with large-scale energy storage**
---|---

**NGK Insulators, Ltd.**
2-56 Suda-cho, Mizuho, Nagoya, 467-8530 Japan
Tel: 052-872-7181  Fax: 052-872-7690
E-mail: pr-office@ngk.co.jp
URL: http://www.ngk.co.jp/

The NAS battery energy storage system is charged with energy at night, when fossil fuel ratio is low, and discharges electricity during the day. It produces no atmospheric pollutants such as NOx, SOx, or particulate matter, so it is a clean energy storage system compared with self-generation from sources such as diesel generators. Because it uses night time power, which costs less, it helps to reduce electricity costs in factories, office buildings, waterworks and sewage facilities, hospitals and universities etc. The system is also suitable for use as an emergency power supply.

**Category:**
- A1. Global Warming
- A2. Air Pollution
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

**Products/Model:**
NAS Battery (Sodium Sulfur Battery) Energy Storage System

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**Eco-products No.0274**

**Machines and Equipments** | **Photovoltaic Module**
---|---

**SHARP CORPORATION**
22-22, Nagaika-cho, Abeno-ku, Osaka, 545-8522 Japan
Tel: 06-6621-1221  Fax: 06-6628-1653
E-mail;
URL: http://www.sharp.co.jp

*High performance* This module realizes the world’s highest conversion efficiency for multi-crystalline (14.8%) by reducing reflection on the surface, resistance loss of module, and minimizing electrode.

*Space-saving* Achieves output of about 8% more than our major photovoltaic module when occupying the same area. Therefore space for installation can be reduced by 8% with no loss in output. This means modules can be designed to meet customer requirements where limited roof space is available.

**Category:**
- B1. Recyclability
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving

**Products/Model:**
Photovoltaic Module NE-142AN
### Eco-products No.0275

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Photovoltaic Module</th>
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**Photovoltaic module using textured glass**

**Category:**
- B1. Recyclability
- B2. Longevity
- B3. Resource Saving
- B4. Higher Quality
- B5. Energy Saving

**SHARP CORPORATION**  
22-22, Nagaïke-cho, Abeno-ku, Osaka, 545-8522 Japan  
Tel; 06-6621-1221 Fax; 06-6628-1653  
E-mail;  
URL; http://www.sharp.co.jp

<High performance> Sunlight reflection is reduced by a pyramidal structure (convexo concave) on the surface of the glass. This contributes to dramatically reduced glare for neighbors and improves the surface appearance.  

<Space-saving>  
This module increases output by about 3.3% compared with our conventional module ND-150AM, thanks to improvements such as the use of textured glass that efficiently takes in incident light.

**Products/Model:**  
Photovoltaic Module ND-155AN

### Eco-products No.0276

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Cogeneration System</th>
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**Energy-saving Industrial Cogeneration System**

**THE JAPAN STEEL WORKS, LTD.**  
1-2, Yurakucho 1-chome, Chiyoda-ku, Tokyo, 100-8456 Japan  
Tel; 03-3501-6111 Fax; 03-3504-0727  
E-mail;  
URL; http://www.jsw.co.jp

This cogeneration system combines a micro gas turbine generator with a freezer containing hydrogen-absorbing alloy. The freezer operates and achieves refrigerating output by means of 280℃ exhaust heat from the generator and 80℃ hot water (80 degrees C) is obtained by means of 150℃ exhaust heat discharged from the freezer. The system offers total energy efficiency of about 60%. Furthermore, the freezer does not contain Chlorofluorocarbon that contributes to ozone layer destruction.

**Category:**
- A1. Global Warming
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

**Products/Model:**  
J-MICRO
**Eco-products No.0277**

**Machines and Equipments**

**Ecological Marine Propulsion UEC Eco-Engine**

Mitsubishi Heavy Industries, Ltd.
16-5 Konan 2-chome, Minato-ku, Tokyo 108-8215 Japan
Tel; 03-6716-3951 Fax; 03-6716-5779
E-mail; san-ene-catalog-senyo@mhi.co.jp
URL; http://www.mhi.co.jp

UEC Eco-Engine is an engine for 21st century, with further improved environmental performance. For example, it reduces NOx emission by 15% and smoke emission also, keep the advantages of conventional UEC engines. Electronic control of fuel injection, exhaust valve, starting and cylinder lubricating systems substantially improves operational cost by reducing fuel oil and cylinder lubricating oil consumption. It also realizes higher reliability.

**Category:**
- A1. Global Warming
- B2. Longevity
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

**Products/Model:**
UEC Eco-Engine

---

**Eco-products No.0278**

**Machines and Equipments**

**Ecological High Performance Gas Engine MACH-30G**

Mitsubishi Heavy Industries, Ltd.
16-5 Konan 2-chome, Minato-ku, Tokyo 108-8215 Japan
Tel; 03-6716-3951 Fax; 03-6716-5779
E-mail; san-ene-catalog-senyo@mhi.co.jp
URL; http://www.mhi.co.jp

We have achieved an efficiency of 45.7%=NOx level of 320ppm as O2=0% that is unsurpassed in gas engines. We have also achieved an efficiency of 46.4% (Power factor=1,without engine driven pump) with miller cycle system. MACH-30G maintains high level of efficiency even in low load operation and is much less affected by atmospheric temperatures than gas turbines. This makes it possible to achieve greater advantage in actual operations and maintenance in comparison with gas turbines, including a gas turbine of similer output. MACH-30G can be one of the best solution for your gas-fuel power generation.

**Category:**
- A1. Global Warming
- A2. Air Pollution
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

**Products/Model:**
MACH-30G Gas Engine
Eco-products No.0279

Machines and Equipments | Diesel Engine
---|---

**Ecological Diesel Engine MARK-30B**

Mitsubishi Heavy Industries, Ltd.
16-5 Konan 2-chome, Minato-ku, Tokyo 108-8215 Japan
Tel: 03-6716-3951 Fax: 03-6716-5779
E-mail: san-ene-catalog-senyo@mhi.co.jp
URL: http://www.mhi.co.jp

We have achieved an efficiency of 47.0% NOx level of less than 950ppm at O2=13%, unsurpassed in diesel engines. Increased maximum pressure and fuel injection pressure of around 25%, optimization of the combustion cycle and improvement of intake exhaust efficiency provide the highest level efficiency in the world. High fuel injection pressure provides a low-smoke performance. (Less than Bosch 0.1).

Category:
● A1. Global Warming
● A2. Air Pollution
● B4. Higher Quality
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

Products/Model:
MACH-30B  Diesel Engine

---

Eco-products No.0280

Machines and Equipments | Incinerator
---|---

**“Hyper-21 Stoker System” Recycling-based incinerator for municipal waste treatment businesses**

JFE Engineering Corporation
1-1-2,Marunouchi,Chiyoda-ku,Tokyo 100-0005 ,Japan
Tel: 03-3217-3912 Fax: 03-3214-9650
E-mail;
URL: http://www.jfe-eng.co.jp/

“Hyper-21 Stoker System” increases power generation efficiency by 30%, (almost twice that of conventional generation system with combustion boiler.) It also achieves around 85% in the overall energy utilization rate by providing neighboring residences with heat generated during incineration.

Category:
● A1. Global Warming
● A3. Hazardous Substance
● A4. Wast
● B1. Recyclability
● B4. Higher Quality
Scrap lumber carbonization system aimed at businesses generating wood waste

JFE Engineering Corporation
1-1-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
Tel: 03-3217-3912 Fax: 03-3214-9650
E-mail;
URL: http://www.jfe-eng.co.jp/

This system allows wood waste such as construction and demolition wood waste and separated bulky waste, to be reprocessed as carbide for reuse. Reprocessed carbide has a wide range of possible applications such as an alternative material to pulverized coal, fuel, or as an alternative absorbent to activated carbon. It is possible to manufacture versatile carbide with consistent quality because the carbonizing temperature can be set arbitrarily within a certain range. The emission of dioxin and toxic gases is very limited as carbonization gas is burnt at a high temperature.

“JFE Gas Clean DX” Dioxin Removal Equipment to reduce the environmental burden

JFE Engineering Corporation
1-1-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
Tel: 03-3217-3912 Fax: 03-3214-9650
E-mail;
URL: http://www.jfe-eng.co.jp/

“JFE Gas Clean DX” uses an activated carbon layer formed by particulate activated carbon with a high absorption capacity. When exhaust dioxin gas passes through this layer, the dioxin is absorbed by the particulate activated carbon. This method makes it possible to obtain dioxin concentration under 0.01ng-TEQ/ m³ and mercury concentration of 10 μg/ m³, that is not possible with the activated carbon spray method. By using a unique cartridge structure, exposure efficiency is improved, substantially reducing activated carbon. The space required to install this equipment is less than 1/5 of that for moving activated absorption equipment in the class.
### Eco-products No.0283

**Mobile construction crusher for recycling and reutilization of waste**

**Komatsu Ltd.**

2-3-6, Akatsuka, Minato-ku, Tokyo, 107-8414 Japan  
Tel: 03-5561-2646 Fax: 03-3582-8332  
E-mail: kankyō@komatsu.co.jp  
URL: http://www.komatsu.com/

Category:  
- A4. Waste  
- B1. Recyclability  
- C6. End-of-Life

This machine is used for field recycling and allows 'by-products' from a construction site to be processed on-site for recycling. The machine crushes natural stones and concrete blocks following demolition of concrete structures so that they can be re-used as crushed stones. Equipped with an impact crusher which crushes stones and concrete blocks by impact, BR480RG efficiently produces high-quality building materials.

**Products/Model:**  
Mobile Crushers BR480RG

### Eco-products No.0284

**Mobile Tub Grinders for land development/dam construction with high recyclability**

**Komatsu Ltd.**

2-3-6, Akasaka, Minato-ku, Tokyo, 107-8414 Japan  
Tel: 03-5561-2646 Fax: 03-3582-8332  
E-mail: kankyō@komatsu.co.jp  
URL: http://www.komatsu.com/

Category:  
- A4. Waste  
- B1. Recyclability  
- C6. End-of-Life

This machine is used in land development/dam construction works to turn felled trees into wood chips on-site. It is equipped with a belt conveyor-type hopper making it suitable for crushing large trees.

**Products/Model:**  
Mobile Wood Tub Grinders BR130M
### Eco-products No.0285

**Machines and Equipments**

**Steam Turbine**

**Steam turbine for power generation from waste incineration**

**Sumitomo Heavy Industries, Ltd.**

5-9-11, Kitashinagawa, Shinagawa-ku, Tokyo 141-8686, Japan  
Tel; 03-5488-8081  Fax; 03-5488-8085  
E-mail;  
URL; http://www.shi.co.jp/

- **Category:**  
  - A1. Global Warming  
  - A4. Waste  
  - C1. Material Extraction  
  - B5. Energy Saving  
  - B7. Usage of Recycled Material

This steam turbine is used for generating electric power from waste incineration. In the field of biomass power generation, our company has experiences of using steam turbines in power generation plants that exploited bagass (sugar cane trash) and study the possible utilization of straw, chaff, wood chip. The steam turbine is also used in cogeneration plants due to its high efficiency to effectively utilize extra steam and low-pressure steam.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-products No.0286

**Machines and Equipments**

**Crusher**

**Mobile Crusher for recycling construction waste**

**Sumitomo Heavy Industries, Ltd.**

5-9-11, Kitashinagawa, Shinagawa-ku, Tokyo 141-8686, Japan  
Tel; 03-5488-8081  Fax; 03-5488-8086  
E-mail;  
URL; http://www.shi.co.jp/

- **Category:**  
  - A4. Waste  
  - B1. Recyclability  
  - B7. Usage of Recycled Material  
  - C1. Material Extraction  
  - C6. End-of-Life

This mobile crusher recycles constructive material waste (concrete and asphalt rubble), being in accordance with the Construction Material Recycling Act. Crushed rockbles are reused as backfill of roadbed, which is well suited to the recycling-oriented society. Additionally, taking the environment of surrounding area into consideration, this crusher employed the roll crush method to diminish vibration, noise, and powder dust.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
**Eco-products No.0287**

**Machines and Equipments**

**Mobile dioxin detoxification plant**

Penta-Ocean Construction Co., Ltd.
2-2-8, Kouraku, Bunkyo-ku, Tokyo 112-8576, Japan
Tel: 03-3816-7111 Fax: 03-3816-7158
E-mail;
URL: http://www.st-egg.com/form_penta_ask/formmail.asp

Category:
- B6. Environmental Purification

This “Mobile Dioxin Detoxification Plant” can render soil contaminated with dioxin harmless at the contaminated site. It is applied to purifying works of soil contaminated with dioxin.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**Eco-products No.0288**

**Machines and Equipments**

**Bio Charco Clean: Solar power, biodegradability, reduction of water pollution**

Tokico Ltd.
1-6-3, Fujimi, Kawasaki-ku, Kawasaki-shi, Kanagawa 210-0011, Japan
Tel: 044-244-3126 Fax: 044-244-7301
E-mail;
URL: http://www.tokico-giken.co.jp/

Category:
- B4. Higher Quality
- B6. Environmental Purification

In this water clarification system, a cartridge filled with charcoals is placed in water to collect water in a targeted body of water by an air lift pump and remove organic matters and nitrogen, contributors to water pollution with microorganisms attached to the surface of a charcoal. The system requires no power because power is generated from solar battery panels. In addition, the sharing of air sources for the pump and introduction of automatic backwash mechanism reduced a maintenance cost by 50%. The system reduces water pollution of lakes and mill ponds and contributes to improvement of water environment.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-products No.0289

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Radio-frequency generator</th>
</tr>
</thead>
</table>

**Radio-frequency generator (RF generator)**

Shindengen Electric Manufacturing Co., Ltd.
10-13, Minami-cho, Hannou, Saitama 357-8585, Japan
Tel; 03-3279-4431 Fax; 03-3279-6478
E-mail; URL: http://www.shindengen.co.jp/top_j/index.html

It is the high efficiency radio-frequency generator used for such as the semiconductor manufacturing equipment and the etching equipment. It have attained energy-saving and moreover, outfit of active filter on the side of alternating current input, permitting prevention of adverse effect on the quality of the commercial power supply side by minimizing reactive power and decrease of the running cost.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

### Eco-products No.0290

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Speaker</th>
</tr>
</thead>
</table>

**Lightweight automotive speaker with high sound quality**

Alpine Electronics, Inc.
1-1-8 Nishi-Gotanda, Shinagawa-ku, Tokyo, 141-8501 Japan.
Tel; 03-3494-1101 Fax; 03-3494-1109
E-mail; URL: http://www.alpine.com

This lightweight automobile speaker can impact favorably on fuel consumption.

It incorporates new technologies such as a new magnet system with high-density short voice coil and new cone with natural material etc and offers both higher quality sound and reduced weight.

By reducing the weight of our speaker products, we believe we can decrease vehicle fuel consumption.

Products/Model : DDLLinear Speaker
**Eco-products No.0291**
Machines and Equipments | Machine Tool (metal working)
---|---

**High-speed tapping center for metal components in automobile manufacture**

BROTHER INDUSTRIES, LTD.
15-1, Naeshiro-cho, Mizuho-Ku, Nagoya 467-0841 Japan
Tel: 052-824-2072 Fax: 052-811-6826
E-mail: toshihiro.izuhara@brother.co.jp
URL: http://www.brother.co.jp

Category:
- A5. Resource Consumption
- B3. Resource Saving
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

We reduced electric power consumption per fabricated component by 15% (compared with our conventional products) by improving productivity with the development of a highly efficient spindle motor. We set a cutting oil pump and servomotor to automatically turn off during waiting time, reducing power consumption by 82% (compared with our conventional products). We have also reduced environmental impact by a variety of measures such as cutting down toxic materials by applying lead-free paint and introducing an automatic cleaning system to make filters maintenance-free.

Products/Model:
CNC Tapping Center TC-S2B

**Eco-products No.0292**
Machines and Equipments | Automatic clinical chemistry analyzer
---|---

**Lightweight and resource-saving laboratory automatic analyzer**

Hitachi High-Technologies Corporation
24-14, Nishi-Shimbashi 1-chome, Minato-ku, Tokyo 105-8717 Japan
Tel: 03-3504-7111 Fax: 03-3504-7123
E-mail: hht@nst.hitachi-hitec.com
URL: http://www.hitachi-hitec.com/index.html

Category:
- A5. Resource Consumption
- B2. Longevity
- B3. Resource Saving
- C5. Product Use, Maintenance and Repair

This analyzer has been designed to minimize environmental load and meets the Design for Environment Assessment System criteria established by the Hitachi group. Its weight has been reduced by using a small size and intelligent sample rack conveyor system. In addition, it uses less de-ionized water thanks to a non-contact ultrasonic mixing method.

Products/Model:
Automatic Clinical Chemistry Analyzer 9000
### Eco-products No.0293

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Diesel Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exhaust refreshing, low-noise, high-power Diesel Engine (for construction equipment)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Komatsu Ltd.**
2-3-6, Akasaka, Minato-ku, Tokyo, 107-8414 Japan  
Tel: 03-5561-2646 Fax: 03-3582-8332  
E-mail: kankyo@komatsu.co.jp  
URL: http://www.komatsu.com/

Category:  
- A1. Global Warming  
- A2. Air Pollution  
- B5. Energy Saving  
- B6. Environmental Purification  
- C5. Product Use, Maintenance and Repair

Injecting fuel into the engine with high pressure allows it to mix well with air. This is an effective means of reducing NOx in the exhaust from the engine and improves fuel efficiency at the same time. This common-rail fuel injection system is capable of maintaining its high-pressure injection performance even when the engine is running at low speeds. This is of special benefit for construction equipment where performance at low speeds is especially important.

The new fuel injection system installed in 6D140 series engines reduces NOx emissions by about 35% and improves fuel efficiency by more than 5%. In addition, it reduces noise levels by more than 2dB(A).

**Products/Model:**  
Diesel Engine 6D140

---

### Eco-products No.0294

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>System Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Space-saving high-performance process controller DOPC</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Advanced Automation Company, Yamatake Corporation**
New Stage Yokohama Bldg, 1-1-32, Shin-urashima-cho, Kanagawa-ku, Yokohama, 221-0031 Japan  
Tel: 045-461-8821 Fax: 045-461-8759  
E-mail: ia-info@jp.yamatake.com  
URL: http://www.yamatake.com

Category:  
- A5. Resource Consumption  
- B4. Higher Quality  
- B5. Energy Saving  
- C3. Design and Material Selection  
- C4. Product Manufacture

This product achieves 38% power saving and 30% weight reduction compared with previous models. Consequently, power supply units and storage cabinets can be reduced, realizing resource savings (energy and cabinet materials) and space saving (reduction of building material due to space saving for equipment). This product is best-suited to plant controls where energy saving is important, thereby reducing environmental effects.
Eco-products No.0295

Machines and Equipments | System Controller
---|---

Energy-saving electromagnetic flow meter “Magcube”

Advanced Automation Company, Yamatake Corporation
New Stage Yokohama Bldg, 1-1-32, Shin-urashima-cho, Kanagawa-ku, Yokohama, 221-0031 Japan
Tel: 045-461-8821 Fax: 045-461-8759
E-mail: ia-info@jp.yamatake.com
URL: http://www.yamatake.com

Category:
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C3. Design and Material Selection
- C4. Product Manufacture

The product consumes only one-fifth of the power of previous models by using polycarbonate and polypropylene for its case. Since electromagnetic meters do not have any parts, maintenance is simple. It is typically used to measure and control water flow rate, ensuring efficient use of water resources while reducing environmental effects.

Products/Model: MCB10

Eco-products No.0296

Machines and Equipments | Oven
---|---

Energy-saving jet oven for the restaurant industry

Fujimak Corporation
5-14-5, Shinbashi, Minato-ku, Tokyo, 105-0004 Japan
Tel: 03-3434-2209 Fax; E-mail;
URL: http://www.fujimak.co.jp/

Category:
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

This oven automatically senses whether cooking is under way based on a detection switch installed in the entrance of convair. When not in use, it stops convair, turning down the heat and cuts wasteful energy consumption. When food is placed on convair, it automatically switches back from energy-saving mode and cooking temperature is quickly restored.

Products/Model: Energy-saving Jet-oven • FEJOA8TE
**Automatic jet stream noodle boiling machine**

**Nippon Senjoki K.K.**

2-43-14, Unoki, Oota-ku, Tokyo, 146-0091 Japan  
Tel: 03-3750-4451 Fax: 03-3750-4890  
E-mail;  
URL: http://www.n-sen.com/

While a conventional machine stirs noodles in boiling water, this product keeps the water temperature at 96°C, just under boiling point, and stirs noodles by a jet stream generated by a jet stream motor. It also cuts down latent heat loss by using a steam shutter when idle. As a result, this product not only reduces energy consumption by 60% compared with conventional machines of equal capacity, but also improves conditions in the kitchen.

**Eco-products No.0297**

**Compact and lightweight 5kg measuring instrument for network maintenance**

**Anritsu Corporation**

1800 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan  
Tel: 046-223-1111 Fax;  
E-mail;  
URL: http://www.anritsu.co.jp

Portable instrument with compact and lightweight individual components.  
By including only basic essential functions and a reduced number of module units, this model offers excellent power savings. Volume: reduced by 54% Mass: reduced by 54% Power consumption: reduced by 88%.
### Eco-products No.0299

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Top runner energy-stingy transformer</th>
</tr>
</thead>
</table>

**High-Efficiency Oil-Filled transformer for industrial use**

Mitsubishi Electric Corporation  
2-2-3 Marunouchi, Chiyoda-ku, Tokyo, 100-8310 JAPAN  
Tel: 03-3218-9024 Fax: 03-3218-2465  
E-mail; eqd.eco@hq.melco.co.jp  

Category:  
- A1. Global Warming  
- A5. Resource Consumption  
- B1. Recyclability  
- B3. Resource Saving  
- B4. Higher Quality

“High-efficiency oil-filled transformer EX series”, (which conforms to energy saving standard of 2006) contributes to energy saving, reducing 60% overall loss by using original reduced-loss design technologies. Since the reduced-loss allows cutback of radiation fins and realizes a major downsizing of the product, it requires 20% less installation space than standard products. Moreover, its iron cores, coils, and structural parts are made from recyclable materials to ensure effective use of resources. (Recycle ratio is 93%)

![High-Efficiency Oil-Filled Transformer](image)

### Eco-products No.0300

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Methane fermentation apparatus</th>
</tr>
</thead>
</table>

**Bison: Methane fermentation apparatus on site (for dairy cow, beef)** Methane fermentation apparatus for individual farmhouse, whereby bio-gas including methane gas is acquired under anaerobic fermentation of livestock excreta.

Ebara Corporation  
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan  
Tel: 03-5461-5205 Fax: 03-5461-6006  
E-mail; ueki.tsuneyuki@ebara.com  
URL: http://www.ebara.co.jp

Category:  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

It can be installed in individual farmhouse, automatically operating to ferment methane from livestock excreta. The biomass-energy of livestock excreta is efficiently utilized to make it self-supporting type that covers power and heat required for fermentation process per se, allowing low-cost operation. It is administering to dairy farming environment as a methane fermentation apparatus with farmer’s labor and economical burden controlled, reflecting the need for an appropriate utilization and treatment of livestock excreta.

![Methane Fermentation Apparatus](image)

Products/Model :
- **Bison**

---

350
**Eco-products No.0301**

**Machines and Equipments**
Small water volume hydroponics

**Eco-vegetable system: hydroponics-system utilizing property of functional culture medium, supplying crops with suitable amount of culture fluid according to growing stage by full automatic irrigation-control.**

**Ebara Corporation**
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel: 03-5461-5205 Fax: 03-5461-6006
E-mail: ueki.tsuneyuki@ebara.com
URL: http://www.ebara.co.jp

*It is a cultivation system with designing to automatically control the amount of water and fertilizer. Compared to the conventional hydroponics cultivation, Ebara Corp. accomplished resource-saving and energy-saving of fertilizer and water by roughly 50% (Ebara figure). It is environment-friendly system which hardly generates waste and effluent.*

---

**Eco-products No.0302**

**Machines and Equipments**
The construction of biomass town

**Establishment of biomass town in Yamada-cho, Chiba prefecture: regional demonstrating study to develop the biomass-using plants belt. Implement under cooperation of industry, academy and bureaucracy**

**Ebara Corporation**
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel: 03-5461-5205 Fax: 03-5461-6006
E-mail: ueki.tsuneyuki@ebara.com
URL: http://www.ebara.co.jp

*Ebara Corp. has designed materialization of regional circulating system through utilization of biomass by independent administrative agency, agricultural engineering laboratory in Yamada-cho, Chiba prefecture, joining the establishment of biomass-town whereat regional biomass is utilized in comprehensive and maximum fashion as a representative of biomass research and development association of participating agencies.*
**Eco-products No.0303**

Machines and Equipments | Methane Fermentation Equipment
---|---

“JFE-Bigadan biogas system” Methane fermentation equipment for resource recycling

JFE Engineering Corporation
1-1-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan  
Tel: 03-3217-3912  Fax: 03-3214-9650  
E-mail:  
URL: http://www.jfe-eng.co.jp/

Category:
- A1. Global Warming  
- A4. Waste  
- B1. Recyclability  
- B4. Higher Quality  
- B5. Energy Saving  

Digester gas generated from waste material via methane fermentation can be reused as electric power, hot water, and fuel. Excess energy such as electric power can be sold. Residual solid material remaining after methane fermentation can also be recycled to meet the demands of local residents. There are various options such as compost, dried sludge, recycled plastic fuel (RPF), and carbide.

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**Eco-products No.0304**

Machines and Equipments | Reflow Oven
---|---

Reflow oven for surface mounting of electronic components

The Furukawa Electric Co., Ltd.
6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8322 Japan  
Tel: 03-3286-3495  Fax: 03-3286-3707  
E-mail: hiroki@ho.furukawa.co.jp  
URL: http://www.furukawa.co.jp

Category:
- A1. Global Warming  
- A3. Hazardous Substance  
- B6. Environmental Purification  
- C4. Product Manufacture

This reflow oven carries out the reflow soldering process during the mounting of electronic components in a nitrogen atmosphere. This eliminates the need to clean completed circuit boards and so avoids the use of CFCs.
## Eco-products No.0305

### Machines and Equipments
- Scrubber

### High-efficiency dry scrubber for the semiconductor industry

**Nippon Sanso Corporation**

1-16-7, Nishi-Shinbashii, Minato, Tokyo, 105-8442 Japan

Tel: 03-3581-8200 Fax: 03-3580-9425

E-mail; URL: http://www.sanso.co.jp

**Category:**
- A3. Hazardous Substance
- A4. Waste
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Many specialty gases used in semiconductor production are dangerous due to their toxicity, causticity or combustibility and needed to be scrubbed when discharged to the atmosphere.

A typical method of scrubbing is dry scrubbing. GBIV, a scrubbing agent developed by our company and used in this equipment, has high reaction efficiency with hydride gases such as AsH3 and PH3 and can treat a larger volume of gases per unit, making it extremely cost-effective. In addition, the equipment was designed with considering safety. There is no risk of thermal runaway because exothermic temperature during reaction is low. This also allows you to see at a glance how far the reaction has proceeded because the scrubbing agent changes color in the process of reaction.

**Products/Model:**
- VEGA®-Z

## Eco-products No.0306

### Machines and Equipments
- Oil separating filter

### Oil separating filter for vessel bilge water and parts cleaning process, which materialized to remove oil from oil-bearing water

**ASAHI KASEI FIBERS CORPORATION**

3-21-1, Nihonbashii Hama-cho, Chuo-ku, Tokyo, 03-8486 Japan

Tel: 03-5695-6730 Fax: 03-5695-6706

E-mail; tezuka.sb@om.asahi-kasei.co.jp

URL: http://www.asahi-kasei.co.jp/eutec

**Category:**
- A4. Waste
- B1. Recyclability
- C4. Product Manufacture

Oil droplets scattered in drainage washing and bilge water is aggrandized into 1-2mm by COALESER filter, quickly collecting oil through gravity difference segregation in the container. The processed oil in washing is separated and collected in the manufacturing process of car, home electric appliances, office automation equipment and the like, thus extending the lifetime of washings and decreasing water exchange frequency so as to realize reduction of waste fluid. In the vessel application, it eliminates oil from bilge water, is used as a wastewater treatment appliance, and meets the regulation value of International Convention for the Prevention of Pollution from Ships.

**Products/Model:**
- EUTEC, TH Series, EUS Series
Eco-products No.0307
Machines and Equipments Electric Air Cleaner for Business Use

Energy-saving Green BIO • TOWER

Yamatake Corporation
1-12-2, Kawanakajima, Fujisawa-shi, Kanagawa, 251-8522 Japan
Tel; 0466-20-2335 Fax; 0466-20-2193
E-mail; kajiwara-hiromichi@jp.yamatake.com
URL; http://jp.yamatake.com

This air cleaner doesn’t contain substances that destroy the ozone layer or contaminate water and soil, and uses neither vinyl chloride as its main material nor foamed polystyrene for packaging. Instead, it uses a selection of eco-friendly materials, such as activated charcoal, which lowers the environmental load to 1/17 of our conventional products according to Life Cycle Assessment. We have also focused on saving resources. For example, the use of a body sensor reduces electric power consumption and it uses less materials for production (compared to conventional products).

Category:
● A4. Waste
● B3. Resource Saving
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair
● C6. End-of-Life

Products/Model:
FNB780B201

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Eco-products No.0308
Carriers / Automobiles Biodegradable plastic

Biodegradable plastic: New plastic which reduces into soil after disposal

Ebara Corporation
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel; 03-5461-5205 Fax; 03-5461-6006
E-mail; ueki.tsuneyuki@ebara.com
URL; http://www.ebara.co.jp

It is a substitute plastic manufacturing technology with the function of biodegradation. The purpose is conversion into high-value added functional material and utilization of food industry garbage. It has an effect of preservation of fossil-resource and reduction of gases with global warming effect.

Category:
● A4. Waste
● A5. Resource Consumption
● B3. Resource Saving
● B7. Usage of Recycled Material
● C1. Material Extraction

---
### Eco-products No.0309

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Pump and Controller</th>
</tr>
</thead>
</table>

**Hz free pump controller: Offers energy conservation and resource-savings**

**Ebara Corporation**  
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan  
Tel; 03-3743-6135 Fax; 03-3743-6589  
E-mail; sakane.shigeru@ebara.com  
URL; http://www.ebara.co.jp

- **Category:**  
  - B4. Higher Quality  
  - B5. Energy Saving  
  - C4. Product Manufacture  
  - C5. Product Use, Maintenance and Repair  
  - C6. End-of-Life

1. Energy-saving operation (Achieved an average 35% energy reduction with adjustable functions.)  
2. Low maintenance (No maintenance provisions such as cooling fan due to water-cooling method using pumped liquid.)

3. Resource-saving  
   Minimum life cycle cost (total energy amount from production to dumping) necessary for fabricating products.

- **Products/Model:**  
  - EECFA52.2

---

### Eco-products No.0310

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Heat Pump Type Vacuum Evaporator</th>
</tr>
</thead>
</table>

**Heat pump type vacuum evaporator for food/chemical factories (thickener)**

**Okawara MFG. CO., LTD.**  
1-6-3, Oh-i, Shinagawa-ku, 140-0014 Japan  
Tel; 03-5743-7461 Fax; 03-5743-7460  
E-mail; okw@po.ijnet.or.jp  
URL; http://www.okawara.co.jp

- **Category:**  
  - A1. Global Warming  
  - B3. Resource Saving  
  - B4. Higher Quality  
  - B5. Energy Saving  
  - C6. End-of-Life

This equipment heats, evaporates, and thickens waste using steam evaporated from waste fluid as a heat medium by means of electric heat pump technology, as opposed to the conventional method (thickening by boiler heat with heavy oil).

Only about 1/7th of the power consumed by the conventional method is required to concentrate waste fluid, and CO₂ emission is reduced approximate to a fifth of the original emission. These improvements drastically cut the cost of waste disposal. (In the case of waste fluid of about 2% concentration, its volume was reduced to 1/15th of its original volume.)
Eco-products No.0311

Machines and Equipments       Heat Pump Type Chiller

Heat pump type chiller for large-scale facilities

TOSHIBA CARRIER AIR CONDITIONING SYSTEMS CORPORATION
3-23-17, Shinagawa-Center Building, Takanawa, Minato-ku, Tokyo, 108-0074 Japan
Tel; 03-6409-1930 Fax; 03-5447-8145
E-mail; michiya.yano@glb.toshiba.co.jp
URL; http://www.toshiba-carrier.co.jp/

Reciprocating compressor (heat pump) using new refrigerant R407C (with zero ODP) is mounted in this chiller, allowing capacity control of compressors installed in modules according to loads and optimizing operation of each module. This allows a partial load operating efficiency, 4.8 in periodical coefficient of performance※1 to be obtained and energy consumption is reduced by 23% compared with conventional air-conditioning chiller※2. Thus, our technology helps to reduce carbon dioxide emission and prevent global warming.

※1 Periodical coefficient of performance is a value of cooling operational efficiency with partial load added/50Hz (compliant with "ARI550/590-1998")
※2 Comparison with our previous type R22 100 hp×4 units

Category:
● A1. Global Warming
● B4. Higher Quality
● B5. Energy Saving
● C3. Design and Material Selection
● C4. Product Manufacture

Products/Model :
Flex Modular Chiller RUA-TP3001V-A/B

Eco-products No.0312

Machines and Equipments       Industrial-wastewater-recycle system using NF membrane

Wastewater recycle-system for private factories seeking decrease in operation cost factories seeking energy reclamation

Ebara Corporation
11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan
Tel; 03-5783-8541 Fax; 03-5461-6011
E-mail; shima.kenji@ebara.com
URL; http://www.ebara.co.jp

This system clears the way for recycling of wastewater from factories like refreshing beverage manufacturing plant for cooling and other usage water in factory, following filtration by NF membrane. Water recycling permits reduction of environment burden such as reduction of industrial water quantity used, reduction of emissions of wastewater from factory. It also reduce environment burden from the viewpoint of resource consumption as it use no chemicals.

Category:
● A4. Waste
● B1. Recyclability
● B3. Resource Saving
● B6. Environmental Purification
● C5. Product Use, Maintenance and Repair

Products/Model :
Industrial wastewater recycle system using NF membrane
<table>
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<tr>
<th>Eco-products No.0313</th>
<th>Machines and Equipments</th>
<th>Sewage Treatment Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long-life floating oil recovery equipment for machining and general factories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nippon Oil Corporation</td>
<td>Category:</td>
<td>“Bio-Tube” Advanced sewage treatment system using microorganism immobilization support</td>
</tr>
<tr>
<td>3-12, Nishi Shimbashi 1-Chome, Minato-Ku, Tokyo, 105-8412 JAPAN</td>
<td>● A4. Waste</td>
<td>JFE Engineering Corporation</td>
</tr>
<tr>
<td>Tel; 03-3502-9176 Fax; 03-3502-9369</td>
<td>● B2. Longevity</td>
<td>1-1-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B3. Resource Saving</td>
<td>Tel; 03-3217-3912 Fax; 03-3214-9650</td>
</tr>
<tr>
<td>URL; <a href="http://www.eneos.co.jp/">http://www.eneos.co.jp/</a></td>
<td>● B6. Environmental Purification</td>
<td>E-mail;</td>
</tr>
<tr>
<td></td>
<td>● C5. Product Use, Maintenance and Repair</td>
<td>URL; <a href="http://www.jfe-eng.co.jp/">http://www.jfe-eng.co.jp/</a></td>
</tr>
</tbody>
</table>

This product uses the Q-pot system to effectively recover surface oil. The Q-pots follow the fluctuation of liquid level to suck draw only the oil on the surface. Since coolant can be reused after separation from the oil with an oil-water separation system, it reduces the level of coolant in the waste liquid. In addition, coolant decomposition is inhibited by the constant recovery of floating oil, extending the life of the coolant.

“Bio-Tube” technology using microorganism immobilization support by means of carriers makes it possible to immobilize microorganisms in high concentrations. It is a high efficiency, low cost, and space-saving advanced sewage treatment system.
### Eco-products No.0315

**Machines and Equipments**  
**“Romembrà” Reverse Osmosis Membrane and seawater desalination plant system**

| Toray Industries, Inc. | Category:  
|-----------------------|-----------  
| Toray Bldg., 2-1,Nihonbashi-Muromachi 2-chome,Chuo-ku, Tokyo, 103-8666 Japan |  
| Tel; 03-3245-5179 Fax; 03-3245-5459 |  
| E-mail; URL: http://www.toray.co.jp |  
|  
| Toray began reverse osmosis membrane R&D in 1968 and has applied the technology to desalination, wastewater treatment/recycling and the production of water for industry. Toray’s seawater desalination technology using these membranes is highly advanced and the membranes have been used all over the world to conserve water resources. In 1997, in cooperation with Toray Engineering Co., Ltd., Toray Industries, Inc. developed a brine conversion two-stage reverse osmosis system which provides low cost energy conservation. The system has allowed Toray to further contribute to the development of water resources through seawater desalination. |  

---

### Eco-products No.0316

**Machines and Equipments**  
**Environmentally-friendly lead-free plating machine for the lead frame of semiconductors**

| Fujiiseiki Machhine Works, Ltd. | Category:  
|-------------------------------|-----------  
| 840 Shimotogari, Nagaizumi-Cho, Sunto-Gun, Shizuoka-Pref., 411-8730 JAPAN |  
| Tel; 055-988-1001 Fax; 055-988-1027 |  
| E-mail; fujiseiki@fj.toshiba-machine.co.jp |  
| URL; http://www.toshiba-machine.co.jp/fj/ |  
|  
| Compared with traditional solder plating, lead-free plating requires higher “precision” for composition ratio. This requires precise management of the plating processing, plating solution, and processing software. This machine features constant jetting at plating processing tank as well as a power feeder for each work holder. As a result, it achieves high quality lead-free plating, through precise control of the electric current needed. |  

**Products/Model:**  
Lead-Free Plating Machine • FSP-F series
**Eco-products No.0317**

**Machines and Equipments**

**Wastewater Treatment Equipment**

**Alkaline wastewater neutralization equipment making use of fuel gas**

**AIR WATER INC.**

20-16, Higashi-Shinsaibashi 1-chome, Chuo-ku, Osaka, 542-0083 Japan

Tel: 06-6252-5411 Fax: 06-6252-3965

E-mail; URL: http://www.awi.co.jp/

This equipment neutralizes alkaline wastewater discharged from a factory with CO₂ in the combustion exhaust gas discharged from the same factory. Using CO₂ in the combustion exhaust gas as a neutralizing agent instead of sulfuric acid, which was traditionally used, brought about the benefit of fixing CO₂, one of global warming substances.

**Eco-products No.0318**

**Machines and Equipments**

**Check Weigher**

**High-speed, high-precision checkweigher using a newly-developed electromagnetic balance scale**

**Anritsu Industrial Solutions Co., Ltd.**

1800 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan

Tel: 046-296-6700 Fax: 046-296-6779

E-mail; URL: http://www.anritsu.co.jp/J/Industry/

Equipped with a conveyor motor under high-efficiency DC power control, this model saves power. Power consumption is reduced by 32% compared with our conventional type.
**Eco-products No.0319**

### Machines and Equipments

**Excess Sludge Reduction System for Sludge Decomposition and Waste Reduction**

**Cosmo Engineering Co., Ltd.**  
2-5-8 Higashi-shinagawa Shinagawa-ku, Tokyo, 140-0002 Japan  
Tel; 03-5462-0150 Fax; 03-5462-0159  
E-mail;  
URL: http://www.cosmoeng.co.jp

**Category:**  
- A4. Waste  
- B6. Environmental Purification  
- C2. Material and Components Production  
- C4. Product Manufacture

This system destroys a firm cell of micro-organism contained in excessive sludge and transforms the cell to a form that can be decomposed by the micro-organism itself. As the result, the sludge is decomposed for the micro-organism’s food and reduced to about a tenth of its initial volume, which enables reduction of industrial waste.

---

**Eco-products No.0320**

### Machines and Equipments

**Hydrocarbon Vapor Recovery Unit for Protection of VOC Emission to Air**

**Cosmo Engineering Co., Ltd.**  
2-5-8 Higashi-shinagawa Shinagawa-ku, Tokyo, 140-0002 Japan  
Tel; 03-5462-0150 Fax; 03-5462-0159  
E-mail;  
URL: http://www.cosmoeng.co.jp

**Category:**  
- A2. Air Pollution  
- A3. Hazardous Substance  
- A5. Resource Consumption  
- B6. Environmental Purification  
- C4. Product Manufacture

The hydrocarbon vapor recovery unit was developed to collect various hydrocarbon vapors emitted by chemical plants. For vapor recovery, an absorbent-based PSA method is used.
### Eco-products No.0321

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Freezing/refrigerating/air-conditioning system</th>
<th>Freezing/refrigerating/air-conditioning system featuring 50% power reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category:</strong></td>
<td>B3. Resource Saving</td>
<td>B5. Energy Saving</td>
</tr>
<tr>
<td><strong>DAIKIN INDUSTRIES, LTD.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umeda Center Bldg., 2-4-12, Nakazaki-Nishi, Kita-ku, Osaka, 530-8323, Japan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tel; 06-6374-9304 Fax; 06-6373-4380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail; <a href="mailto:kankyo@daikin.co.jp">kankyo@daikin.co.jp</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>URL; <a href="http://www.daikin.co.jp/kankyo/">http://www.daikin.co.jp/kankyo/</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This system achieves an energy reduction for convenience stores by integrating the freezer and refrigeration showcases with an air-conditioning system. It achieves a 50% reduction in annual energy consumption compared with existing systems by using exhausted heat from freezing or refrigerating in winter. Additionally, combining freezing, refrigerating, and air-conditioning into one system provides resource-savings.</td>
<td>CONVENI-PAC</td>
<td></td>
</tr>
<tr>
<td><strong>CONVENI-PAC</strong></td>
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</tbody>
</table>

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### Eco-products No.0322

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>High Load Type EGSB (Expanded Granular Sludge Bed) Technology</th>
<th>Organic wastewater treatment technology for private factories seeking energy reclamation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category:</strong></td>
<td>A4. Waste</td>
<td>A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 03-5783-8541 Fax; 03-5461-6011</td>
<td>A5. Resource Consumption</td>
<td>B5. Energy Saving</td>
</tr>
<tr>
<td>E-mail; <a href="mailto:shima.kenji@ebara.com">shima.kenji@ebara.com</a></td>
<td>A4. Waste</td>
<td>B6. Environmental Purification</td>
</tr>
<tr>
<td>URL; <a href="http://www.ebara.co.jp">http://www.ebara.co.jp</a></td>
<td>A5. Resource Consumption</td>
<td>B5. Energy Saving</td>
</tr>
</tbody>
</table>

Organic wastewater from brewery and soft drink-manufacturing factory is purified through anaerobic treatment in this system. In addition, it permits reclamation of methane gas from wastewater. Compared to UASB(Uflow Anearobic Sludge Blanket) method, the conventional repesentive technology of anaerobic treatment, the treatment performance of this system is enhanced up to as 2-3 times high as that of the method, resulting in space-saving and tremendous decrease in operating cost. Moreover, energy recovery such as heat recovery or power generation comes possible, by recovered methane gas.
### Eco-products No.0323

**Machines and Equipments** | **Incinerator**
---|---

**Eco-friendly Incinerator: Energy-saving waste treatment plant**

| Ebara Corporation | Category: |
| 11-1 Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 Japan | ● A2. Air Pollution |
| Tel; 03-3743-6135 Fax; 03-3743-6589 | ● A4. Waste |
| E-mail; sakane.shigeru@ebara.com | ● B1. Recyclability |
| URL; http://www.ebara.co.jp | ● B5. Energy Saving |
|  | ● C6. End-of-Life |

The incinerator recycles collected metals and produces ash slag with heat created by the refuse itself. Waste put into a gasification furnace is gasified and burned at high temperature to decompose dioxin. In addition, since no fossil fuels are used for combustion it prevents global warming and reduces CO₂. Residues and slag can be reused for road asphalt, reducing the amount of waste going to a final disposal site. Its low power consumption ensures high-efficiency waste power generation, and waste heat can be used for local community facilities.

### Eco-products No.0324

**Machines and Equipments** | **Scanning electron microscope**
---|---

**Energy and space-saving electron microscope for business and research laboratories**

| Hitachi High-Technologies Corporation | Category: |
| 24-14, Nishi-Shimbashi 1-chome, Minato-ku, Tokyo 105-8717 Japan | ● A1. Global Warming |
| Tel; 03-3504-7111 Fax; 03-3504-7123 | ● B2. Longevity |
| E-mail; hht@hitachi-hitec.com | ● B5. Energy Saving |
|  | ● C5. Product Use, Maintenance and Repair |

This microscope is designed to minimize environmental impact and meets the Design for Environment Assessment System criteria established by the Hitachi group. Power consumption has been reduced by using one pump rather than two, and the inclusion of an eco-mode function. The unit’s layout has been improved to achieve a reduction in size. This microscope is an important tool in environmental conservation research.

Products/Model: Field Emission Scanning Electron Microscope S-4800
## Eco-products No.0325

**Machines and Equipments** | **Electric tool**
---|---

### Improved speed eco-friendly cordless bolting tool that minimizes use of toxic substances

**Hitachi Koki Co., Ltd.**  
Shinagawa Intercity Tower A 15-1, Konan 2-chome, Minato-ku, Tokyo, 108-6020 Japan  
Tel; 03-5783-0601 Fax; 03-5783-0709  
E-mail; webmaster@hitachi-koki.co.jp  
URL; http://www.hitachi-koki.com

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A1. Global Warming</td>
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<tr>
<td>• A5. Resource Consumption</td>
</tr>
<tr>
<td>• B1. Recyclability</td>
</tr>
<tr>
<td>• B6. Environmental Purification</td>
</tr>
<tr>
<td>• C6. End-of-Life</td>
</tr>
</tbody>
</table>

1. It bound tight with tightening torque, 20% faster and used less power than previous model.
2. It features an environmentally-friendly nickel hydride battery.
3. Packaging has abolished to save resources.

Products/Model:  
Cordless Impact Driver WH 12DM2

## Eco-products No.0326

**Machines and Equipments** | **Electric tool**
---|---

### Energy-saving eco-friendly drill

**Hitachi Koki Co., Ltd.**  
Shinagawa Intercity Tower A 15-1, Konan 2-chome, Minato-ku, Tokyo, 108-6020 Japan  
Tel; 03-5783-0601 Fax; 03-5783-0709  
E-mail; webmaster@hitachi-koki.co.jp  
URL; http://www.hitachi-koki.com

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
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<tbody>
<tr>
<td>• A1. Global Warming</td>
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<tr>
<td>• A5. Resource Consumption</td>
</tr>
<tr>
<td>• B1. Recyclability</td>
</tr>
<tr>
<td>• B2. Longevity</td>
</tr>
<tr>
<td>• C6. End-of-Life</td>
</tr>
</tbody>
</table>

1. Striking energy was raised by 39% and energy efficiency improved by 53% based on our previous model.
2. Motor features a tough aluminum body for durability and a 30% longer life than previous model.

Products/Model:  
Hammer H 45MR
**Eco-products No.0327**

**Machines and Equipments**

**Eco-friendly high-efficiency air tool**

Hitachi Koki Co., Ltd.
Shinagawa Intercity Tower A 15-1, Konan 2-chome, Minato-ku, Tokyo, 108-6020 Japan
Tel: 03-5783-0601 Fax: 03-5783-0709
E-mail: webmaster@hitachi-koki.co.jp
URL: http://www.hitachi-koki.com

<table>
<thead>
<tr>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>● B1. Recyclability</td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
</tr>
<tr>
<td>● C1. Material Extraction</td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
</tr>
</tbody>
</table>

1. Product weight has been reduced by 27% based on high-pressure air use.
2. Exhaust muffler has reduced noise by 8dB compared with previous model.

Products/Model:
Nailer NV 90H

---

**Eco-products No.0328**

**Machines and Equipments**

**Energy-saving Air Conditioning System Using Hydrate Slurry**

JFE Engineering Corporation
1-1-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
Tel: 03-3217-3912 Fax: 03-3214-9650
E-mail:
URL: http://www.jfe-eng.co.jp

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<tr>
<th>Category:</th>
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<tbody>
<tr>
<td>● A1. Global Warming</td>
</tr>
<tr>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
</tbody>
</table>

1. Heat density of clathrate hydrate slurry is almost twice that of cold water (temperature difference: about 7°C), enabling power for heat transfer to be decreased to 1/5th of that for cold water.
2. Mobile power for freezing is reduced to about 60% compared with the manufacture of ice because manufacturing temperature of clathrate hydrate slurry is in the range between 5°C and 12°C. It is equal to cold water temperature.
### Eco-products No.0329

<table>
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<th>Category</th>
<th>Machines and Equipments</th>
<th>Photoelectric smoke detector</th>
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</tbody>
</table>

**Resource-saving Photoelectric smoke detector for automatic fire alarm system**

Matsushita Electric Works, Ltd. Information Equipment & Wiring Products Co.  
1048, Kadoma, Osaka, 571-8686 Japan  
Tel; 06-6909-0873  Fax; 06-6904-4225  
E-mail;  
URL; http://www.mew.co.jp

The product has been significantly downsized as a result of its parts design, high density mounting and photoelectric microminiaturization, which provide resource savings of printed-board and plastic parts. The product is eco-friendly thanks to its lead-free soldering.

**Products/Model:**  
Cyber sensor BVR-46898 etc

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### Eco-products No.0330

<table>
<thead>
<tr>
<th>Category</th>
<th>Machines and Equipments</th>
<th>Energy measuring unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

**Eco-friendly accurate Energy measuring unit**

Mitsubishi Electric Corporation  
2-2-3 Marunouchi, Chiyoda-ku, Tokyo, 100-8310 JAPAN  
Tel; 03-3218-9024  Fax; 03-3218-2465  
E-mail;  
URL; http://www.MitsubishiElectric.co.jp corporate/eco/index.html

“EcoMonitor” accurately measures the electric power consumption of each facility or production line in factories or buildings. By collecting and analyzing measured data, it pinpoints the energy consumption required to produce one product in a specific process - as well as the cause of wasteful stand-by power. This equipment identifies points where further energy savings are possible, helping users to save energy. Furthermore, it contributes to the reduction of environmental impact through its compact size, low resource consumption, module structure, and low power consumption.

**Products/Model:**  
Energy Measuring Unit "EcoMonitorPro" EMU2-RD3-C

---

365
**Eco-products No.0331**

Machines and Equipments | Heat Pump Type Chiller
---|---

**Air-conditioning heat pump type chiller using HFC refrigerant “R134a”**

MITSUBISHI HEAVY INDUSTRIES, LTD.
16-5, Konan 2-chome, Minato-ku, Tokyo, 108-8215 Japan
Tel: 03-6716-4288 Fax: 03-6716-5855
E-mail; www.mhi.co.jp

- Achievement of COP 5.0/4.0 (cooling/heating) by means of heat pump technology
- Features an ultra-small turbo compressor
- Dramatic enhancement of part load performance and efficiency ranging over the whole range of outside air temperatures due to the control of rotation number by the latest high speed motor and inverter
- Use of HFC (hydrofluorocarbon) refrigerant “R134a” of which ODP (ozone-depleting potential) is zero
- Considerable reduction in maintenance cost due to the high durability bearing of which lifetime is 200,000 hours
- A reduction of around 30% in running costs compared with conventional equipment made by Mitsubishi Heavy Industries, Ltd.

Products/Model:
- microTURBO S series MTS175

---

**Eco-products No.0332**

Machines and Equipments | Centrifugal Chiller
---|---

**Centrifugal Chiller that achieves the highest efficiency level in the world**

MITSUBISHI HEAVY INDUSTRIES, LTD.
16-5 Konan 2-chome, Minato-ku, Tokyo 108-8215 Japan
Tel: 03-6716-3111 Fax: 03-6716-5800
E-mail; http://www.mhi.co.jp

Mitsubishi Heavy Industries’ centrifugal chiller using HFC-134a refrigerant with zero ozone depletion potential succeeded in achieving the world’s highest COP and reducing environmental impact burden. The “AART” series achieved the a world record 6.4 COP at full load, along with and the “NART” series that also achieved the a world record 17.8 COP at partial load by applying inverter control. Consequently, these chillers contribute to the prevention of global warming by cutting more CO2 emission than conventional chillers.

Products/Model:
- CENTRIFUGAL CHILLER AART, NART-I, NART
Eco-products No.0333
Machines and Equipments | Defoaming equipment

Factory defoaming equipment

Nippon Oil Corporation
3-12, Nishi Shimbashi 1-Chome, Minato-Ku, Tokyo, 105-8412 JAPAN
Tel: 03-3502-9176 Fax: 03-3502-9369
E-mail:
URL: http://www.eneos.co.jp/

Category:
- A4. Waste
- B3. Resource Saving
- B4. Higher Quality
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

The equipment quickly eliminates bubbles on the surface of the liquid to prevent bubbles overflowing, improving working conditions. Its simple structure does not require consumables or defoaming agent, so it contributes to cost reduction and reduces waste fluid.

Eco-products No.0334
Machines and Equipments | Far infrared ray heater

Environmentally-friendly far infrared heater for large areas

Nippon Oil Corporation
3-12, Nishi Shimbashi 1-Chome, Minato-Ku, Tokyo, 105-8412 JAPAN
Tel: 03-3502-9176 Fax: 03-3502-9369
E-mail:
URL: http://www.eneos.co.jp/

Category:
- A1. Global Warming
- A2. Air Pollution
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

By using a multi-step combustion system (three steps) based on catalytic combustion, which allows low temperature/low oxygen combustion, this infrared heater system for large spaces achieves high efficiency and clean exhaust gas with little emission of CO₂ and NOx.
**Eco-products No.0335**

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Air Separation Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High performance tonnage air separation plant</strong></td>
<td></td>
</tr>
</tbody>
</table>

Nippon Sanso Corporation  
1-16-7, Nishi-Shinbashi, Minato, Tokyo, 105-8442 Japan  
Tel: 03-3581-8200  Fax: 03-3580-9425  
E-mail;  
URL: http://www.sanso.co.jp

The air separation plant produces oxygen and nitrogen by separating air at cryogenic temperature. Our latest tonnage air separation plant offers 15% less power consumption than our previous models by means of employing:

1. a high performance air compressor.  
2. packed columns which reduce the pressure losses of the columns down to 30% of traditional sieve tray columns and outlet pressure of air compressor.  
3. a falling film condenser which also reduces outlet pressure of air compressor.

**Products/Model:**  
Air separation plant

---

**Eco-products No.0336**

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Nitrogen Generator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy-saving nitrogen generator with a non-freon process</strong></td>
<td></td>
</tr>
</tbody>
</table>

Nippon Sanso Corporation  
1-16-7, Nishi-Shinbashi, Minato, Tokyo, 105-8442 Japan  
Tel: 03-3581-8200  Fax: 03-3580-9425  
E-mail;  
URL: http://www.sanso.co.jp

The generator provides nitrogen in places where there is a high demand for nitrogen gas. It uses a non-freon process which does not require the freon refrigerator necessary in a traditional production process. The JN type offers low noise level as standard. The MG type is a high efficiency device, which increases nitrogen yield by improving the production process. It also realize to reduce power consumption 20% less than our previous models.

**Products/Model:**  
Nitrogen generator(JN type, MG type)
**Eco-products No.0337**

Machines and Equipments | Steel-pipe power pole (eco-steel-pipe pole)

---

**Steel-pipe power pole (eco-steel-pipe pole) with PET-powder-coat for underground sections - offers excellent anti-corrosion properties and meets the Environmental 3R’s**

NIPPON TELEGRAPH AND TELEPHONE WEST CORPORATION  
3-15, Banba-cho, Chuo-ku, Osaka-shi, Osaka, 540-8511 Japan  
Tel; 06-4793-3761 Fax; 06-4793-4855  
E-mail;  
URL;

Category:  
- A1. Recyclability  
- A2. Longevity  
- A3. Usage of Recycled Material

The use of a tough coating with anti-corrosion properties satisfies the following targets:  
- Reduce: Required natural resources reduce owing to longer life of products.  
- Reuse: Once dismantled the steel pipe pole can be reused due to its toughness and longevity. Recycle: Steel pipe pole is made of steel, and is suitable for recycling at disposal. Recycled materials such as PET bottles are used in the raw material of PET-powder-coat.  
- Others: Harmful organic solvent is not used at all in the process of powder coating.

---

**Eco-products No.0338**

Machines and Equipments | Heat Pump type Water Heater

---

**Heat pump type water heater using CO₂ as natural refrigerant**

Nishiyodo Corporation  
1-1, Iwataminamino, Yawata-city, Kyoto, 614-8264 Japan  
Tel; 075-983-9451 Fax; 075-983-0130  
E-mail; m.ogata@nishiyodo.co.jp  
URL; http://www.nishiyodo.co.jp/

Category:  
- A1. Global Warming  
- B3. Resource Saving  
- B4. Higher Quality  
- B5. Energy Saving  
- C5. Product Use, Maintenance and Repair

This heat pump type water heater uses CO₂ as a natural refrigerant, which has the value of zero and one (1/1700 of fluorocarbon refrigerant’s GWP) for ODP and GWP, respectively. The coefficient of performance (COP) of this equipment exceeds 3.0.  
Considering that power generation efficiency averaged over thermal power plants is 35%, consumed energy and discharged CO₂ in operation is reduced by approximately 30% compared with a combustion type water heater.
**Eco-products No.0339**

**Grinding Swarf Briquetting Equipment**

**NTN Corporation**
1-3-17 Kyomachibori, Nishi-ku, Osaka, 550-0003 Japan
Tel: 06-6443-5001 Fax:
E-mail;
URL: http://www.ntn.co.jp/

This system can compress sludge generated in the grinding process, separate solids from liquid, recycle its metal element to steel making materials and reuse filtered grinding fluid. The equipment (1/3rd smaller than conventional products) has equipment characteristics such as elimination of binder and other additives for solidification of oil-based grinding sludge. The system reduces waste treatment cost.

**Eco-products No.0340**

**Metal casting system for manufacturers considering environment and safety**

**Toshiba Machine Co., Ltd.**
2068-3 Ooka, Numazu-Shi, Shizuoka-Ken, 410-8510 Japan
Tel: 055-926-5141 Fax: 055-925-6501
E-mail;
URL: http://www.toshiba-machine.co.jp

This metal casting system is designed mainly to cope with magnesium as well as aluminum and zinc. Using the conventional system, large amounts of material are melted in advance even if only a small amount is required for casting. However this system allows you to melt only the required amount of material and, since materials do not need to be maintained at high temperature for prolonged periods, heat emission is small. This system also eliminates global warming gas (sulfur hexafluoride). With no mass melting operation involved, factory safety can be improved, contributing to a better operational environment.
Eco-products No.0341
Machines and Equipments  Flue Gas Denitrification Equipment

Flue gas denitrification equipment decomposing nitrogen oxide to nitrogen and vapor

KAWASAKI HEAVY INDUSTRIES, LTD.
World Trade Center Building, 4-1 Hamamatsu-cho 2-chome, Minato-ku, Tokyo,105-6116 Japan
Tel; 03-3435-2409  Fax; 03-3436-3039
E-mail; kita_m@khi.co.jp
URL; http://www.khi.co.jp/

This equipment employed dry processing method with which nitrogen oxide in the fuel gas is decomposed to nitrogen and vapor by exposing fuel gas mixed with ammonia to solid catalyst. It can be applied to a variety of combustion equipment such as boilers and gas turbines, achieved high efficiency with simple configuration of devices. It also has a simultaneous dioxin decomposing function. By selecting optimum catalyst and operating temperature area and ammonia injection control system, high efficiency and high durability and high following characteristic for operation fluctuation are demonstrated in wide NOx generation resource field. And, it is also useful for the reduction of the dioxins for the refuse incinerator.

Products/Model :
Kawasaki Catalytic NOx Reduction System

---

Eco-products No.0342
Machines and Equipments  Flue-gas denitrification equipment

Air pollution prevention systems (Denitrification: DeNOx)

Ishikawajima-Harima Heavy Industries Co., Ltd.
Shin-Ohtemachi Bldg., 2-1, Ohtemachi 2-chome, Chiyoda-ku Tokyo 100-8182 Japan
Tel; 03-3244-5111  Fax; 03-3244-5131
E-mail; Webmaster@ihi.co.jp
URL; http://www.ihi.co.jp/

IHI-made flue-gas DeNOx system utilizes the SCR system (SCR: Selective Catalytic Reduction). The principle of the reduction method is to decompose nitrogen oxides into nitrogen and water vapor by adding ammonia to flue gas (stack gas) and then passing the gas through a reactor packed with catalyst.

\[
\begin{align*}
4 \text{NO} + 4 \text{NH}_3 + \text{O}_2 \xrightarrow{\text{catalyst}} & 4 \text{N}_2 + 6 \text{H}_2\text{O} \\
\text{NO} + \text{NO}_2 + 2 \text{NH}_3 \xrightarrow{\text{catalyst}} & 2\text{N}_2 + 3\text{H}_2\text{O}
\end{align*}
\]

In 1978, IHI delivered a DeNOx system adopting this method, into its first practical application in the world, applied for sources, emitting large amount of flue gas.

Products/Model :
Orchid Base
### Eco-products No.0343

**Machines and Equipment** | **Flue-gas desulphurization equipment**
---|---

**Air pollution prevention systems (Desulfurization: DeSOx)**

**Ishikawajima-Harima Heavy Industries Co., Ltd.**

Shin-Ohtemachi Bldg.,2-1, Ohtemachi 2-chome, Chiyoda-ku Tokyo 100-8182 Japan  
Tel; 03-3244-5111 Fax; 03-3244-5131  
E-mail; Webmaster@iihi.co.jp  
URL; http://www.iihi.co.jp/

Sulfur dioxide in the flue gas of boiler is removed by the gas-liquid reaction between the flue gas and the absorbent solution. Various processes are available depending on the kind of absorbent. Limestone-gypsum process uses the limestone slurry as absorbent and recovers SO$_3$ as gypsum.  

SO$_2$ + CaCO$_3$ + 1/2O$_2$ + 2H$_2$O → CaSO$_4$ · 2H$_2$O + CO$_2$  

IHI has rich experience on many FGD(Flue Gas Desulfurization) processes, such as magnesium process, ammonia process, caustic soda process, sea-water process, as well as limestone-gypsum process.

**Products/Model :**  
Orchid Base

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### Eco-products No.0344

**Machines and Equipment** | **Gas Chromatograph**
---|---

"GC-2014", energy-saving type high-performance Gas Chromatograph

**Shimadzu Corporation**

1, Nishinokyo-Kuwabara-cho, Nakagyo-ku, Kyoto 604-8511 Japan  
Tel; 075-823-1113 Fax; 075-823-2062  
E-mail; kksitu@group.shimadzu.co.jp  
URL; http://www.shimadzu.co.jp

"GC-2014" is a gas chromatograph considering high performance and environmental loading. By the following improvement: (a) use of a transformer-less switching power supply, (b) miniaturization of parts by using high performance, high-density integrated circuit, and (c) decrease in the number of parts, the energy consumption in the stand-by condition reduced by 68% of that for the previous-type apparatus.

**Products/Model :**  
Gas Chromatograph GC-2014
Automatic cleaning system for air filter by ultrasonic waves

KAWASAKI HEAVY INDUSTRIES, LTD.
1-1, Higashikawasaki-cho, 3-chome, Chuo-ku, Kobe 650-8670 Japan
Tel; 078-682-5476 Fax; 078-682-5568
E-mail; kpme@corp.khi.co.jp
URL; http://www.khi.co.jp/

Kawasaki Ultrasonic filter Cleaning System (KUCS) is an automatic cleaning device for air filter, which utilizes impulse force generated by cavitations of ultrasonic waves.
Kawasaki KUCS makes it possible to re-use air filter for several times by means of ultrasonic waves-cleaning without damage of filter media. That means (1) Reduce of waste by Recycling of Filter Material, (2) Reuse of Natural Resources, (3) Reduce of Maintenance Cost.

Large-scale and environment-friendly marine two-stroke diesel engine with economical efficiency

KAWASAKI HEAVY INDUSTRIES, LTD.
1-1, Higashikawasaki-cho, 3-chome, Chuo-ku, Kobe, 650-8670 Japan
Tel; 078-682-5340 Fax; 078-682-5558
E-mail; yoshida_taka@khi.co.jp
URL; http://www.khi.co.jp/

This next generation computerized diesel engine enabled flexible control according to the situation by changing the control method of fuel injection, opening and closing of exhaust valve, and cylinder lubricating oil injection from conventional mechanical control to electronic control. This reduced NOX emission discharged during a sailing in port area as well as fuel consumption and CO2 emission during an ocean voyage. Besides, it enabled to cut down on oil consumption and control the emission of particulate matter.
### Eco-products No.0347

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>Beach Cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beach cleaner with the function of separating sand and trash</strong></td>
<td></td>
</tr>
<tr>
<td><strong>KAWASAKI HEAVY INDUSTRIES, LTD.</strong></td>
<td><strong>Category:</strong></td>
</tr>
</tbody>
</table>
| World Trade Center Building, 4-1 Hamamatsu-cho 2-chome, Minato-ku, Tokyo, 105-6116 Japan | ● A1. Global Warming  
● A2. Air Pollution  
● B4. Higher Quality  
● B6. Environmental Purification  
● C5. Product Use, Maintenance and Repair |
| Tel; 03-3435-6959  Fax; 03-3435-3480 E-mail; URL: http://www.khi.co.jp/ | |

You can see that beach is usually cleaned by people of local municipalities and citizen’s group, but it is not enough to collect rapidly increasing and diversifying trash. Today, more local governments have introduced beach cleaners to make cleaning work more automatically and efficiently. Our “Beach Cleaner KBC12A” facilitated gathering trash by employing the unique device, rotor and multi-screen, which easily separates trash from sand, removing all sorts of trash ranging from cans and bottles to cigarette butts and shell from the beach. On top of that, it made it possible to recover breakable bottles and other dangerous stuff without breaking.

Products/Model :  
Beach Cleaner · KBC12A

### Eco-products No.0348

<table>
<thead>
<tr>
<th>Machines and Equipments</th>
<th>CCPP using blast furnace gas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High efficiency cogeneration facility using blast furnace gas</strong></td>
<td></td>
</tr>
<tr>
<td><strong>KAWASAKI HEAVY INDUSTRIES, LTD.</strong></td>
<td><strong>Category:</strong></td>
</tr>
</tbody>
</table>
| 1-1, Higashikawasaki-cho, 3-chome, Chuo-ku, Kobe 650-8670 Japan | ● A1. Global Warming  
● A2. Air Pollution  
● B3. Resource Saving  
● B5. Energy Saving  
● C5. Product Use, Maintenance and Repair |
| Tel; 078-682-5262  Fax; 078-682-5576 E-mail; shobayashi_j@khi.co.jp URL: http://www.khi.co.jp/ | |

The blast furnace gas had not been able to use exclusively for turbine fuel because the gas, which is the by-product gas in ironworks, has low calorific power. However, single-fuel combustion is realized by using silo combustor and maintaining flame retention time longer. High efficiency cogeneration as well as the reduction of fossil fuel consumption and CO2 emission can be realized by consisteint the combined cycle which has this gas turbine as the main machine. In addiotion, thermal NOx emission is also reduced because flame temperatur in the single-fuel combustion of the blast furnace gas is lower than commone fuel.

Products/Model :  
KA11N2-LBTU
Eco-products No.0349

Machines and Equipment | Magnetically levitated turbo-molecular pump

"EI-D Series" energy-saving type power supply unit

Shimadzu Corporation
1, Nishinokyo-Kuwabara-cho, Nakagyo-ku, Kyoto 604-8511 Japan
Tel; 075-823-1113  Fax; 075-823-2062
E-mail; kksitu@group.shimadzu.co.jp
URL; http://www.shimadzu.co.jp

Category:
● A1. Global Warming
● A5. Resource Consumption
● B4. Higher Quality
● B5. Energy Saving
● C5. Product Use, Maintenance and Repair

Turbo-molecular pump is vacuum pump which makes up clean ultra-high vacuum by carrying out the molecular-level exhaust by means of high-speed rotation of turbine blade. The new-model power supply unit (EI-D Series) achieved its weight reduction with the help of a new control circuit which comprises DSP (Digital Signal Processor) and HIC (Hybrid IC) and of the high-density packaging technology. In comparison with our previous-model product, the volume and the weight reduced by 50%, respectively. The maximum power consumption also reduced by 30% by installing the new-model power supply unit.

Products/Model :
EI-D Series magnetically levitated turbo-molecular pump power supply

Eco-products No.0350

Machines and Equipments | Fluidized Bed Cement Kiln System

Energy-saving and environment-friendly fluidized bed advanced cement kiln system (FAKS)

KAWASAKI HEAVY INDUSTRIES, LTD.
World Trade Center Building,4-1 Hamamatsu-cho
2-chome,Minato-ku,Tokyo,105-6116 Japan
Tel; 03-3435-2273  Fax; 03-3435-3039
E-mail; sankihp-pj@khi.co.jp
URL; http://www.khi.co.jp/

Category:
● A1. Global Warming
● A2. Air Pollution
● A5. Resource Consumption
● B5. Energy Saving
● C4. Product Manufacture

This Fluidized Bed Advanced Cement Kiln (FAKS) is a next-generation technology that utilizes the characteristic of the fluidized bed such as combustion, particle dispersion granulation, etc. This system aims at 1) burning low grade coals efficiently, 2) significantly reducing nitrogen oxide (NOx) emission, 3) and increasing thermal efficiency by efficiently recovering heat from solids and gas discharged from the process. In order to comply with 1) the global environmental preservation, 2) the energy conservation, 3) and the numerous needs to cements. These objectives were achieved by utilizing the characteristic of the fluidized bed process.

Products/Model :
FAKS
### Eco-products No.0351

**Machines and Equipments**

**VOC recovery equipment**

**IDESORB—G/-B/-Y, recovery of VOC by the PSA method**

<table>
<thead>
<tr>
<th>Idemitsu Engineering Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makuhari Techno Garden B23 Nakase 1-3 Mihamaku Chiba Chiba</td>
</tr>
<tr>
<td>Tel: 043-296-6971 Fax: 043-296-6949</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:masashi.fukazawa@si.idemitsu.co.jp">masashi.fukazawa@si.idemitsu.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.idemitsu.co.jp/en">http://www.idemitsu.co.jp/en</a></td>
</tr>
</tbody>
</table>

**Category:**
- A3. Hazardous Substance
- B6. Environmental Purification
- C6. End-of-Life

The product is the equipment for the recovery of a volatile organic compound (VOC) by the pressure swing adsorption (PSA) method. Recovery principle of PSA is as follows: The gas containing VOC is allowed to pass through an adsorption column in which incombustible and special silica gel was filled. After an appropriate period, the valves are automatically switched, the column is evacuated and the adsorbed VOC is desorbed from the surface of the silica gel. The recovery of gasoline and benzene is possible with the equipment. The recovery of the hydrocarbon having chlorine (*) is also possible, as well as the case of the water-soluble organic compounds such as alcohol, ketene and ester. (*) dichloromethane, ethylene-dichloride, chloroform, etc.

**Products/Model:**

IDESORB-Y

### Eco-products No.0352

**Machines and Equipments**

**VOC recovery equipment**

**IDESORB-Y, recovery of VOC by the TSA method**

<table>
<thead>
<tr>
<th>Idemitsu Engineering Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makuhari Techno Garden B23 Nakase 1-3 Mihamaku Chiba Chiba</td>
</tr>
<tr>
<td>Tel: 043-296-6971 Fax: 043-296-6949</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:masashi.fukazawa@si.idemitsu.co.jp">masashi.fukazawa@si.idemitsu.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.idemitsu.co.jp/en">http://www.idemitsu.co.jp/en</a></td>
</tr>
</tbody>
</table>

**Category:**
- A3. Hazardous Substance
- B6. Environmental Purification
- C6. End-of-Life

The product is the equipment for processing VOC in the air by the temperature swing adsorption (TSA) method. Incombustible and special silica gel is the adsorption medium and VOC is trapped and released by the surface of the silica gel owing to the temperature swing. Unlike the TSA method using the steam deposition, the condensed water is not mixed with the recovery water. The present method is applicable to not only VOA, but also the substance which is soluble in water, such as alcohol, ketene and ester.

**Products/Model:**

IDESORB-G, IDESORB-B, IDESORB-Y
Eco-products No.0353

Others | Vending machine

**CVA-PC6330ATR, energy-saving type vender**

Sanden Corporation  
1-31-7, Taito, Taito-ku, Tokyo, 110-8555, Japan  
Tel: 03-3833-1211 Fax: 03-3833-7095  
E-mail: office@sanden.co.jp  
URL: http://www.sanden.co.jp/

Category:
- A1. Global Warming
- B4. Higher Quality
- B5. Energy Saving
- C3. Design and Material Selection
- C5. Product Use, Maintenance and Repair

For vender machine, we have repeated various improvements based on the LCA. They include the improvement on the cooling system, that of the air tightness and that of the thermal insulation. Then, in order to solve the problem that the milk constituent of coffee drink deteriorates in long-term heating, we have developed the technology for heating the minimum coffee can necessary for the sale. Moreover, vacuum heat insulation material is used for the wall material of this heating room. A remarkable effect on the energy consumption was brought about by these improvements. Basing upon these achievements, we developed a new model CVA-PC6330ATR. The machine is an epoch-making vender for drinks. Energy save of the new machine is a 61% to the machine in 1990 ages, and a 54% to the pre-model machine that was developed in fiscal 1999.

Eco-products No.0354

Others | Cold-air circulation open showcase

**RSC-S series, FAZ-series, energy-saving type open showcase**

Sanden Corporation  
1-31-7, Taito, Taito-ku, Tokyo, 110-8555, Japan  
Tel: 03-3833-1211 Fax: 03-3833-7095  
E-mail: office@sanden.co.jp  
URL: http://www.sanden.co.jp/

Category:
- A1. Global Warming
- A5. Resource Consumption
- B4. Higher Quality
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

The cold-air circulation open showcase prevents the inversion of a heat from the outside by an air certain. Therefore, the difference of the power consumption occurs by the performance of the air curtain. As for this product, a newly developed air certain was adopted and the amount of heat inversion was drastically reduced in comparison with the conventional one. The power consumption was reduced by using a DC fan system and a newly developed high-efficient heat exchanger. Relating to the environment problem, the change of refrigerant from R22 to R404A was carried out, with the stop of the use of the vinyl chloride except for electric wires. The products are suitable for the cold-air circulation open showcase used in convenient stores and super-markets.
Eco-products No.0355

Machines and Equipments | Copper tube annealing furnace

Copper tube annealing furnace with degreasing system

DAIDO STEEL CO., LTD.
6-35, 1-Chome, Konan, Minato-ku, Tokyo 108-8478 Japan
Tel: 03-5439-1273 Fax: 03-5439-6740
E-mail: t-kimura@ac.daido.co.jp
URL: http://www.daido.co.jp

To abolish the cleaning process of processing lubricant, air-conditioning manufactures have started processing with high volatility lubricant because of production regulation on tri-ethane and special chlorofluorocarbon. Accordingly, cleaning with tri-ethane becomes unnecessary because high volatility lubricant has been used. However, even when high volatility lubricant is used, 10 mg/m lubricant within copper tube is left; this may lead brazing faults. Therefore, we developed the copper tube annealing furnace with degreasing system, which features that automatic degreasing is realized under 0.1 mg/m using the heat during annealing process without addition of lubricant clearing process within the copper tube.

Eco-products No.0356

Others | Hydraulic Fluid

Hydraulic Fluid that reduces Water and Soil Contamination

Cosmo Oil Lubricants Co., Ltd.
9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan
Tel: 03-3798-3831 Fax: 03-3798-3185
E-mail;
URL: http://www.cosmo-lube.co.jp

COSMO TERRA FLUID Series meets JEA(No.110), and is designed for environmentally sensitive applications.
### Eco-products No.0357

**Others** | **Turbine Oil**
--- | ---

**Turbine Oil for Hydro-generator to reduce Water and Soil Contamination**

Cosmo Oil Lubricants Co., Ltd.
9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan
Tel; 03-3798-3831 Fax; 03-3798-3185
E-mail;
URL; http://www.cosmo-lube.co.jp

Category:
- A4. Waste
- A5. Resource Consumption
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

COSMO TERRA TURBINE 46 meets JEA(No.110), and is designed for environmentally sensitive applications.

**Products/Model:**
COSMO TERRA TURBINE 46

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### Eco-products No.0358

**Others** | **Grease for Agriculture and Civil Engineering**
--- | ---

**Grease to reduce Water and Soil Contamination**

Cosmo Oil Lubricants Co., Ltd.
9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan
Tel; 03-3798-3831 Fax; 03-3798-3185
E-mail;
URL; http://www.cosmo-lube.co.jp

Category:
- A4. Waste
- A5. Resource Consumption
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair
- C6. End-of-Life

COSMO TERRA GREASE UR 2 meets JEA(No.110), and is designed for environmentally sensitive applications.

**Products/Model:**
COSMO TERRA GREASE UR 2
### Eco-products No.0359

<table>
<thead>
<tr>
<th>Category</th>
<th>Diesel Engine Oil for PM Reduction System Mounted Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Diesel Engine Oil</td>
<td></td>
</tr>
<tr>
<td>Cosmo Oil Lubricants Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-3798-3831 Fax; 03-3798-3185 E-mail; URL: <a href="http://www.cosmo-lube.co.jp">http://www.cosmo-lube.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>Category:</td>
<td></td>
</tr>
<tr>
<td>● A4. Waste</td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
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<tr>
<td>● B6. Environmental Purification</td>
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<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
</tbody>
</table>

COSMO ECO-DIESEL KAISEI gives supreme performance in automotive diesel engines with PM reductional assy. Using 「KAISEI」 is able to get easily, overall cost, oil consumption, used oil disposition.

![COSMO ECO-DIESEL KAISEI](image)

**Products/Model:**
COSMO ECO-DIESEL KAISEI

### Eco-products No.0360

<table>
<thead>
<tr>
<th>Category</th>
<th>Hydraulic Fluid for Reducing Power Consumption (Energy Conservation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Hydraulic Fluid</td>
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</tr>
<tr>
<td>Cosmo Oil Lubricants Co., Ltd.</td>
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<tr>
<td>9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan</td>
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</tr>
<tr>
<td>Tel; 03-3798-3831 Fax; 03-3798-3185 E-mail; URL: <a href="http://www.cosmo-lube.co.jp">http://www.cosmo-lube.co.jp</a></td>
<td></td>
</tr>
<tr>
<td>Category:</td>
<td></td>
</tr>
<tr>
<td>● A4. Waste</td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
<td></td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
</tbody>
</table>

Cosmo Super Epoc UF is expected to produce energy conservation by matching high-performance base oil with carefully screened additives. In addition, the product from non-zinc series can reduce sludge from the thermal oxidation and can be used for long periods of time.

![Cosmo Super Epoc UF 46](image)

**Products/Model:**
COSMO SUPER EPOC UF 46
**Eco-products No.0361**

Others | Biodegradable hydraulic oil
---|---

**Eco-friendly Bio Green Grass biodegradable hydraulic oil for off-road machines**

KUBOTA Corporation  
1-2-47 Shikatsu-higashi, Naniwa-ku, Osaka 556-8601 Japan  
Tel; 06-6648-2111 Fax;  
E-mail;  
URL; www.kubota.co.jp/index.html  

This environmentally-friendly oil is degraded by microorganism and will not cause environmental damage if spilled onto grass, soil or into a river following a construction accident. We developed the technology for the world's first hydraulic oil that does not kill the grass. Eco-label certification criteria as biodegradable. It is certified as an Eco-label product by Japan Environment Association.

Products/Model :  
Bio Green Grass

**Eco-products No.0362**

Others | Desulfurization catalyst for light oil
---|---

**High performance desulfurization catalyst for sulfur-free light oil production**

Nippon Oil Corporation  
3-12 Nishi Shinbashii 1-chome , Minato-ku, Tokyo, 105-8412 Japan  
Tel; 03-3502-9184 Fax; 03-3502-9389  
E-mail;  
URL; http://www.eneos.co.jp/  

We have developed and marketed a desulfurization catalyst that efficiently produces sulfur-free light oil (with 10 ppm sulfur or less). The catalyst has a desulfurization capability which is twice that of a conventional product, thereby reducing environmental impact as follows:  
1)Decreasing the investment on production facilities.  
2)Reducing NOx and airborne particles in the exhaust gas from diesel vehicles with expansion of sulfur-free light oil.  
3)Reducing waste (the catalyst can be reused several times through reproduction) recycling OR reprocessing.

Products/Model :  
NHS-204
### Eco-products No.0363

<table>
<thead>
<tr>
<th>Category</th>
<th>Two Cycle Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Two Cycle Engine to reduce Water and Soil Contamination</strong></td>
<td></td>
</tr>
<tr>
<td>Cosmo Oil Lubricants Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-3798-3831 Fax; 03-3798-3185</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL; <a href="http://www.cosmo-lube.co.jp">http://www.cosmo-lube.co.jp</a></td>
<td></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
<td></td>
</tr>
<tr>
<td>● A4. Waste</td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>● B6. Environmental Purification</td>
<td></td>
</tr>
<tr>
<td>● C5. Product Use, Maintenance and Repair</td>
<td></td>
</tr>
<tr>
<td>● C6. End-of-Life</td>
<td></td>
</tr>
</tbody>
</table>

COSMO TERRA 2 CYCLE meets JEA(No.110), and is designed for environmentally sensitive applications.

### Eco-products No.0364

<table>
<thead>
<tr>
<th>Category</th>
<th>Offset Printing Ink</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Offset printing ink containing vegetable oil re-refined from waste oil</strong></td>
<td></td>
</tr>
<tr>
<td>Toppan Printing Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>1-11-1 Shimura, Itabashi-ku, Tokyo, 174-8558 Japan</td>
<td></td>
</tr>
<tr>
<td>Tel; 03-3835-5111 Fax;</td>
<td></td>
</tr>
<tr>
<td>E-mail;</td>
<td></td>
</tr>
<tr>
<td>URL; <a href="http://www.toppan.co.jp/index_n.html">http://www.toppan.co.jp/index_n.html</a></td>
<td></td>
</tr>
<tr>
<td><strong>Category:</strong></td>
<td></td>
</tr>
<tr>
<td>● A5. Resource Consumption</td>
<td></td>
</tr>
<tr>
<td>● B1. Recyclability</td>
<td></td>
</tr>
<tr>
<td>● B3. Resource Saving</td>
<td></td>
</tr>
<tr>
<td>● C1. Material Extraction</td>
<td></td>
</tr>
<tr>
<td>● C2. Material and Components Production</td>
<td></td>
</tr>
</tbody>
</table>

Offset printing ink consists of pigment, solvent, vegetable oil, and adjuvant and usually, the vegetable oil used is virgin oil.

However, Toppan Printing uses reclaimed vegetable oil (the major ingredient is reclaimed soybean oil) as regular ink for rotary offset printing. The oil is re-refined from waste cooking oil originally used for meals served in schools and Japan's Self Defense Forces. This resource-saving ink is more suited to a recycling-oriented society than regular soybean ink.
Eco-products No.0365

<table>
<thead>
<tr>
<th>Others</th>
<th>Glass bottle</th>
</tr>
</thead>
</table>

**Toyo Glass ultra light stock bottle series**

*Ultra light resource-saving glass bottles for alcoholic beverages and foods*

Toyo Glass Co., Ltd.
3-1, Uchisaiwaicho 1-chome, Chiyoda-ku, Tokyo 100-0011 Japan
Tel: 03-5510-7130 Fax: 03-5510-7106
E-mail: sohichiroh_ohkoshi@toyo-glass.co.jp
URL: http://www.toyo-glass.co.jp/index.html

Products in this series are ultra light bottles (as defined by the Japan Glass Bottle Association). The amount of glass used is minimized and, when compared to other bottles worldwide, they are amongst the lightest. The bottles are resource-saving and energy-saving and make a significant contribution to environmental conservation by reducing CO₂ emissions. In addition, when packed in cases, freight handling is much easier.

**Category:**
- A1. Global Warming
- A4. Waste
- B3. Resource Saving
- C1. Material Extraction
- C6. End-of-Life

**Products/Model:**
Toyo Glass Ultra Light Weight Stock Bottles

---

Eco-products No.0366

<table>
<thead>
<tr>
<th>Others</th>
<th>Films with lens</th>
</tr>
</thead>
</table>

"QuickSnap" for general users, considering "reducing, reusing, and recycling"

Fuji Photo Film Co., Ltd.
26-30, Nishiazabu 2-Chome, Minato-ku Tokyo 106-8620 Japan
Tel: 03-3406-2291 Fax: 03-3406-2131
E-mail: ecorepo@fujifilm.co.jp
URL: http://home.fujifilm.com/

The Fujicolor "QuickSnap" is designed and produced based on the 3R concept. Since its inception in 1986, the design of the "QuickSnap" has gradually become smaller and smaller until now the camera is half its original size. Since 1990, the flash unit and lens have been reused in the camera. The flash unit is designed to be compatible with other types of "QuickSnap" cameras, thus greatly enhancing reusability. The cover of the body is made of polystyrene, which is also recycled after disassembly. A new polystyrene recycling process has been developed which decreases energy consumption by as much as 30% compared with existing processes. LCA estimates show that emissions of CO₂ gas generated during the entire process can be reduced by more than 60% through the use of increased recycling. Efforts are also currently underway to make all the lead based solder used in the flash units lead free.

**Category:**
- B1. Recyclability
- B3. Resource Saving
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

**Products/Model:**
"The Fujicolor "QuickSnap" Night&Day"

---

383
## Eco-products No.0367

<table>
<thead>
<tr>
<th>Others</th>
<th>Battery energy storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NAS Battery for large-scale stores materializing high-density / longevity / high-efficiency</strong></td>
<td></td>
</tr>
</tbody>
</table>
| NGK INSULATORS, LTD. | Category:  
- A2. Air Pollution  
- B2. Longevity  
- B3. Resource Saving  
- B4. Higher Quality  
- C5. Product Use, Maintenance and Repair |
| 2-56 Sudacho Mizuhoku Nagoya, 467-8530 Japan  
Tel: 052-872-7178 Fax: 052-872-7513  
E-mail: t-oshima@ngk.co.jp  
URL: http://www.ngk.co.jp/english/index.html | NAS Battery |
| NAS Battery emits no exhaust gas since there is no combustion process. It generates no noise or vibration in use, thus contributing to a better local environment and it has reduced CO₂ emissions compared with power generators that involve a combustion process. |

## Eco-products No.0368

<table>
<thead>
<tr>
<th>Others</th>
<th>Printing paper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco-paper incorporating pulp from thinned woods that promote sound forest development.</strong></td>
<td></td>
</tr>
</tbody>
</table>
| HEIWA PAPER CO., LTD. | Category:  
- A1. Global Warming  
- A5. Resource Consumption  
- B7. Usage of Recycled Material  
- C1. Material Extraction |
| 1-22-11, Shinkawa, Chuo-ku, Tokyo 104-0033, Japan  
Tel: 03-3206-8501 Fax: 03-3206-8600  
E-mail: soumu@paper-hsk.co.jp  
URL: http://www.paper-hsk.co.jp | Eco-paper |
| This paper contains 10% pulp made from “thinned woods”. The remaining 90% pulp is from used paper. The paper is simple with a woody texture.  
It is the first standard stock product for general printing from thinned woods.  
The product complies with the law on Promoting Green Purchasing. It is an EcoMark-certified product and a thinned wood mark-certified product. |
### Eco-products No.0369

**Printing Paper from Afforestation to conserve Forest Resources**

<table>
<thead>
<tr>
<th>Oji Paper Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ginza 4-7-5, Chuo-ku, Tokyo, 104-0061 Japan</td>
</tr>
<tr>
<td>Tel: 03-3563-7020 Fax: 03-3563-1139</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:kikunori-matsubara@ojipaper.co.jp">kikunori-matsubara@ojipaper.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.ojipaper.co.jp">http://www.ojipaper.co.jp</a></td>
</tr>
</tbody>
</table>

**Category:**
- ● B1. Recyclability

Oji Paper is working to improve the environment by complying with environmental regulations through its “Oji Paper Environmental Charter.” The company contributes to the realization of a true wealthy society from a global viewpoint, setting “Recycling of Forests” for positive development of afforestation projects and “Recycling of Paper” to utilize waster paper.

Paper products from the ‘Planted Tree’ series use pulp from the company's own afforestation activities.

**Products/Model:**
- OK Top-kote Matte N afforestation

### Eco-products No.0370

**Business Form Paper for high printing quality and smooth running**

<table>
<thead>
<tr>
<th>Oji Paper Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ginza 4-7-5, Chuo-ku, Tokyo, 104-0061 Japan</td>
</tr>
<tr>
<td>Tel: 03-3563-7020 Fax: 03-3563-1139</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:kikunori-matsubara@ojipaper.co.jp">kikunori-matsubara@ojipaper.co.jp</a></td>
</tr>
<tr>
<td>URL: <a href="http://www.ojipaper.co.jp">http://www.ojipaper.co.jp</a></td>
</tr>
</tbody>
</table>

**Category:**
- ● B1. Recyclability

Oji Paper is working to improve the environment by complying with environmental regulations through its “Oji Paper Environmental Charter.” The company contributes to the realization of a true wealthy society from a global viewpoint, setting “Recycling of Forest” for positive development of afforestation projects and "Recycling of Paper" to better use waste paper.

Products in the recycled paper series have the same degree of whiteness and are just as suitable for printing use as fresh pulp items.

**Products/Model:**
- OK Form Green 100
Eco-products No.0371

<table>
<thead>
<tr>
<th>Others</th>
<th>RECO View Sheet/IC Tag Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RECO-View Sheet/IC Tag Sheet: Paper resources reduction, cut cost</strong></td>
<td></td>
</tr>
</tbody>
</table>

Ricoh Company, Ltd.
1-15-5, Minami-Aoyama, Minato-ku, Tokyo, 107-8544, Japan
Tel: 03-5411-4404  Fax: 03-5411-4410
E-mail: envinfo@ricoh.co.jp
URL: http://www.ricoh.co.jp/ecology/

Category:
- A4. Waste
- A5. Resource Consumption
- B1. Recyclability
- B2. Longevity
- B3. Resource Saving

RECO-View Sheet/IC Tag Sheet can be utilized as business form that can be rewritten whenever necessary with a combination of RFID and rewritable display function. The form can be display rewritten about 1000 times. In addition to the features of RFID such as real-time management of inventories and production process situations, its rewritable display-based digital information visualization allows a wide variety of utilization. It also realizes prevention of single round of RFID, reduction of operating cost and substantial cut of paper resources.

Products/Model :
RECO-View Sheet 530BF

Eco-products No.0372

<table>
<thead>
<tr>
<th>Others</th>
<th>Paper exhibition panel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco-friendly paper panel exhibition board</strong></td>
<td></td>
</tr>
</tbody>
</table>

Shin Nippon Core Co., Ltd.
1-3-9 Kokabashi Iwatsuki-ken, 339-0072 Japan
Tel: 048-793-1171  Fax: 048-793-2775
E-mail: shin-nippon@sncore.jp
URL: http://www.sncore.jp

Category:
- A4. Waste
- A5. Resource Consumption
- B1. Recyclability
- C1. Material Extraction
- C6. End-of-Life

Explanation panels used at exhibitions are usually made from styrene which contains petroleum so the boards are disposed of as industrial waste. However, the OK eco-panel with direct printing can be recycled after use or disposed of by incineration with little environmental impact. This is because it is made from paper and has a combined structure of G-flute corrugated cardboard with a honeycomb core which is light and strong.

Products/Model :
OK Eco-panel  Direct printing Type
### Eco-products No.0373

<table>
<thead>
<tr>
<th>Category</th>
<th>Digital camera</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ultra thin, compact design in 4 stylish colors, 4-Megapixels CCD, High Resolution Lens</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Canon Inc.**

30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan  
Tel: 03-3758-2111 Fax;  
E-mail;  
URL: [http://canon.jp/](http://canon.jp/)

Canon’s Digital IXUS i is a 4-Megapixel digital camera with a compact, lightweight design that is only 18.5mm thick and weighs around 100g. By making use of the world's first "highly refractive glass" and "high-refraction, double-sided aspheric surface glass-mold lenses" with a refraction index in excess of 2.0, we have successfully produced a compact camera offering excellent performance. Lead categorized as hazardous is not used in the F2.8 single-focus lens, which has a focal length of 6.4mm.

---

### Eco-products No.0374

<table>
<thead>
<tr>
<th>Category</th>
<th>Digital Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco-friendly EF Lenses with High Image Quality</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Canon Inc.**

30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan  
Tel: 03-3758-2111 Fax;  
E-mail;  
URL: [http://canon.jp/](http://canon.jp/)

Preventing sludge from polluting the environment requires a complex and large-scale treatment process. Lead-free lenses will sweep away the root use of lead. Canon launched the development of lead-free lenses in partnership with glass material manufactures and was successful in developing lenses with the same optical features, durability and workability as conventional lenses, using substances that do not cause harm to people or the environment.

At least 100 types of Canon lenses, including EF lenses, are made of Lead-free glass materials.
### Eco-products No.0375

<table>
<thead>
<tr>
<th>Category</th>
<th>Digital Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>Canon DV Camera MVX35i with High Image Quality</td>
</tr>
</tbody>
</table>

Canon Inc.
30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan
Tel; 03-3758-2111 Fax;
E-mail;
URL: http://canon.jp/

Canon's ultra-compact digital camcorder provides high quality moving images and freeze-frame pictures. It is equipped with the high-performance "DIGIC DV" engine, developed by Canon. The company's first priority is “Working on global environmental assurance based on a philosophy of harmonious co-existence (Kyosei).” Eco-friendly design aspects, such as the application of lead-free soldering for board mounting and use of hexavalent chromium-free screws and lead-free lenses, are incorporated into DV cameras.

### Eco-products No.0376

<table>
<thead>
<tr>
<th>Category</th>
<th>Digital Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>EOS-1D: A RoHS-compliant digital SLR for professionals</td>
</tr>
</tbody>
</table>

Canon Inc.
30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan
Tel; 03-3758-2111 Fax;
E-mail;
URL: http://canon.jp/

The RoHS Directive concerning the “Limitation of Specific Hazardous Substances contained in Electric and Electro Equipment” will be enforced from July 2006 in the EU. It is intended to restrict and prohibit the use of specific hazardous substances in electric and electro equipment.

The EOS-1D Mark II is an eco-friendly product that complies with the RoHS Directive, a European environmental regulation concerning lead/hexavalent chromium/mercury/cadmium/specific bromine flame-retardant materials PBB/PBDE.
### Eco-products No.0377

<table>
<thead>
<tr>
<th>Others</th>
<th>Digital camera</th>
</tr>
</thead>
</table>

**Slim, Miniature Digital camera /**

CASIO Computer Co., Ltd.
6-2, Hon-machi 1-chome, Shibuya-ku, Tokyo 151-8543, Japan
Tel; 03-5334-4964 Fax; 03-5334-4675
E-mail; URL; http://www.casio.co.jp

Category:
- A5. Resource Consumption
- B2. Longevity
- B3. Resource Saving
- B5. Energy Saving
- C5. Product Use, Maintenance and Repair

In order to attain miniaturization and slimmest composed of picture processor or memory, we stereopackage plural LSI by ultra high density packaging technology, and in addition so as to turn it into 1 chip through lamination by package level.

![Image of CASIO EXILIM Camera](image_url)

### Eco-products No.0378

<table>
<thead>
<tr>
<th>Others</th>
<th>Film-in Single Use Camera</th>
</tr>
</thead>
</table>

**Reuse/recyclable Film-in single use camera**

Konica Minolta Photo Imaging, Inc.
26-2 Nishi-Shinjuku1- chome, Shinjuku-ku, Tokyo 163-0512 Japan (Head Office)
Tel; 042-589-8182 Fax; 042-589-3883
E-mail; eco-support@konicanolta.jp
URL; http://konicanolta.jp

Category:
- A1. Global Warming
- B1. Recyclability
- B7. Usage of Recycled Material
- C3. Design and Material Selection
- C6. End-of-Life

- Use of standardized parts: Apart from the front cover and flash, all Goody SUCs are made from standardized parts. This makes the product much easier to reuse and recycle.
- Materials integration: All plastic parts in our SUCs are produced from the same type of polystyrene to make material recycling easier (except the lens and flash panel). Material used is standardized as far as possible.

![Image of Konica Minolta Film-in Camera](image_url)

Products/Model:
Konica Minolta Film-in
Eco-products No.0379

Others | Digital Camera
---|---

**Eco-conscious, smaller digital camera**

Konica Minolta Photo Imaging, Inc.
26-2 Nishi-Shinjuku 1-chome, Shinjuku-ku, Tokyo 163-0512 Japan (Head Office)
Tel; 06-6110-0675 Fax; 06-6532-6252
E-mail; masafumi.inaba@konicaminolta.jp
URL: http://konicaminolta.jp

Konica Minolta gives priority to product downsizing since this helps to conserve resources at the manufacturing stage, curtail energy use at the product delivery stage, and reduce environmental impact after products are discarded. Digital cameras in the DiMAGE X series are equipped with Konica Minolta’s original refracting zoom lenses, which help to make the cameras smaller and lighter. Further improvements were made to the DiMAGE Xg to achieve a more compact size. As a result, its weight was reduced by 11% compared with conventional cameras in the DiMAGE X series (released in February 2002).

Products/Model:
DiMAGE Xg

---

Eco-products No.0380

Others | Digital steel camera
---|---

**NIKON digital camera COOLPIX 5400 Sophisticated digital camera featuring lead & arsenic-free ecoglass**

NIKON CORPORATION
Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-8331 Japan
Tel; 03-3214-5311 Fax;
E-mail;
URL: www.nikon.co.jp

Equipped with a high-spec lens of 4X zoom from wide-angle 28mm, we have used high lens technology to develop a more lightweight version of our previous model and are continuing with energy-saving designs. Compared with the COOLPIX 5000, commodity mass is lowered by 11%, battery life is improved by 10% and it uses 100% lead/arsenic-free ecoglass.

Products/Model:
NIKON Digital Camera • COOLPIX 5400
### Eco-products No.0381

<table>
<thead>
<tr>
<th>Category</th>
<th>Weather Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weather Protection: Weather Derivatives, Weather Insurance, Wind Speed</strong></td>
<td></td>
</tr>
</tbody>
</table>

The Tokio Marine and Fire Insurance Co., Ltd.
2-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8050, Japan
Tel; 03-3285-0274 Fax; 03-5223-3013
E-mail; YUUKO.NISHITANI@tokiomarine.co.jp
URL; http://www.tokiomarine.co.jp

Ecology-related industries have a great risk of setting up and managing business due to that their operations and performance depends on weather phenomenon and climatic aberration. We support a variety of business ventures and operations by having risk-transferred products, weather derivatives and weather insurance assume a part of this risk. Example: "Wind Condition Protection" for wind power generation utilities.

### Eco-products No.0382

<table>
<thead>
<tr>
<th>Category</th>
<th>Diesel Particulate filter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diesel Particulate filter to reduce particulate matter in exhaust gas</strong></td>
<td></td>
</tr>
</tbody>
</table>

Mitsubishi Cable Industries, Ltd.
4-3, Ikejiri, Itami-City, Hyogo 664-0027, Japan
Tel; 072-781-8293 Fax; 072-781-8866
E-mail; Masaaki_Nagai@mitsubishi-cable.co.jp
URL; http://www.mitsubishi-cable.co.jp

This product reduces the amount of toxic PM (particulate matter) in the exhaust gas of diesel vehicles. It is possible to significantly reduce PM using our technology to shape reticulate material used in the catalyst filter, followed by burning PM.
**Pre-washed rice for consumers/restaurants preventing aqueous contamination by washing rice**

**TOYO RICE CLEANING MACHINE CO., LTD.**

12 Kuroda, Wakayama-city 640-8341, Japan
Tel: 073-471-3011  Fax: 073-471-7033
E-mail: kikaku@toyoseimaiki.co.jp
URL: http://www.toyoseimaiki.co.jp

BG pre-washed rice has been cleaned of bran by an ingenious rice-cleaning machine which does not use chemicals. It avoids the problem of water contamination from phosphorus and nitrogen and bran collected during the manufacturing stage is recycled as organic fertilizer or feed.

**“EBIOS” tablet, a by-product in the manufacture of beer**

**Asahi Breweries, Ltd.**

23-1, Azumabashi 1-chome, Sumida-ku, Tokyo 130-8602 Japan
Tel: 03-5608-5195  Fax: 03-5608-5201
E-mail: ecopost@asahibeer.co.jp
URL: http://www.asahibeer.co.jp/

Asahi Food & Healthcare, Ltd (Asahi Beer Co. Group) produces medicine, health food, stuff for food, food for animals, etc by using the washed and dried material of the brewing yeast which is obtained in the manufacture of beer. In particular, the medicine “EBIOS” tablet, which contains so many as 18 kinds of nutrients including amino acid, is a long seller having a history of more than 70 years. We have started selling a new version of health food supplement “Super Beer Yeast”, recently. Brewing yeast is a natural substance good for the health and we are doing the production of various foods and medicines by applying the features of brewing yeast.
**Eco-products No.0385**

<table>
<thead>
<tr>
<th>Others</th>
<th>Optical Fiber Cable</th>
</tr>
</thead>
</table>

**Highly recyclable Waterproof Optical Fiber Cable for Carriers**

Showa Electric Wire & Cable Co., Ltd.
No.1-18, Toranomon 1-chome, Minato-ku, Tokyo, 105-8444 Japan
Tel: 042-774-7901  Fax: 042-773-3961
E-mail;
URL: http://www.swcc.co.jp

Material recycling between facing materials becomes a focus of attention as a recycling method for optical fibers. Traditionally, the water-absorbing tape around a cable core stuck fast to the facing material. It could not be separated from the materials during recycling, so optical fibers could not be recycled as the facing material needs to be of extremely high quality. However, by coating the surface of the tape with an acrylic resin, separation becomes easy and this substantially improves the ease of recycling.

Products/Model :
Waterproof Optical Fiber Cable

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**Eco-products No.0386**

<table>
<thead>
<tr>
<th>Others</th>
<th>Aluminum Conductor Carbon Fiber Reinforced</th>
</tr>
</thead>
</table>

**Aluminum Conductor Carbon Fiber Reinforced**

Showa Electric Wire & Cable Co., Ltd.
No.1-18, Toranomon 1-chome, Minato-ku, Tokyo, 105-8444 Japan
Tel: 042-774-7901  Fax: 042-773-3961
E-mail;
URL: http://www.swcc.co.jp

This product, Aluminum Conductor Carbon Fiber Reinforced, is a new type of electric wire that uses carbon fiber complex materials cable as its reinforced core, replacing the metal core used in conventional products. Since the electric wire is lightweight and has a small coefficient of expansion, it reduces the sag. As well as reducing the weight of the entire steel tower, this product also has a better appearance.

Products/Model :
Aluminum Conductor
### Eco-products No.0387

**Others**

<table>
<thead>
<tr>
<th>Optical cord</th>
</tr>
</thead>
</table>

**Halogen-free and heavy-metal-free optical cord for connecting apparatus**

**Sumitomo Electric Industries, Ltd.**

1, Taya-cho, Sakae-ku, Yokohama, 244-8588 Japan  
Tel: 045-853-7219  Fax: 045-851-9855  
E-mail: osada-naomichi@sei.co.jp  
URL: http://www.sei.co.jp

Conventional optical cord uses PVC as a covering material in order to maintain high flame resistance and mechanical characteristics. The PVC releases hydrogen chloride and heavy smoke when burned, which may impact on the environment. Therefore, we developed covering material that includes neither halogen nor harmful heavy metal yet offers almost the same characteristics as conventional cord. The new cord includes a new covering material, which also has low smoke release.

### Eco-products No.0388

**Others**

<table>
<thead>
<tr>
<th>Power cable</th>
</tr>
</thead>
</table>

**Electric power cable considering transmission loss**

**KITANIHON ELECTRIC CABLE CO., LTD.**

6-2, Aza-Mukaiharamae, Kagitori, Taihaku-ku, Sendai, Miyagi  
982-8511 Japan  
Tel: 022-307-1800  Fax: 022-307-1763  
E-mail: knp-pd@post.tinet-i.ne.jp  
URL: http://www.kitaniti-td.co.jp

"Fin equipped power cable with low transmission loss" achieves small transmission loss of power cable by reducing electrical resistance by 20% compared to conventional aerial power cable. In order to achieve the small electrical resistance, the entire aluminum wire is compressed into conductor to increase cross-sectional area of conductor. In addition, fins are equipped on outer layer of the cable so that the cable is not attached with snow.

Products/Model :  
SBACSR/UGS
**Eco-products No.0389**

**Others**

**Optical fiber cable**

**Lead-free H-PCF cord/cable for short/medium-distance transmission**

Sumitomo Electric Industries, Ltd.
1-1-3, Shimaya, Konohana-ku, Osaka, 554-0024 Japan
Tel; 06-6466-5539 Fax; 06-6466-7973
E-mail; fujita@sei.co.jp
URL; http://www.sei.co.jp/h_pcf/sankousi/top.html

**Category:**
- A3. Hazardous Substance
- A4. Waste
- B1. Recyclability
- C4. Product Manufacture
- C6. End-of-Life

Conventional H-PCF (Hard plastic clad optical fiber) cord/cable includes a small amount of lead in its PVC material. The new PVC for H-PCF cord/cable that we have developed does not contain any lead. For materials other than PVC, we use materials without lead, chrome, or heavy metals, thereby reducing environmental impact.

**Products/Model:**
HC, HG, HS, HT series

---

**Eco-products No.0390**

**Others**

**Variety of Halogen-free Cables**

**Variety of halogen-free cables including terminal and fire-protection cables**

Mitsubishi Cable Industries, Ltd.
4-3, Ikejiri, Itami-City, Hyogo 664-0027, Japan
Tel; 072-781-8293 Fax; 072-781-8866
E-mail; Masaaki_Nagai@mitsubishi-cable.co.jp
URL; http://www.mitsubishi-cable.co.jp

**Category:**
- A2. Air Pollution
- A3. Hazardous Substance
- B6. Environmental Purification
- C6. End-of-Life

“Eco-Safe” is a series of flexible cables using PO (poly-olefin resin) instead of PVC (polyvinyl chloride) used in conventional cables. Owing to the characteristics of poly-olefin resin, “Eco Safe” does not include environmental hormone or halogen materials and does not generate dioxin, halogen gas, or excess smoke when incinerated. The reduction in smoke is also helpful for firefighting and residents’ evacuation in the event of a cable fire. Additionally, this product is flexible and easy to recycle.

**Products/Model:**
Eco Safe Series
### Eco-products No.0391

<table>
<thead>
<tr>
<th>Category</th>
<th>Wristwatch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy-saving Wristwatch</strong></td>
<td></td>
</tr>
</tbody>
</table>

CASIO Computer Co., Ltd.
6-2, Hon-machi 1-chome, Shibuya-ku, Tokyo 151-8543, Japan
Tel: 03-5334-4964 Fax: 03-5334-4675
E-mail; http://www.casio.co.jp

This solar powered watch which keeps accurate time and does not require battery replacement, was developed as a supreme environmental product offering maintenance-free operation. We have developed compact models - Model WVH-500DJ (6mm thick) and WVH-100DJ (7mm thick) — by downsizing the antenna by 36%, the battery by 61% and IC/peripheral components by 73% compared with current products.

### Eco-products No.0392

<table>
<thead>
<tr>
<th>Category</th>
<th>Wristwatch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clean-energy Wristwatch that does not require battery replacement</strong></td>
<td></td>
</tr>
</tbody>
</table>

Citizen Watch Co., Ltd.
1-12, 6-chome, Tanashi-cho, Nishi Tokyo-shi, Tokyo 188-8511, Japan
Tel: 0424-66-1231 Fax: 0424-68-4756
E-mail; http://www.citizen.co.jp

The wristwatch is powered by electric energy stored in a solar cell's titanium lithium secondary battery by using the battery as a driving system and uses sunlight and fluorescent lamp light to electric energy through a solar cell dial window.

The watch requires no silver oxide cells and the battery does not need replaced since a secondary battery facilitates recharging. This reduces the use of as hazardous metals including mercury and cadmium.
Eco-products No.0393

**Environmental purifying coating for interior materials**

**Total Clean Inc.**
1-2-16, Kushiro, Kawanishi, Hyogo, 666-0024 Japan
Tel; 072-758-5712 Fax; 072-758-1751
E-mail; info@total-clean.co.jp
URL; http://www.total-clean.co.jp

This aqueous coating contains “wisdom of forerunners,” bitter persimmon extract with no VOC, endocrine-disrupting chemicals etc.
It detoxifies and kills odors such as formaldehyde, acetaldehyde (nicotine odor), ammonia (pet odor) etc. It is available either as a clear coating that won’t affect decor or in a colored version for a renewal of old wall papers.
BOD/COD value are low so it decomposes easily in nature.

Category:
- A5. Resource Consumption
- B2. Longevity
- B3. Resource Saving
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Products/Model:
ECO-LING

---

Eco-products No.0394

**Interior Color-Coating with deodorizing properties**

**Total Clean Inc.**
1-2-16, Kushiro, Kawanishi, Hyogo, 666-0024 Japan
Tel; 072-758-5712 Fax; 072-758-1751
E-mail; info@total-clean.co.jp
URL; http://www.total-clean.co.jp

This coating offers excellent renewal-effect when applied over old wallpaper, reducing industrial waste and contributing to resource conservation. It is a water-based coating with no endocrine disrupter, VOCs etc. It contains persimmon extract which detoxifies and deodorizes odors such as formaldehyde, cigarette smoke and pet odors.
BOD, COD values are low, making it easily decomposed in nature. It is compatible with other materials as well as wallpaper and offers a choice of colors.

Category:
- A4. Waste
- A5. Resource Consumption
- B3. Resource Saving
- B6. Environmental Purification
- C5. Product Use, Maintenance and Repair

Products/Model:
RENEWCOAT
Eco-products No.0395

Others | High-performance Fertilizer

Salt-tolerance improving High-performance Fertilizer containing ALA

Cosmo Oil Co., Ltd. Seiwa Co., Ltd.
Toshiba Bldg., 1-1, Shibaura 1-chome, Minato-ku, Tokyo, 105-8528 Japan
Tel; 03-3798-3215 Fax; 03-3798-3256
E-mail; toru_tanaka@cosmo-oil.co.jp
URL; http://www.cosmo-oil.cp.jp http://www.pentakeep.com

Category:
● A1. Global Warming
● B2. Longevity
● B3. Resource Saving
● B4. Higher Quality
● B6. Environmental Purification

“PENTAKEEP-V” is the only fertilizer in the world that contains ALA. ALA is known to have the following physiological characteristics, making it relevant to environmental fields as well as agriculture.

1) ALA promotes plant absorption of fertilizer, so it is expected to lead to the best use of resource and protect against environmental contamination from run-off.
2) ALA promotes plant photosynthesis. Its carbon dioxide fixation is expected to contribute to protection of global warming.
3) ALA improves salt tolerance. It is expected to contribute to the greening of deserts and alkali soil.

Products/Model :
PENTAKEEP-V

Eco-products No.0396

Others | Deep Layer Aerator

Deep Layer Aerator to provide oxygen for Dams and Lakes

Yokogawa Electric Corporation
9-32, Nakacho 2-chome, Musashino-shi, Tokyo, 180-8750 Japan
Tel; 0422-52-5617 Fax; 0422-52-3421
E-mail; water-sales@csv.yokogawa.co.jp
URL; http://www.yokogawa.com/, http://www.yokogawa.co.jp

Category:
● B2. Longevity
● B4. Higher Quality
● B5. Energy Saving
● B6. Environmental Purification
● C1. Material Extraction

The bottom of enclosed water bodies such as dams or lakes lacks oxygen from spring to summer. Under this situation, sediment is anaerobically decomposed while nutrient salts, manganese and arsenic elute from bottom sludge. This causes deterioration of water quality. By dissolving concentrated oxygen in bottom water and returning the oxygen to the original bottom, the oxygen diffuses only near a water bottom in carpet form. So, this method enables the efficient supply of oxygen to bottom sludge.

Products/Model :
Gas Dissolving System
**Eco-products No.0397**

**Others** | **Adhesive Tape**
---|---

**“OPS tape”, recyclable adhesive-tape only for polystyrene goods.**

LINTEC Corporation  
2-1-2 Koraku, Bunkyo-ku, Tokyo 112-0004, Japan  
Tel; 03-3868-7713  Fax; 03-3868-7741  
E-mail; ar-kumakura@post.lintec.co.jp  
URL; http://www.lintec.co.jp

“OPS” tape is adhesive labeling tape, the use of which is exclusive to the boxes made of styrene form. The styrene form box and the “OPS” tape attached on it are provided to recycle system as they are, because the material of the box and that of “OPS” tape are homogeneity. There is no need to tear off the tape from the box. In this aspect, “OPS” tape contributes to the recycle of styrene form boxes.

Products/Model :  
OPS Tape

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**Eco-products No.0398**

**Others** | **Waste Water Treatment Agent**
---|---

**Inorganic coagulant FA-MICS: Recycles coal ash and reduces environmental load**

Tohoku Electric Power Engineering & Construction Co., Inc.  
2-15-29, Omachi, Aoba-ku, Sendai-shi, Miyagi, 980-0804 Japan  
Tel; 022-261-5431  Fax; 022-64-4138  
E-mail;  
URL; http://www.tohatu.co.jp/

FA-MICS is a wastewater treatment agent recycled from by-products (coal ash) generated in coal-fired power stations and chemically treated to increase its capabilities. The agent immediately forms flocculation against water pollutants, is hardly dissolved and generates sludge that has good compaction and dewatering efficiency.

Furthermore, we sell and lend waste-water clarification units (maximum 20m3/h) using FA-MICS that are applicable to a wide variety of fields, such as rivers, lakes, mine waste water and general waste water.
**Eco-products No.0399**

**Re-galvanized hot dip zinc-coated ironware made of used steel products**

**Cycle Inc.**
S · G Bld.2F Higashi-shinbashii Minato-ku Tokyo, 105-0021 Japan
Tel: 03-5401-3196 Fax: 03-5401-3197
E-mail; t-morita@z-cycle.co.jp
URL; http://www.z-cycle.co.jp/

Generally, rusty hot dip zinc-coated metal fittings are disposed of as iron scrap. However, we offer recycled products by collecting those rusty metal fittings and re-galvanizing them after exfoliating the surface coat and rust. This recycling reduces the energy used in the production process to about 1/10 of that of new products. In addition, by electrolyzing wastewater from the sulfuric acid used for exfoliation (sulfuric acid with zinc and iron) with an electrolyzer, it is possible to retrieve and reuse the sulfuric acid and zinc.

**Category:**
- A4. Wast
- B1. Recyclability
- B7. Usage of Recycled Material
- C4. Product Manufacture
- C6. End-of-Life

**Product/Model:**
- regalvanized steels

---

**Eco-products No.0400**

**Coated fertilisers (SR Coat and Super SR Coat)**

**Sumitomo Chemical Co., Ltd.**
27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8260, Japan
Tel: 03-5543-5500 Fax: 03-5543-5901
E-mail;
URL: http://www.sumitomo-chem.co.jp/

These fertilizers are produced by a resin coating layer to enhance efficiency of use. There are two types of coating available, SR Coat, Super SR Coat. The use of resin coated fertilizers increases resource efficiency and reduces the burden on the environment by decreasing frequency and amount of application compared to conventional fertilizers.

**Category:**
- A5. Resource Consumption
- B3. Resource Saving
- B4. Higher Quality
- C5. Product Use, Maintenance and Repair

---

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.
### Eco-products No.0401

**Others** | **Hydraulic Fluid Additives**
---|---

**Hydraulic Fluid Additives for Reducing Industrial Waste**

**Cosmo Oil Lubricants Co., Ltd.**
9-25, Shibaura, 4-chome, Minato-ku, Tokyo, 108-0023 Japan
Tel: 03-3798-3831 Fax: 03-3798-3185
E-mail;
URL: http://www.cosmo-lube.co.jp

**Category:**
- A4. Waste
- A5. Resource Consumption
- B3. Resource Saving
- C6. End-of-Life

The addition of 5% Cosmo Hydro Clean to the hydraulic fluid currently in use allows powerful dispersal of sludge in tanks and pipes and provides more powerful cleaning than complex oil flushing. The additives also reduce emissions of waste oil.

Products/Model: COSMO HYDRO CLEAN

### Eco-products No.0402

**Others** | **Blackboard Chalk**
---|---

**Eco-friendly school blackboard chalk with additional health benefits**

**Green Techno 21, Inc.**
1828-2 Nagase, Takagise-machi, Saga 849-0917 JAPAN
Tel: 0952-34-5715 Fax: 0952-34-4970
E-mail: info@green-21.com
URL: http://www.green-21.com

**Category:**
- A1. Global Warming
- A4. Waste
- B1. Recyclability
- B7. Usage of Recycled Material
- C1. Material Extraction

Food companies in Japan dispose of around 250,000 t of eggshells per year. About 80% of these go for incineration. This is a costly process and in addition, it creates CO₂ emissions, posing a risk of global warming. Our company has developed “Cocko Chalk” for school blackboards by reprocessing eggshells into fine particles. While conventional blackboard chalks can cause health problems, such as asthma attacks (and occasionally even skin damage to teachers’ fingers), our product is harmless to health thanks to its safe ingredient, natural calcium from eggs.

Thus, we can reduce CO₂ emission and mitigate environmental damage. Our product also preserves minerals since it does not contain gypsum, the main ingredient of conventional chalk.

Products/Model: Cock-a-chalk
### Eco-products No.0403

**Line marking compound for schools and athletic fields**

**Green Techno 21, Inc.**  
1828-2 Nagase, Takagise-machi, Saga 849-0917 JAPAN  
Tel; 0952-34-5715 Fax; 0952-34-4970  
E-mail: info@green-21.com  
URL: http://www.green-21.com  

Food companies in Japan dispose of around 250,000 t of eggshells per year. About 80% of these go for incineration. This is a costly process and in addition it creates CO₂ emissions, posing a risk of global warming. Our company has developed “Gaia Field Line” for field line marking by reprocessing eggshells into fine particles. While conventional slaked lime could pose health risks such as burns or damage to the eyes and skin, our product is harmless to health thanks to its safe ingredient, natural calcium from eggs. Thus, we can reduce CO₂ emissions and mitigate environmental damage. Our product helps to preserve minerals because it does not contain gypsum, the main ingredient of conventional line marking compound.

Category:  
- A1. Global Warming  
- A4. Waste  
- B1. Recyclability  
- B7. Usage of Recycled Material  
- C1. Material Extraction  

Products/Model :  
Gaia Field Line

### Eco-products No.0404

**Eco-friendly halogen-free rubber cabtire cable for mobile wireway**

**Hannan Electric Wire & Cable Co., Ltd.**  
66-10, Kumai, Kibi, Arida, Wakayama, 643-0023 Japan  
Tel; 0737-52-7605 Fax; 0737-52-7607  
E-mail: kobayashi-yutaka97@sei.co.jp  
URL:  

Halogen-free rubber cabtire cable EM-PPCT reduces halogen gas and dioxin generation when it is burned by using ethylene rubber for its sheath, thus reducing environmental impact. Moreover, the EM-PPCT having the features of flame resistance and flexibility, is light and useful superior to conventional cabtire cables (PNCT) using chloroprene rubber.

Category:  
- A2. Air Pollution  
- A3. Hazardous Substance  
- B1. Recyclability  
- C6. End-of-Life

Products/Model :  
Halogen - free rubber cabtire cable
### Eco-products No.0405

**Others** | **Running shoes**
--- | ---

**Running shoes with PET bottle- recycled artificial leather shoe upper**

**MIZUNO CORPORATION**  
1-12-35, Nanko-kita, Suminoe-ku, Osaka 559-8510, Japan  
Tel: 06-6614-8455 Fax: 06-6614-8399  
E-mail;  
URL: [http://www.mizuno.co.jp](http://www.mizuno.co.jp)

**Category:**  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- B7. Usage of Recycled Material  
- C4. Product Manufacture

Material recycled from PET bottles is shoe uppers.  
“Mizuno Wave” technology delivers optimal cushioning and stability simultaneously.  
The wave plate gives excellent stability, provides shock dispersal and minimizes excessive deformation of weighted parts.  
MIZUNO also uses PET bottle-recycled polyester fiber for sportswear, promoting the use of recycled materials.  
MIZUNO contributes saving resources and reducing waste.

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### Eco-products No.0406

**Others** | **Recycling System for Used Tickets**
--- | ---

**Office Supplies from Used Tickets**

**Nagoya Railroad Co., Ltd.**  
1-2-4 Meieki Nakamura-ku, Nagoya-shi, Aichi, 450-8501  
Tel: 052-588-0805 Fax: 052-588-0809  
E-mail: action-eco@nrr.meitetsu.co.jp  
URL: [http://www.meitetsu.co.jp](http://www.meitetsu.co.jp)

**Category:**  
- A1. Global Warming  
- A4. Waste  
- B1. Recyclability  
- B3. Resource Saving  
- B7. Usage of Recycled Material

- **Products/Model:**  
  - **RUNNING SHOES**

- **Products/Model:**  
  - **Nil**

- **Others** | **Recycling System for Used Tickets**
--- | ---

- High daily volumes of used tickets can be disposed of without incineration.  
- The use of virgin materials can be reduced by utilizing recyclable used tickets.
### Eco-products No.0407

**Biodegradable plastic net including chilli for protecting trees and crops**

**NTT Neomeit Hokuriku Co., Ltd.**  
1-43-1, Masuizumi, Kanazawa-City, Isikawa, 921-8025 Japan  
Tel; 076-226-8322  Fax; 076-226-8825  
E-mail; eco@hkr.ntt-neo.co.jp  
URL; http://www.hkr.ntt-neo.com

This net is made from biodegradable plant sources such as corn, and does not use fossil fuels like petroleum. Additionally, the repellent we use to protect trees and crops from animals and birds is made from chilli pepper extract, another eco-friendly material. After use, the product dissolves to water and carbon dioxide, thanks to nature's microorganisms so it does not generate waste. The generated carbon dioxide is taken into plants and used for photosynthesis, leading to a reduction of CO₂ in the atmosphere.

**Products/Model:**  
RAYSTAR PROTEX

---

### Eco-products No.0408

**Internet waste tracking service providing information on handling**

**NTT Advanced Technology Corporation**  
Neocity Mitaka Bldg. 7F, 3-35-1, Shimorenjaku, Mitaka-city, Tokyo, 181-0013 Japan  
Tel; 03-5217-8892  Fax; 03-3270-6286  
E-mail; kankyo@ntt-me.co.jp  
URL; http://www.ntt-me.co.jp/junkan/kankyo

This Internet service for waste treatment monitoring avoids the need for someone to be present when waste leaves a site or arrives at the intermediate treatment plant. Instead, the waste material handling course can be confirmed with GPS via the Internet. This helps the environment by providing a variety of savings such as in energy consumed and CO₂ emitted by cars, trains, and airplanes and also saves paper by recording treatment steps in electronic files.

**Products/Model:**  
The Waste picture pursuit service
### Eco-products No.0409

<table>
<thead>
<tr>
<th>Others</th>
<th>Environmental Management Support System</th>
</tr>
</thead>
</table>

#### “Smart-Eco” Integrated system with functions to support environmental management

**NTT GP-ECO Communication, Inc.**  
Shakujii Koen Peerless 2F, 2-14-1 Shakujii-machi Nerima-ku Tokyo, 177-0041 Japan  
Tel; 03-5910-7900  Fax; 03-5910-7880  
E-mail; info@ntt-gp.com  
URL: http://www.ntt-gp.com

“Smart-Eco” has a variety of functions such as computerized approval and distribution, computerized management of activities, and environmental information gathering which are all important to the operation of an environmental management system. It helps to reduce the amount of paper used, and reduces the time necessary for the business activities for environmental management to about 1/3 of the conventional systems. It incorporates a plan-do-check-action cycle and is also capable of compiling the information needed to write an environmental report. We also provide web-based training for employees that can be customized according to customer demand by applying the unique assignment a customer addresses to teaching materials.

- **Category:**  
- A1. Global Warming  
- A4. Waste  
- A5. Resource Consumption  
- B3. Resource Saving  
- B5. Energy Saving

### Eco-products No.0410

<table>
<thead>
<tr>
<th>Others</th>
<th>Aluminum paste for painting</th>
</tr>
</thead>
</table>

#### An aluminum paste with little use of volatile organic compounds

**Showa Denko K.K.**  
13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 105-8518 Japan  
Tel: 03-5470-3610  Fax; 03-3435-9606  
E-mail;  
URL: http://www.sdk.co.jp

We are developing an aluminum paste to cope with water-based metallic paints with water as the primary solvent, in order to reduce the use of volatile organic compounds which cause air pollution and global warming. We are also developing an odor-free aluminum paste product which contains almost no odorous solvents or compounds and a solvent-free product which deals with ultraviolet-hardened paints and powder coatings.

- **Category:**  
- A3. Hazardous Substance  
- B4. Higher Quality  
- C2. Material and Components Production  
- C3. Design and Material Selection  
- C4. Product Manufacture
# Eco-products No.0411

<table>
<thead>
<tr>
<th>Others</th>
<th>Cutting tool</th>
</tr>
</thead>
</table>

## Long-life eco-friendly cutting tool

<table>
<thead>
<tr>
<th>Sumitomo Electric Hardmetal Corp.</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-1, Koya- kita, Itami, Hyogo, 664-0016 Japan</td>
<td>● A5. Resource Consumption</td>
</tr>
<tr>
<td>Tel; 072-771-0529 Fax; 072-771-0623</td>
<td>● B2. Longevity</td>
</tr>
<tr>
<td>E-mail;</td>
<td>● B4. Higher Quality</td>
</tr>
<tr>
<td>URL; <a href="http://www.sumitool.com/">http://www.sumitool.com/</a></td>
<td>● B5. Energy Saving</td>
</tr>
<tr>
<td></td>
<td>● C4. Product Manufacture</td>
</tr>
</tbody>
</table>

DLC coating is a DLC coating film that features high performance in lubrication, sealing, and uniformity. The DLC coating allows dry aluminum alloy cutting, eliminating the need for cutting fluid which can have an adverse environmental effect. In addition, it offers a high anti-friction performance and long-life. It can reduce cutting friction by 30%, resulting in energy savings.

※ DLC (= Diamond Like Carbon)

Products/Model :
DLC coating

# Eco-products No.0412

<table>
<thead>
<tr>
<th>Others</th>
<th>Hydrocarbon system cleaner</th>
</tr>
</thead>
</table>

## Eco-friendly Industrial Cleaner

<table>
<thead>
<tr>
<th>Tosoh Corporation</th>
<th>Category:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-8-2, Shiba, Minato-ku, Tokyo 105-8623, Japan</td>
<td>● C5. Product Use, Maintenance and Repair</td>
</tr>
<tr>
<td>Tel;</td>
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<td>Fax;</td>
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<td>E-mail;</td>
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<tr>
<td>URL; <a href="http://www.tosoh.co.jp">http://www.tosoh.co.jp</a></td>
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</tbody>
</table>

The HC series is used for degreasing and cleaning metal machine components in the precision equipment and electronics fields. It is a non water-based environmentally-friendly cleaner that does not use chlorofluorocarbon gas or ethane.

Products/Model :
HC-250
Clean Maintenance Co., Ltd has developed a new detergent for the cleaning of air conditioner. In comparison with the previous detergents, the product has the following merits.

1. The product does not injurious to the skin of the hands.
2. The product does not corrode the aluminum material.
3. The product does not worsen the properties of the plastics.
4. The product does not discolor the plastics.
5. The strong cleaning power of the product recovers the performance of air conditioner, which leads to the decrease of the power consumption and the expansion of the life of air conditioner.
6. Waste solution of the cleaning is a small amount because the neutralization is unnecessary.
7. Reuse of the waste solution is possible.

Products/Model:
Super cell clean

HLC-8220GPC is an all-in-one analytical instrument exclusively for GPC equipped with the apparatus necessary for GPC (Gel Permeation Chromatography.) We materialized limit of dead volume with appropriate layout for each functional apparatus and in parallel high reproducibility and high-sensitization. Using semi-micro SEC column (4.6mmΙ.D. 15cm) together has reduced measurement time by half. In addition, solvent consumption has been reduced by 5/6th. (Tosoh Corporation figure)
Eco-products No.0415

Others | Analytical instrument
---|---
**Ion Chromatograph IC-2001**
Exclusive system for ion chromatography for analytical field of, including environment, underwater ion such as foods, medication or wastewater, downsized high-performance with simple operation

Tosoh Corporation
3-8-2, Shiba, Minato-ku, Tokyo 105-8623, Japan
Tel: 03-5427-5103  Fax: 03-5427-5195
E-mail: tosoh@tosoh.co.jp
URL: http://www.tosoh.co.jp

The Ion chromatograph IC-2001 is an all-in-one, high-performance analytical instrument equipped with an auto-sampler exclusively for ion chromatography. It uses new suppressor technology developed by Tosoh. It allows easy determination of negative and positive ions with high-sensitivity. It is simple to operate and uses a newly-developed high-separation column. Its compact size (320W×410D×400H - comparable to A3 portrait-size), resolves the problem of installation space.

Category:
- B2. Longevity
- B4. Higher Quality

Products/Model:
Ion Chromatography system IC-2001

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Eco-products No.0416

Others | Soundproof chamber
---|---
**Recyclable general purpose soundproof chamber**

Yamaha Corporation
10-1 Nakazawa-cho, Hamamatsu, Shizuoka, 430-8650 Japan
Tel: 0120-284-808  Fax: 053-461-7209
E-mail;
URL: http://www.yamaha.co.jp

This chamber achieves a weight reduction over conventional chambers, while maintaining higher sound insulation performance. As a result of modifications involving changes to the shape and configuration of acoustic materials inside a panel and damping materials or others are modified, it is 15% to 20% lighter than existing products. Moreover, recycling of the product is possible since it does not use vinyl chloride for the ceiling, wall cloth or door materials.

Category:
- A4. Waste
- A5. Resource Consumption
- B1. Recyclability
- B3. Resource Saving
- C6. End-of-Life

Products/Model:
AvitecsTM (Mini Type)
**Eco-products No.0417**

**General-use drum using less paint**

Yamaha Corporation
10-1 Nakazawa-cho, Hamamatsu, Shizuoka, 430-8650 Japan
Tel: 053-411-4744 Fax;
E-mail;
URL: http://www.yamaha.co.jp

It is difficult to make the coating of a drum aqueous because of problems in maintaining its tone and durability. However, development of a new painting technology has achieved aqueous painting. As a result, the undercoat paint inside a main drum can be changed to aqueous coating.

Additionally, the transparent final coating and walnut coating is reduced by 10% with a UV coating (using ultraviolet hardening-type coating).

**Eco-products No.0418**

**Greening stuff including temperature-sensitive resin that absorbs and discharges water**

NTT GP-ECO Communication, Inc.
Shakujii Koen Peerless 2F, 2-14-1 Shakujii-machi Nerima-ku Tokyo, 177-0041 Japan
Tel: 03-5910-7900 Fax: 03-5910-7880
E-mail: info@ntt-gp.com
URL: http://www.ntt-gp.com

“Dom turf” is unitized greening, made from recycled urethane foam, onto which turf is directly laid. Temperature-sensitive resin inside the urethane foam absorbs and discharges water depending on the temperature.

The foam is recycled from factories, and the internal resin retains rainwater or sprayed water and discharges it when outside air temperature reaches a preset temperature. Thus, the temperature-sensitive resin can reduce environmental load. In addition, “Dom turf” uses turf grown without chemicals and soil made from sugarcane and other materials to ensure healthy turf.
**Chrome-free surface treatment agent for aluminum wheels**

Nippon Paint Co., Ltd.
2-1-2, Oyodokita, Kita-ku, Osaka-shi, Osaka 531-8511, Japan
Tel: 06-6455-9194 Fax;
E-mail;
URL: http://www.nipponpaint.co.jp/inquiry/

Surface treatment agent including chrome is conventionally used for aluminum wheel priming in order to maintain high anti-corrosion performance. We have developed an eco-friendly surface treatment agent without chrome. This agent realizes higher performance than conventional surface treatment agents with chrome and has already been widely used in production lines.

※Excerpt from the data of Annual Environmental Reports, Sustainable Reports, and so on.

**"Orchid Base", the shrubbery-soil made from malt-feed**

Asahi Breweries, Ltd.
23-1, Azumabashi 1-chome, Sumida-ku, Tokyo 130-8602 Japan
Tel: 03-5608-5195 Fax: 03-5608-5201
E-mail: ecpost@asahibeer.co.jp
URL: http://www.asahibeer.co.jp/

One of the waste materials evolved in the manufacturing process of the beer is malt-feed, which is mainly utilized as a feed of cattle. For the purpose of expanding the reuse of malt-feed, Asahi Ecology, Ltd. (Asahi Breweries, Ltd. group) has developed a new commodity "Orchid Base", which is the shrubbery-soil of ceramic grains. "Orchid Base" is made from malted-feed by a series of treatment: dryness -forming by press- baking. "Orchid Base" has characteristics of not containing heavy metal, but being rich in mineral component, so it is proper for the culture of sugar-rich tomato and that of plants such as orchid.

Products/Model :
Orchid Base
L-Lysine to forage: to provide better dietary amino acid balance

Ajinomoto Co., Inc.
15-1, Kyobashi 1-chome, Chuo-ku, Tokyo 104-8315, Japan
Tel: 03-5250-8140  Fax: 03-5250-8270
E-mail; izuru_shinzato@ajinomoto.com
URL: http://www.ajinomoto.com

|----------|------------------------|-------------------|-------------------------------|----------------------------------------|

Feeds for livestock animals are mainly composed of vegetable ingredients such as corn, wheat, and soybean meal. Most proteins in such vegetable ingredients do not necessarily have the optimal amino acid profile for body protein synthesis by animals. The insufficient supply of a certain amino acid may lead not only to inferior growth but also to increased excretion of nitrogen to the environment because of less efficient utilization of amino acids for protein synthesis and the subsequent enhancement in catabolism of amino acids. Supplementation of L-lysine, which is in general the 1st limiting amino acid in pigs and the 2nd limiting in chickens, can contribute to the reduction of nitrogen excretion from animals to the environment by improving dietary amino acid balance and consequently by improving amino acid utilization efficiency. In addition, because the usage of L-lysine in the feeds can sustain the ideal growth of animals with a less amount of feeds, it helps save the land area for feed crop production.

Products/Model:
aL-Lysine Monohydrochloride Feed Grade
Company List

A

A.L.M.T. TECH Inc.
http://www.allied-material.co.jp/
Advanced Automation Company, Yamatake Corporation
http://www.yamatake.com
AICH STEEL CORPORATION
http://www.aichi-steel.co.jp
AIR WATER INC.
http://www.awi.co.jp/
Aisan Industry Co., Ltd.
http://www.aisan-ind.co.jp/
Ajinomoto Co., Inc.
http://www.ajinomoto.com
Alpine Electronics, Inc.
http://www.alpine.com
AMITA CORPORATION
http://www.amita-net.co.jp/
Anritsu Corporation
http://www.anritsu.co.jp
Anritsu Industrial Solutions Co., Ltd.
http://www.anritsu.co.jp/J/Industry/
APICA Co., Ltd.
http://www.apica.co.jp/
APPAX Co., Ltd.
http://www.appax.com
Asahi Breweries, Ltd.
http://www.asahibeer.co.jp/
Asahi Kasei Corporation
http://www.asahi-kasei.co.jp/
ASAHI KASEI CONSTRUCTION MATERIALS CORPORATION
http://www.asahikasei-kenzai.com
ASAHI KASEI FIBERS CORPORATION
http://www.ak-bemberg.com
http://www.ak-fibers.jp
http://www.asahi-kasei.co.jp/eutec
http://www.bemliese.com

B

Banana Paper Project
http://www.bananaproject.com/jp/top/index.html
Bando Chemical Industries Ltd.
http://www.bando.co.jp
BROTHER INDUSTRIES, LTD.
http://www.brother.co.jp

C

C-PRO Co., Ltd.
http://www.cpco.jp/
Calsonic Kansei Corporation
http://www.calsonickansei.co.jp/
Canon Inc.
http://canon.jp/
CASIO Computer Co., Ltd.
http://www.casio.co.jp
Central Research Institute of Electric Power Industry (CRIEPI)
http://criepi.denken.or.jp
CHIKUMA & Co., Ltd.
http://www.chikuma.co.jp
CHUBU ELECTRIC POWER CO., INC.
http://www.chuden.co.jp/otoiawase/index.html
Chugai Pharmaceutical Co., Ltd.
http://www.chugai-pharm.co.jp/hc/chugai_top.jsp
Citizen Watch Co., Ltd.
http://www.c-e.co.jp/home.asp
http://www.citizen.co.jp
Clarion Co., Ltd.
http://www.clarion.co.jp
Clean Maintenance Co., Ltd.
http://www.air-cm.co.jp
CombiWith Corporation
http://www.combiwith.co.jp
Cosmo Engineering Co., Ltd.
http://www.cosmoeng.co.jp
Cosmo Oil Co., Ltd.
http://www.cosmo-oil.co.jp
Cosmo Oil Lubricants Co., Ltd.
http://www.cosmo-lube.co.jp
Cycle Inc.
http://www.z-cycle.co.jp/

D

Dai Nippon Printing Co., Ltd.
http://www.dnp.co.jp/
Daice Chemical Industries, Ltd.
http://www.daice.co.jp/celgreen/
http://www.daice.co.jp/wsp/f-p-c.html
DAIDO STEEL CO., LTD.
http://www.daido.co.jp
DAIHATSU MOTOR CO., LTD.
http://www.daihatsu.co.jp
Daiichi Pharmaceutical Co., Ltd.
http://www.daiichipharm.co.jp/index2.html

DAIKIN INDUSTRIES, LTD.
http://www.daikin.co.jp
http://www.daikin.co.jp/kankyo/

Dainippon Ink And Chemicals, Incorporated
http://www.dic.co.jp/form.html

Daiwa House Industry Co., Ltd.
http://www.daiwahouse.co.jp/

DENSO CORPORATION
http://www.denso.co.jp

DUPLO CORPORATION
http://www.duplo.com

Ebara Corporation
http://www.ebara.co.jp

Eizo Nanao Corporation
http://www.eizo-nanao.com/

ENTEC Co., Ltd.
http://www.k-entec.co.jp

FDK CORPORATION
http://www.fdk.co.jp/

Fuji Heavy Industries Ltd.
http://www.fhi.co.jp/index.html

Fuji Photo Film Co., Ltd.
http://home.fujifilm.com/

Fuji Xerox Co., Ltd.
http://www.fujixerox.co.jp/

Fujikura Ltd.
http://www.fujikura.co.jp/

Fujimak Corporation
http://www.fujimak.co.jp/

Fujisawa Pharmaceutical Co., Ltd.
http://www.fujisawa.co.jp/

Fujiseiki Machine Works Ltd.
http://www.toshiba-machine.co.jp/fj/

Fujitsu General Limited
http://www.fujitsugeneral.co.jp/

Fujitsu Limited
http://jp.fujitsu.com/

Fukutoku Corporation
http://www.fukutoku.com

The Furukawa Electric Co., Ltd.
http://www.furukawa.co.jp

Green Techno 21, Inc.
http://www.green-21.com

Hannan Electric Wire & Cable Co., Ltd.

Hazama Corporation
http://www.hazama.co.jp

HEIWA PAPER CO., LTD.
http://www.paper-hsk.co.jp

Hitachi Chemical Co., Ltd.
http://www.hitachi-chem.co.jp

Hitachi High-Technologies Corporation
http://www.hitachi-hitech.com/index.html

Hitachi Home & Life Solutions, Inc.
http://www.hitachi-hl.com/

Hitachi Information Systems, Ltd.
http://www.hitachijoho.com/

Hitachi Koki Co., Ltd.
http://www.hitachi-koki.com

Hitachi Maxell, Ltd.
http://www.maxell.co.jp/environment/contact.html

Hitachi Metals, Ltd.
http://www.hitachi-metals.co.jp/

Hitachi, Ltd., Digital Media Division
http://www.hitachi.co.jp/index-j.html

Honda Motor Co., Ltd.
http://www.honda.co.jp/

Hoya Corporation
http://www.hoya.co.jp/japanese/index.cfm

Idemitsu Engineering Co., Ltd.
http://www.idemitsu.co.jp/en

INAX Corporation
http://inax.co.jp/

Ishikawajima-Harima Heavy Industries Co., Ltd.
http://www.ihhi.co.jp/

ISUZU MPTORS LIMITED
http://www.isuzu.co.jp

ItoKi Co., Ltd.
http://www.itoki.co.jp/

Japan Polypropylene Corporation
http://www.film-sheet.com/

THE JAPAN STEEL WORKS, LTD.
http://www.jsw.co.jp
Japan Storage Battery Co., Ltd.
http://www.nippondenchi.co.jp/npd/toi/toi.html

JFE Engineering Corporation
http://www.jfe-eng.co.jp/

JFE Holdings, Inc.

JFE Steel Corporation
http://www.jfe-steel.co.jp

JICHODO Co., Ltd.
http://www.jichodo.co.jp

Jit Co., Ltd.
http://www.jit-c.co.jp

K

KÈK ASSOCIATES Co., Ltd.
http://www.kek.co.jp

KAJIMA CORPORATION
http://www.kajima.co.jp/

Kanebo, Ltd.
http://www.kanebo.co.jp/index.htm

Kansai Paint Co., Ltd.
http://www.kansai.co.jp/mail/iken.html

Kanto Denka Kogyo Co., Ltd.
http://www.kantodenka.co.jp

Kao Corporation
http://chemical.kao.co.jp/e/

Kawakami Sangyou Co., Ltd.
http://www.putiputi.co.jp/

KAWASAKI HEAVY INDUSTRIES, LTD.
http://www.khi.co.jp/

Keihin Corporation
http://www.keihin-corp.co.jp/

Kikkoman Corporation
http://www.kikkoman.co.jp/

KING JIM CO., LTD.
http://www.kingjim.co.jp/

KIRIN Brewery Company Limited
http://www.kirin.co.jp

KITANIHON ELECTRIC CABLE CO., LTD.
http://www.kitaniti-td.co.jp

KOBE STEEL, LTD.
http://www.kobelco.co.jp/

Koito Manufacturing Co., Ltd.
http://www.koito.co.jp/f_index.html

KOKUYO Co., Ltd.
http://www.kokuyo.co.jp

Komatsu Ltd.
http://www.komatsu.com/

Konica Minolta Business Technologies, Inc.
http://konicanminolta.jp

Kose Corporation
http://www.kose.co.jpoffice/form_m.html

Koyo Seiko Co., Ltd.
http://www.koyo-seiko.co.jp/japanese/

Koyo Sangyo, Co., Ltd.
http://www.koyo-web.com/

KUBOTA Corporation
http://www.kubota.co.jp/

Kumagai Gumi Co., Ltd.
http://www.kumagaigumi.co.jp/main.html

Kuraray Chemical Co., Ltd.
http://www.kuraray-c.co.jp

Kyocera Corporation
http://www.kyocera.co.jp

Kyodo Printing Co., Ltd.
http://www.toppan.co.jp/index_f.html

Kyowa Hakko Chemical Co., Ltd.
http://www.kyowachemical.co.jp

L

LINTEC Corporation
http://www.lintec.co.jp

LION OFFICE PRODUCTS CORPORATION
http://www.lion-jimuki.co.jp

Logitec Corporation
http://www.logitec.co.jp/

M

Mabuchi Motor Co., Ltd.
http://www.mabuchi-motor.co.jp/

Mammoth Co., Ltd. Head Office
http://www.mammoth-g.jp

Maruju Kasei Co., Ltd.
http://www.misnon.com

Matsushita Ecology Systems Co., Ltd.
http://panasonic.co.jp/mesc

Matsushita Electric Industrial Co., Ltd.
http://national.jp/
http://panasonic.co.jp/

Matsushita Electric Works, Ltd.
http://www.mew.co.jp

MATUYA INDUSTRY CORPORATION
http://www.d2.dion.ne.jp/~matuya/

Mazda Motor Corporation
http://customer.mazda.co.jp/inquiry.html

Misawa Homes Co., Ltd.
http://www.misawa.co.jp

Mitsuba Corporation
http://www.mitsuba.co.jp/

Mitsubishi Cable Industries, Ltd.
http://www.mitsubishi-cable.co.jp

Mitsubishi Chemical Corp.
http://www.m-kagaku.co.jp/index.htm
MITSUBISHI CHEMICAL
FUNCTIONAL PRODUCTS, INC.
http://www.yes-mks.co.jp
Mitsubishi Electric Corporation
http://www.mitsubishielectric.co.jp/
MITSUBISHI ELECTRIC LIGHTING CORPORATION
http://www.mitsubishielectric.co.jp/group/mitf/
MITSUBISHI ELECTRIC OSRAM Ltd.
http://www.mol-omi.co.jp
Mitsubishi Heavy Industries, Ltd.
http://www.mhi.co.jp
Mitsubishi Materials C.M.I. Corporation
http://www.mmc.co.jp
Mitsubishi Materials Corporation
http://www.mmc.co.jp
MITSUBISHI PAPER MILLS LIMITED
http://www.e-mpm.com/products/
MITSUBISHI PENCIL Co., Ltd.
http://www.mpuni.co.jp
MITSUBISHI PLASTICS, INC.
http://www.mpi.co.jp
Mitsubishi Rayon Co., Ltd.
http://www.mrc.co.jp/
Mitsubishi Rayon Engineering Co., Ltd.
http://www.sterapore.com/
Mitsui Chemicals Corporation
http://www.mitsui-chem.co.jp/index.htm
Mitsui Mining Materials Company Limited
http://www.mitsui-mining.co.jp/
Miyoshi Oil & Fat Co., Ltd.
http://www.miyoshi-yushi.co.jp
MIZUNO CORPORATION
http://www.mizuno.co.jp
Murata Manufacturing Company Ltd.
http://www.murata.co.jp/

Ngk Spark Plug Co., Ltd.
http://www.ngkntk.co.jp/menu.html
NHK Spring Co., Ltd.
http://www.nhkspg.co.jp/
Nichicon Corporation
http://www.nichicon-us.com/index.html
Nikon Corporation
http://www.nikon.co.jp
Nippon Electric Glass Co., Ltd.
http://www.neg.co.jp
Nippon Oil Corporation
http://www.eneos.co.jp/
Nippon Paint Co., Ltd.
http://www.nipponpaint.co.jp/inquiry/
Nippon Paper Industries Co., Ltd.
http://www.npaper.co.jp
Nippon Sanso Corporation
http://www.sanso.co.jp
Nippon Senjoki K.K.
http://www.n-sen.com/
Nippon Sheet Glass Co., Ltd.
http://www.nsg.co.jp
Nippon Steel Corporation
http://www0.nscc.co.jp/kankyou/index.html
NIPPON TELEGRAPH AND TELEPHONE WEST CORPORATION
http://www.ntt.west.co.jp
Nishimatsu Construction Co., Ltd.
http://www.nishimatsu.co.jp/eng/
Nishiyodo Corporation
http://www.nishiyodo.co.jp/
Nissin Steel Co., Ltd.
http://www.nissin-steel.co.jp/
NITTO DENKO CORPORATION
http://www.nitto.co.jp
NSK Ltd.
http://www.nsk.com
NTN Corporation
http://www.ntn.co.jp/
NTT Advanced Technology Corporation
http://www.keytech.ntt-at.co.jp/
http://www.ntt-me.co.jp/junkan/kankyo
NTT Neomeit Hokuriku Co., Ltd.
http://www.hkr.ntt-neo.com
NTT GP-ECO Communication, Inc.
http://www.ntt-gp.com

Obayashi Corporation
Obayashi Corporation, Technical Research Institute
http://www.obayashi.co.jp/
Oji Fiber Co., Ltd.
http://www.ojifiber.co.jp
Oji Paper Co., Ltd.  http://www.ojipaper.co.jp
Okamura Corporation  http://www.okamura.co.jp
OKAWARA MFG. CO., LTD.  http://www.okawara.co.jp

PIONEER CORPORATION  http://www.pioneer.co.jp
Platinum Pen Co., Ltd.  http://bungu.plus.co.jp

RENGO CO., LTD. CENTRAL LABORATORY  http://www.rengo.co.jp/index.htm
Rinnai Corporation  http://www.rinnai.co.jp/

Sagawa Express Co., Ltd.  http://www.sagawa-exp.co.jp/
SAIBU GAS CO., LTD.  http://www.saibugas.co.jp
Sakata Seed Corporation  http://www.sakataseed.co.jp
Sanden Corporation  http://www.sanden.co.jp
SANKEI Co., Ltd.  http://www.isu-sankei.co.jp/
Sankyo Co., Ltd.  http://www.sankyo.co.jp/
SANYO Air Conditioner Co., Ltd.  http://www.sanyo.co.jp/kuuchou/
SARAYA CO., LTD.  http://www.saraya.com
SEIKO EPSON CORPORATION  http://www.epson.co.jp
Sekisui Chemical Co., Ltd. Housing Company  http://www.sekisuiheim.com
Sekisui Chemical Co., Ltd. Housing Company Urban Infrastructure & Environmental Products Headquarters  http://www.sekisui.co.jp/
SEKONIC CORPORATION  http://www.sekonic.co.jp
Senju Metal Industry Co., Ltd.  http://www.senju-m.co.jp/
SHARP CORPORATION  http://www.sharp.co.jp
Shimadzu Corporation  http://www.shimadzu.co.jp
SHIMIZU CORPORATION  http://www.shimz.co.jp/
Shin-Etsu Chemical Co., Ltd.  http://www.shinetsu.co.jp
SHINKO ELECTRIC INDUSTRIES CO., LTD.  http://www.shinko.co.jp
SHISEIDO CO., LTD.  http://www.shiseido.co.jp
Showa Denko K.K.  http://www.sdk.co.jp
Showa Electric Wire & Cable Co., Ltd.  http://www.swcc.co.jp
Showa Shell Sekiyu K.K.  http://www.showa-shell.co.jp
Shinwa Wood Industrial Co., Ltd.  http://www.shinwa-m.com
Sony Corporation  http://www.sony.net
Sumitomo Bakelite Co., Ltd.
http://www.sumibe.co.jp/index.html
Sumitomo Chemical Co., Ltd.
http://www.sumitomo-chem.co.jp/
Sumitomo Electric Fine Polymer, Inc.
http://www.sei-sfp.co.jp
Sumitomo Electric Flat Components, Inc.
http://www.sei.co.jp/ewp/J/
Sumitomo Electric Hardmetal Corp.
http://www.sumitool.com/
Sumitomo Electric Industries, Ltd.
http://www.sei.co.jp
Sumitomo Heavy Industries, Ltd.
http://www.shi.co.jp/
Sumitomo Metal Industries, Ltd.
http://www.sumitometals.co.jp
Sumitomo Metal Mining Co., Ltd.
http://www.smm.co.jp/main.html
Sumitomo Osaka Cement Co., Ltd.
http://www.soc.co.jp/index.html
Sumitomo Rubber Industries, Ltd.
http://www.srigroup.co.jp/ecopedia/index.html
Sumitomo Wiring Systems, Ltd.
http://www.sws.co.jp/
Suntory Limited
http://www.suntory.co.jp/index.html

Tokico Ltd.
http://www.tokico.co.jp/
The Tokio Marine and Fire Insurance Co., Ltd.
http://www.tokiomarine.co.jp
Tokyo Electric Power Company
http://www.tepco.co.jp
Tokyo Electric Power Environmental Engineering Co. Inc.
http://www.tee-kk.co.jp
Tokyo Gas Co., Ltd.
http://www.tokyo-gas.co.jp/
Tombow Pencil Co., Ltd.
http://www.tombow.com
Toppan Printing Co., Ltd.
http://www.toppan.co.jp/index_n.html
http://www.kyodoprinting.co.jp/khome/welcome.html
Toray Industries, Inc.
http://www.toray.co.jp
http://www.waterless-print.com/index.php
TOSHIBA CARRIER AIR CONDITIONING SYSTEMS CORPORATION
http://www.toshiba-carrier.co.jp/
TOSHIBA CARRIER CORPORATION
http://www.toshiba-carrier.co.jp
TOSHIBA CONSUMER MARKETING CORPORATION
http://www.toshiba.co.jp/tcm/
TOSHIBA ELECTRON TUBES & DEVICES CO., LTD.
http://www.toshiba-tetd.co.jp/tetd/qcinfo/ele_kankyo_j.htm
TOSHIBA HOMELIGHTING CO., LTD.
http://www.tlt.co.jp/tlt/akari/home/home/home.htm
TOSHIBA LIGHTING & TECHNOLOGY CORPORATION
http://www.tlt.co.jp/
Toshiba Machine Co., Ltd.
http://www.toshiba-machine.co.jp
TOSHIBA MEDICAL SYSTEMS CORPORATION
http://www.toshiba-medical.co.jp/tmd/
TOSHIBA TEC CORPORATION
http://www.toshibatec.co.jp/
Tosoh Corporation
http://www.tosoh.co.jp
TOSTEM CORPORATION
http://www.tostem.co.jp/
Total Clean Inc.
http://www.total-clean.co.jp
TOTO Ltd.
http://www.toto.co.jp
TOYO ENGINEERING WORKS
http://www.h.toyo-ew.co.jp/
Toyo Glass Co., Ltd.
http://www.toyo-glass.co.jp/index.html
TOYO INK MFG. CO., LTD.
http://www.toyoink.co.jp
Toyo Kohan Company, Limited
http://www.toyokohan.co.jp/

Taiheiyo Cement Corporation
http://www.taiheiyo-cement.co.jp
Taisei Corporation
http://www.taisei.co.jp
Taisho Pharmaceutical Co., Ltd.
http://www.taisho.co.jp
Taiyo Yuden Co., Ltd.
http://www.ty-top.com
TDK Corporation
http://www.tdk.co.jp
Teijin Limited
http://www.teijin-eco.com
Teramoto Corporation Ltd.
http://www.teramoto.co.jp/
Terumo Corporation
http://www.terumo.co.jp
Toda Corporation
http://www.toda.co.jp
Toho Gas Co., Ltd.
http://www.tohogas.co.jp/work/kankyo/
Tohoku Electric Power Engineering & Construction Co.,Inc.
http://www.tohatsu.co.jp/
Tokai Rika Co., Ltd.
http://www.tokai-rika.co.jp/
TOYO RICE CLEANING MACHINE CO., LTD.
http://www.toyoseimaiki.co.jp

Toyo Seikan Group
http://www.toyo-seikan.co.jp/

Toyo Tire & Rubber Co., Ltd.
http://www.toyo-rubber.co.jp/

Toyobo Co., Ltd.
http://www.toyobo.co.jp

Toyota Motor Corporation
http://www.toyota.co.jp

U

Ube Industries, Ltd.
http://www.ube-ind.co.jp

Unicharm Corporation
http://www.unicharm.co.jp

Unitika Ltd.
http://www.unitika.co.jp/business/home.htm

V

Victor Company of Japan, Limited
http://www.victor.co.jp/

Y

YAGI CORPORATION
http://www.yagi.co.jp/

Yamaha Corporation
http://www.yamaha.co.jp

YAMAHA MOTOR CO., LTD.
http://www.yamaha-motor.co.jp/

Yamanouchi Pharmaceutical Co., Ltd.
http://www.yamanouchi.com/jp/

Yamatake Corporation
http://jp.yamatake.com

Yokogawa Electric Corporation
http://www.yokogawa.com/,
http://www.yokogawa.co.jp

The Yokohama Rubber Co., Ltd.
http://www.yrc-pressroom.jp/env/

YUASA Corporation
http://www.yuasa-jpn.co.jp/menuhp.html

Z

ZEBRA Co., Ltd.
http://www.zebra.co.jp