Asian Productivity Organization

ECO-PRODUCTS
DIRECTORY 2009

For sustainable production & consumption

Eco-products Directory 2009

More than 800 eco-materials, -components, -products, and -services are included, with more than 400 categorized as effective in preventing global warming.

Environmental considerations in publishing the *Eco-products Directory 2009*

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Eco-products Directory 2009

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Foreword

The *Eco-products Directory* is a groundbreaking APO publication that promotes the concept and practice of environmentally responsible purchasing among enterprises and consumers in the Asia-Pacific region.

Release of the four editions published thus far has coincided with the annual Eco-products International Fairs, and they have been circulated in Asia and beyond at various international events. For example, the *Eco-products Directory 2008*, the previous edition, was on display at the Environmental Showcase in the International Media Center of the G8 summit held in Hokkaido, Japan, 7-9 July 2008. It was also distributed to delegates to the Fourth Tokyo International Conference on African Development.

The fifth edition of the *Eco-products Directory* is being released in conjunction with the opening of the Eco-products International Fair 2009 in Manila, the Philippines, in March. The compilers aimed to make the latest edition even easier to use and understand. For example, a classified index of goods and services has been added. The descriptions of eco-products that have obtained environmental certification are illustrated with the relevant labels in the listings.

Several world leaders have spoken of their intention to ignite national economic activity by prioritizing public investment for improved energy efficiency and the promotion of renewable energy. Of the more than 800 products and services listed in the *Eco-products Directory 2009*, more than 450 are categorized as energy saving, more than 400 as effective in preventing global warming, and around 350 as helping to reduce the consumption of resources. The number of products and services listed and the percentage of providers in countries other than Japan were the highest since this publication started in 2004. I hope that this publication will contribute to an appreciation and expansion of eco-product and -service markets in the Asia-Pacific region.

Our sincere thanks go to Professor Ryoichi Yamamoto, Chairperson of the Committee on the Eco-products Database, and all members of the working group for their dedicated leadership and efforts that made this publication possible.

Shigeo Takenaka
Secretary-General

Tokyo
January 2009

Dear Readers

The area of the Arctic Ocean covered with sea ice in 2008 was the second smallest since satellite observation began. Although the coverage was slightly larger than the level seen in 2007, its actual volume was the smallest on record. Some even predict that summer sea ice will be completely gone in about ten years, and experts warn that if no action is taken, global warming will cause major disruptions to our health, ecosystems, industries, social infrastructure and various other areas.

Society has also developed a heightened level of sensitivity to the issue of global warming. Tokyo's Eco-Products 2008 exhibition (an event to showcase environmentally friendly products) attracted 174,000 visitors, with more than 752 businesses running booths. The Eco-products International Fair 2008 held in Hanoi, Vietnam, welcomed approximately 100,000 visitors. An increasing number of music concert and sports event organizers now make efforts to offset the CO_2 emissions generated from the events they host by planting trees. In addition, businesses have ventured into the area of food and other products bearing carbon footprint labels that indicate the total amount of CO_2 and other greenhouse gases emitted during their life cycles.

Environmental issues have also gained prominence in the media, with TV programs and newspapers reporting on environmental matters every day. Although more than 7,000 products now bear labels certifying their green status, information about products and services that help mitigate environmental impact often does not reach us. As a result, many people struggle to come up with a clear-cut answer when considering how to minimize damage to the environment.

To guide us toward the development of an environmentally friendly society, each one of us must have a solid understanding of the answers to the following two questions: "What problems does today's society face?" and "How can I help to address them?"

Industry can make a social contribution by providing goods and services that are environmentally friendly or that reduce their environmental impact - commonly referred to as eco-products.

Industry is actively working to develop eco-products and services and make them widely available to help society. However, regardless of how wonderful eco-products might be, if they do not gain enough popularity to replace existing products, they will not be effective in reducing environmental damage. Accordingly, efforts must be made to inform consumers of the types of eco-products and services available.

The *Eco-products Directory* has been published by the Asian Productivity Organization (APO) since 2004, and represents a comprehensive guide to a range of eco-products currently on the market. To date, 3,300 eco-products and services have been included in this directory.

The *Eco-products Directory 2009* offers consumers:
- Straightforward listings of more than 800 leading-edge eco-products
- Clear explanations of the varieties and characteristics of the eco-products listed

To satisfy the above conditions, the APO established the Eco-products Directory 2009 Working Group and held multiple meetings aimed at tailoring the information contained to ensure that it is genuinely useful in helping consumers to better understand the contents of the directory.

The year 2009 promises to be an extremely important period in the earth's history. Post-Kyoto Protocol negotiations on greenhouse gas emissions are underway worldwide in tandem with a global trend of efforts to overcome the current economic downturn caused by financial turmoil through the Green New Deal initiative. An integral part of these processes is the popularization and widespread use of environmental impact-reducing technologies and eco-products. We therefore believe that the *Eco-products Directory 2009*, which itemizes such technologies and products, is a tremendously valuable resource.

In editing this directory, we received the generous cooperation of parties across a wide variety of fields including universities, research centers and NPOs. The Society for Non-Traditional Technology also dedicated itself to the completion of the project. I would like to take this opportunity to express my sincere gratitude to all concerned.

Ryoichi Yamamoto
Professor, Institute of Industrial Science & International Research Center for Sustainable Materials, University of Tokyo
Chairperson of the Committee on the Eco-products Database of the APO
Vice chairperson of the GP Advisory Committee of the APO

1 The Green New Deal

In 2008, a financial meltdown triggered by the US subprime mortgage crisis swept through Europe and Asia. As a result, the global economy has continued its nosedive into recession as consumption plummets and the real economy centered on the automobile industry slumps.

The global stock market has lost US$30 trillion (approximately ¥3,000 trillion), and the large-scale credit crunch rapidly engulfing world markets has caused the real economy to begin shrinking. Many people have read of the Great Depression of 1929 and the New Deal launched by US President Franklin D. Roosevelt in response to concerns over future prospects for the global economy. Against this background, the Green New Deal Group, a UK-based organization, issued a report in July 2008 proposing a Green New Deal to combat the triple crunch of the financial crisis, accelerating climate change, and soaring energy prices (commonly referred to as the credit crunch, the climate crunch, and the global energy crunch), primarily through the introduction of new energy technologies.

With the aim of countering climate change and the energy crisis as well as stimulating the global economy, the International Energy Agency (IEA) has also called for a global revolution in which unprecedented investment amounting to US$45 trillion (approximately ¥4,500 trillion) would be made to halve greenhouse gas emissions by 2050. British Prime Minister Gordon Brown and French President Nicolas Sarkozy have backed the IEA plan. In October 2008, the United Nations Environment Programme (UNEP) issued the Green Economy Initiative report, and UN Secretary-General Ban Ki-moon expressed expectations that new US President Barack Obama would launch a Global Green New Deal.

The Green Economy Initiative was developed in part in response to a request made in 2006 by the G8+5 group of nations and is based on the following three concepts: 1) valuing and mainstreaming nature-related services into national and international accounts, including GDP; 2) generating employment through green jobs and formulating related policies; and 3) introducing instruments and market signals to accelerate the transition to a green economy. The results of surveys conducted by the UNEP and other UN agencies on innovative market mechanisms, the impact of subsidies, etc., will be incorporated in proposals made to governments within 18 to 24 months for a comprehensive assessment and the creation of a tool kit for making the necessary transition. The initiative is backed by approximately US$4 million in funding from the European Commission, Germany, and Norway, and the UNEP has asked the Deutsche Bank to lead the research required. The UNEP believes that the project will serve as an antidote to the current economic crisis and act as a springboard to

the establishment of a low-carbon, low-impact global economy characterized by high employment and better management.

The Green New Deal will overwhelmingly focus on renewable energy. Looking back on recent decades, the driving forces behind the economy and employment have been the Internet and IT in the 1990s and finance and real-estate business (housing investment) in the following decade. In today's world, a new growth sector is needed to serve as the engine for economic recovery. In the 21st century, renewable energy is expected to take over the economic role played by automobiles in the 20th century, and the sector is currently growing at a speed that will make it comparable in size to the automotive industry in 10 years' time. In addition to renewable energy, unprecedented levels of investment in the infrastructure for a low-carbon society are also foreseen, including financial stimuli to encourage the construction of well-insulated residences and the development of clean-energy automobiles and green power grids. There is now a need to create a new growth sector through large-scale investment in the infrastructure for a low-carbon society worldwide as well as to overcome the three crises mentioned above while creating employment (in the form of green jobs) and providing the political leadership to achieve these aims.

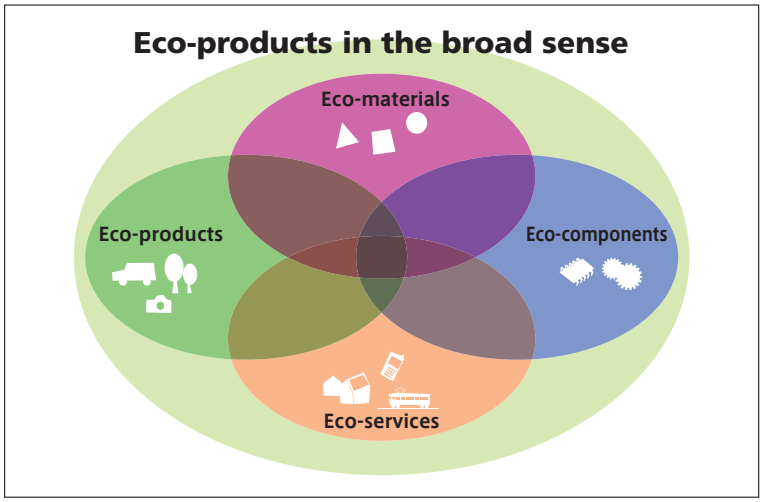
The Asian economy is expected to cool as a result of stagnating domestic demand and a downturn in export growth. Governments need to minimize this economic downturn and shift direction toward sustainable social and economic systems supported by appropriate policies. In the meantime, economic stimulus programs and job creation will be the keys to extricating ourselves from the crises currently engulfing the environment and the economy.

Hideki Nakahara
Professor, Faculty of Environmental & Information Studies, Musashi Institute of Technology

2 Products listed in the *Eco-products Directory 2009*

About eco-products

"Eco-products" generally refer to environmentally friendly products, but there is no strict definition. In the *Eco-products Directory 2009*, eco-products are defined as "products and services that comply with environmental regulations or are environment-friendly, reflecting manufacturers' voluntary efforts to care for the environment." Eco-products include not only industrial products but also products and services in the areas of agriculture, tourism, and finance. They also include products and services aimed directly at environmental impact reduction (i.e., eco-businesses, such as the production of pollution control devices, waste disposal/recycling, and consulting). In the *Eco-products Directory 2009*, eco-products are classified into four categories: materials, components, products, and services.



Eco-products listed in this Directory

Many eco-products come with environmental labels that state product features to inform and appeal to consumers. They certify that items are eco-products according to standards independently set by countries, regions, organizations, and providers.

The International Organization for Standardization (ISO) classifies environmental labels into Type I, Type II, and Type III and environmental labels are then given based on compliance certification, producers' self-declaration of commitment to environmental preservation, and the verification and disclosure of quantitative environmental impact data. Additional environmental labels are awarded under standards and criteria of other bodies.

In addition to environmental labels, other initiatives are intended to raise consumers' environmental awareness, including the creation of databases where self-assessed products may be registered. Those initiatives are individual ones and thus differ.

ISO environmental labels

Type I (ISO14020, ISO14024): Seal of approval-compliance approval
Description: Type I labels are managed in accordance with the standards and principles of the ISO. This system ensures that the use of the label is accepted by a third party based on an independent, multifaceted standard. The standard covers the entire product life (resource extraction, manufacturing, distribution, use, disposal, recycling). The submitted products are assessed for approval and if successful are awarded the Type I label.
Examples:

Green Label (Singapore)


Korea Eco-labeling Program

Eco Mark (Japan)


Thai Green Label


Green Mark (Chinese Taipei)


Nordic Swan (Northern Europe)

Type II (ISO14021): Single attribute-producers' self-declaration of commitment to the environment
Description: Product providers independently incorporate environment-related improvements in their products. There is no intervention by any third party.
Examples:

Hitachi Ltd.

Panasonic Group

Toshiba Group

Inax Corp.

Fujitsu Group

Toto Ltd.

Tostem Corp.

Anritsu Corp.

Toyota Industries Corp.

Okamura Corp.


Sharp Corp.

PC green labels

Type III (ISO14025): Report card-verification and disclosure of quantitative environmental impact data

Description: Type III labels are managed in accordance with ISO14025 (environmental declarations). They use the life cycle assessment (LCA) method to show environmental information on products quantitatively from resource extraction to manufacturing/assembly, distribution, use, and discarding/recycling. Only the reliability of disclosed data is verified and product evaluation is left to consumers.

Examples:

Eco Leaf (Japan)

EDP (Republic of Korea)

EPD (Sweden)

Other environmental labels

There are other environmental labels apart from those of the ISO. Various environmental labels have been created in many areas including the consumer electronics industry and automotive industry.

Energy star labels

Energy-Saving Label

GreenPla

J-Moss green marks

Uniform Energy-Saving Label

Fuel economy sticker

Low emitter vehicle sticker

PET bottle reclaimed product

Butterfly mark

Other initiatives to raise environmental awareness

Apart from the promotion of environmental labels, the Green Purchasing Network (GPN) in Japan formulated guidelines for purchasing environment-friendly products, together with important points to consider, in 17 categories including printing and communication paper, stationery and office products, and vehicles. In line with the guidelines, the GPN Database provides the public with environmental information on products. The information contained in the database is based on judgment by registrants, and in no way represents endorsement by the GPN for the products listed. The database is intended to catalogue products that comply with the GPN's Purchasing Guidelines and the Law on Promoting Green Purchasing and to provide environmental data on these products to enable comparisons by consumers making purchasing decisions.

Registered in
the GPN Database

The products listed in the *Eco-products Directory 2009* are considered to be eco-products if any of the above-mentioned environmental labels have been received or declared, or if they are registered in the GPN Database. For listed products that have not received environmental labels or have not been registered in the GPN Database, the Eco-products Database Working Group decided whether to include them based on the Purchasing Guidelines of the GPN.

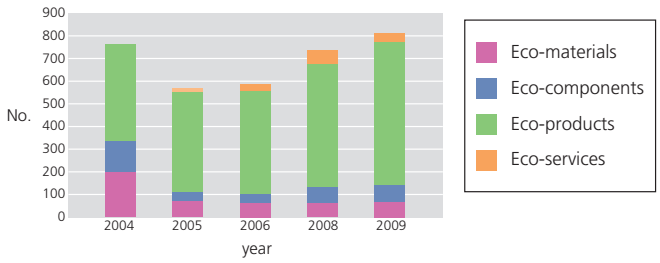
3 Properties of listed goods and services during 2004-2009

1. Number of eco-products and -services

1) The number of listed eco-products has been steadily increasing since 2004.
2) Listed eco-products account for nearly 80% of the total in 2009.
3) The total number of goods and services has gradually increased since 2005.
*Data entry for eco-services started in 2005.

	2004	2005	2006	2008	2009
Eco-materials	199	80	71	70	73
Eco-components	134	39	39	73	83
Eco-products	421	432	453	526	604
Eco-services		16	28	56	44
Total	754	567	591	725	804

Figure 1. Number of listed goods and services



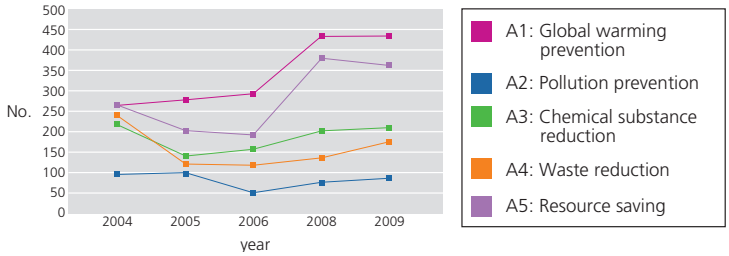
2. Number of products and services by category

Which environmental issues are eco-products intended to address?

1) More than 400 have been categorized as effective in preventing global warming since 2008.
2) Category A products and services are divided into two subgroups. The first subgroup comprises Categories A1 and A5 which have the highest percentage gain in number of entries. The second subgroup comprises Categories A2, A3, and A4 which continue to have few entries.

	2004	2005	2006	2008	2009
A1: Global warming prevention	263	274	289	429	441
A2: Pollution prevention	95	98	51	73	84
A3: Chemical substance reduction	215	140	153	199	207
A4: Waste reduction	238	119	117	135	173
A5: Resource saving	264	201	190	376	355

Figure 2. Number of goods and services categorized as A1-5



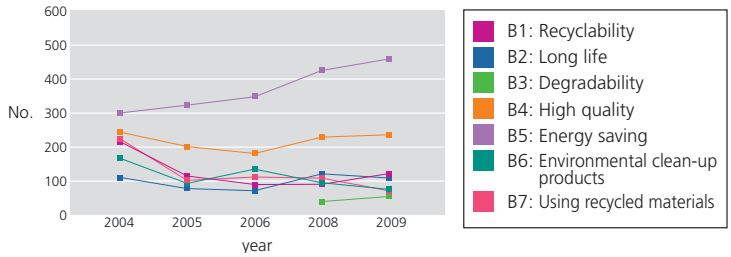
How do eco-products address environmental issues?

1) Products categorized as energy saving increased from about 300 to 500 from 2004 to 2009.
2) The number of products categorized as high quality has remained between 170 and 300 since 2004.

*Category B3 was newly added from 2008.

	2004	2005	2006	2008	2009
B1: Recyclability	214	110	84	85	116
B2: Long life	106	76	65	118	104
B3: Degradability				33	55
B4: High quality	243	198	179	228	230
B5: Energy saving	297	321	348	428	469
B6: Environmental clean-up products	135	74	107	75	83
B7: Using recycled materials	177	79	87	86	80

Figure 3. Number of goods and services categorized as B1-7



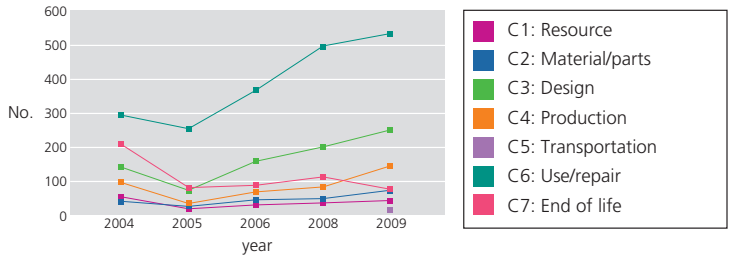
When and where in the product life-cycle do eco-products address environmental issues?

1) Except for Category C7, the number of goods and services has gradually increased from 2005.
2) In 2009, nearly 70% of products listed addresses environmental issues in the stage of design and product use.
3) Among them, the number categorized as use/repair accounts for about half of the total in Category C.

*Category C5 was newly added from 2009.

	2004	2005	2006	2008	2009
C1: Resource	63	23	35	43	48
C2: Material/parts	45	30	52	59	86
C3: Design	163	83	184	229	247
C4: Production	111	40	79	95	145
C5: Transportation					16
C6: Use/repair	298	256	363	499	525
C7: End of life	205	78	87	110	80

Figure 4. Number of goods and services categorized as C1-7



4 Understanding of eco-products

To ensure an accurate understanding of eco-products, the following three categories were developed for the *Eco-products Directory 2009*:

Which

A: Which environmental issues are eco-products intended to address?

This category helps consumers understand which environmental issues eco-products are intended to address. The focus is on global warming and resource consumption. Issues related to pollution and contamination (air, water, and soil), which are serious problems in developing economies, and waste disposal, one of the weighty environmental problems in Japan, are also included. A total of five issues are therefore listed:

Global warming prevention
Helps reduce emissions of greenhouse gases such as carbon dioxide. This initiative includes the direct reduction of greenhouse gas emissions as well as energy saving and the reduction of deforestation.

Air/water/soil pollution prevention
Helps reduce emissions of substances contained in the air, water, and soil, such as photochemical oxidants (e.g., nitrogen oxides) and suspended particulate matter (e.g., sulfur oxides), which are substances restricted by environmental standards including air pollution control laws. This includes products that contribute to preventing ozone depletion and product oxidization. The clean-up of air/water/soil pollutants is also included.

Chemical substance reduction
Helps reduce and clean up eco-toxic chemical substances harmful to humans and the environment. These chemicals include substances specified by laws that identify the environmental impact created by emissions of specific chemical substances and that promote better management of such substances. This includes the reduction and purification of hazardous substances by recycling and reuse as well as products containing low levels of or no hazardous substances.

Waste reduction
Helps reduce the final disposal volumes by changing products, manufacturing processes, and packaging. This includes waste weight/volume reduction within the circulation system.

Resource saving
Helps reduce the consumption of resources, such as mineral, forest, and water resources. This includes resource saving by reuse and recycling as well as resource saving in products and the manufacturing process.

How

B: How do eco-products address environmental issues?

This category explains how eco-products support environmental impact reduction in response to the five issues listed in A. The category is subdivided to provide comprehensive support for various environmental measures widely exercised at present. This clarifies whether resource saving is achieved through enhanced product performance, longer product life, or improved product recyclability.

Recyclability/reusability/refillability
Raw materials can be recovered, processed, and recycled for reuse. Alternatively, they can be recycled efficiently by using designs that are easily disassembled. Reusable and refillable designs may be used in packaging and products.

Long life
With long-life designs, enhanced durability, and continued performance with repairs and maintenance, product life can be prolonged, leading to the reduction of raw materials and waste.

Degradability/compostability
Products, packaging, and their components are biodegradable and produce substances that are relatively homogeneous and stable. They can also be degraded to a degree under certain conditions within a predetermined period of time.

High quality/performance
Product quality and performance improvements enable environmental impact reduction, subsequently leading to material and waste reduction.

Energy saving
Efficient process designs and product weight reduction enable energy saving. This initiative includes the use of energy recovered instead of disposal.

Environmental clean-up products
The use of hazardous chemical substances in product manufacturing is reduced through the development of alternative materials, etc.; or the use of the product helps clean up hazardous substances.

Using recycled materials
Recyclable materials (pre- and postconsumer) are recovered and recycled materials are used in the manufacturing process, either entirely or in high volumes.

When, Where

C: When and where in the product life cycle do eco-products address environmental issues?

This category helps determine when and where within the life cycle environmental initiatives are reflected in eco-products. The product life cycle is broken down into seven steps: material extraction, material and component production, design, manufacturing, transportation, product use, and disposal.

Extraction of materials (resources)
In this step, resources needed for product manufacturing are collected. Some equipment is used for environmental impact reduction in this stage.

Material and component production (materials/parts)
This is a stage where interim products including materials and components are manufactured. Such interim products and their designs are intended for environmental impact reduction.

Design and material selection (design)
In this step, designs and materials are carefully selected for product manufacturing, including environmentally compatible designs.

Product manufacturing (production)
Products are manufactured in this step using materials and components. This step includes products that help reduce environmental impact during the manufacturing process.

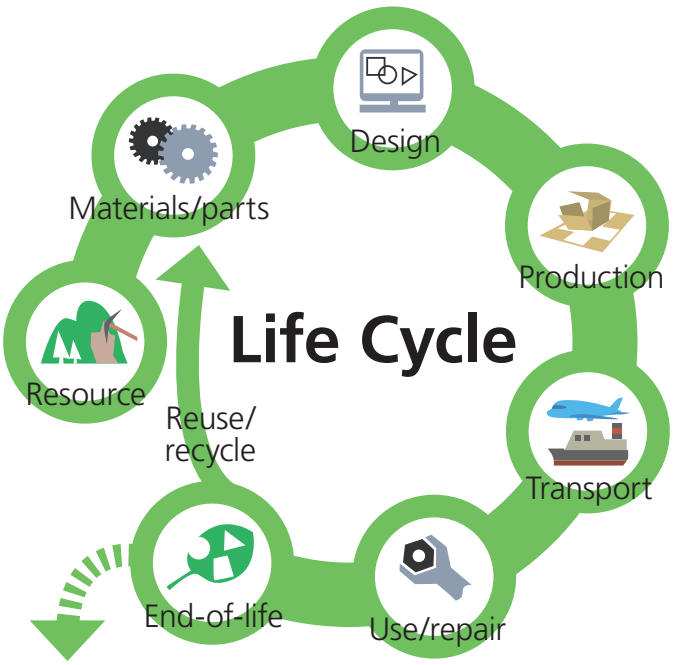
Transportation
In this step, materials, parts, and products are carefully transported to result in a low environmental burden. This step includes products for which modes of transportation have been changed and those with unique packaging.

Product use, maintenance, and repair (use/repair)
In this step, products are used by consumers and maintenance and repairs are carried out. This step includes consideration of energy saving and environmental clean-up as well as for prolonging product life by repairs and product life improvement.

End-of-life
In this step, products are disposed of and recycled. Included in this step are products that contribute to the reduction of final disposal volumes and can be disassembled, are easily reusable, easily recyclable, and compatible with well-established recycling systems.

Each product listed in the *Eco-products Directory 2009* is categorized by a maximum of two items in categories A, B, and C.

Product life cycle stage: Schematic diagram



5 Product data display in the *Eco-products Directory 2009*

The *Eco-products Directory 2009* is intended to enlighten people, mainly in the Asia-Pacific region, on eco-products and -services available. As many as possible are listed in this directory. To make it simple and easy for all environment-minded individuals to understand, the product data are sorted and arranged in the directory as shown below. We thank the providers for information on the products and services listed.

1. Product ID number
2. Title (product name and features)
3. Product description (environmental performance and product performance)
4. Company information
5. Sales territory
6. Common product name
7. Categories
8. Environmental labels and greenhouse gas emissions
9. Product photo
10. Photo caption

① Product ID number

All product ID numbers are displayed as shown below:

EP-3-014

Classification1 Classification2 product item no.

(1) Classification1

In the *Eco-products Directory 2009*, the information on each eco-product is provided in four categories: 1. Materials, 2. Components, 3. Products, and 4. Services. The product data also use frames of different colors for different main entries (1. pink, 2. blue, 3. green, and 4. orange).

Eco-materials **Eco-components**
Eco-products **Eco-services**

(2) Classification2

Each main entry is divided into subentries as shown below:

EM

1 Metals
2 Polymers
3 Natural materials
4 Foam
5 Ceramics and glass
6 Composites
7 Others

EC

1 Construction components
2 Electrical and electronic components
3 Semiconductor-related devices and components
4 Machine parts
5 Automobile parts
6 Packaging
7 Others

EP

1 Home electric appliances/lighting
2 Carriers/automobiles
3 OA/IT equipment
4 Office supplies/furniture
5 Apparel/textiles
6 Household goods and equipment
7 Building and civil engineering
8 Machines and equipment
9 Others

ES

1 Product-related services
(maintenance, upgrading, repair/reform)
2 Reuse and recycling services
(collection, etc.)
3 Outsourcing services
(waste disposal, control of hazardous items, chemical treatment, facility management)
4 Management-related services
(consulting, accreditation, analysis, evaluation, etc.)
5 Others
(e-commerce, eco-tourism, hotels, information transfer, etc.)

These subentries are shown the right side of the line for product ID numbers as follows:

Eco-materials // Metals

EM-1-001 Metals

Eco-components // Construction components

EC-1-001 Construction

Eco-products // Home electric appliances/lighting

EP-1-001 Home electric appliances/lighting

Eco-services // Product-related services (maintenance, upgrading, repair/reform)

ES-1-001 Product-related

(3) Product item number

Each subentry lists product items in numerical order in accordance with the Japan Statistical Standard Industry Classification.

② Title (product name and features)

Brief descriptions of how products have been improved to contribute to environmental impact reduction are provided in this section.

③ Product description

(environmental performance and product performance)

Detailed descriptions of how products have been improved to contribute to environmental impact reduction are provided in this section.

④ Company information

The contact details of product providers are listed in this section including respective URLs for the Websites of providers, the listed product and provider's CSR report.

⑤ Sales territory

Where each product is available can be found in this section.
(Sales territories are not always stated, as this is a free-listing section.)

⑥ Common product name

The common name of each product is given in this section
(e.g., camera, pencil, desk, etc.).

⑦ Categories

How eco-products reflect certain environmental initiatives is indicated graphically under the following three categories:

A: Which environmental issues are eco-products intended to address?

B: How do eco-products address environmental issues?

C: When and where in the product life cycle do eco-products address environmental issues?

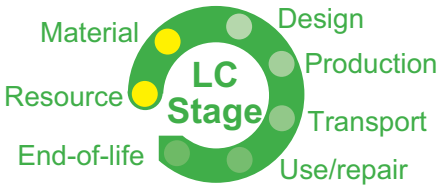
The icons indicate items (maximum of two each) selected from Categories A (which) and B (how).

<icons>

A: "Which"

B: "How"

The yellow dots indicate items (maximum of two) selected from
C: "When" and "Where"



⑧ Environmental labels and greenhouse gas emissions

Up to four eco-labels granted to products are displayed based on applications from providers. For information on the types and names of these eco-labels, please refer to page 6-9 in 3. Products listed in the *Eco-products Directory 2009*.

As a new development, we asked providers to specify greenhouse gas (GHG) emissions per product (if available) and indicate respective CO_2 equivalents below the illustration of the environmental labels. Where such values are indicated, we also specify the scope of the life cycle stages included in the calculation of GHG emissions (i.e., resource extraction, production of materials/parts, product manufacturing, transportation, use, and disposal). As a further measure, we indicate whether such values were inspected by a third-party organization.

⑨ Product photo

One photo is inserted for each product.

⑩ Photo caption

The caption provides a brief description, e.g., model name, of each product photo.

Eco-materials

1 Metals
2 Polymers
3 Natural materials
4 Foam
5 Ceramics and glass
6 Composites
7 Others

In the *Eco-products Directory 2009*, "eco-materials" refer to "materials (or material technologies) that possess excellent characteristics with good performance, which can be manufactured, used, and recycled or disposed of, while having only a low impact on the environment as well as being kind to humans." Environment-friendly eco-materials come in a diverse range and include recyclable materials, materials free from hazardous substances, materials manufactured with low energy consumption and in clean conditions, materials that purify contaminated water and air, materials that are very efficient and resource-saving while still offering high performance, and much more.

Carefully assessing the impact on the environment within its life cycle from resource collection to the disposal stage is important in choosing eco-materials. Once this has been clarified, eco-materials can be used to create eco-products with a good balance between function and eco-efficiency. Based on this concept, eco-materials must meet the following six criteria:

(1) They do not use scarce resources.
(2) They have functions to clean and conserve the environment.
(3) They create only low environmental impact when manufactured.
(4) They do not contain any hazardous substances.
(5) They provide high performance when used.
(6) They are easy to recycle.

EM-1-001

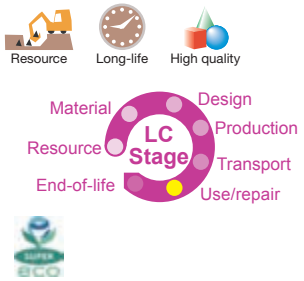
Metals

mold steel

Advanced Plastic Mold Steel "CENA1® α"

Environmental performance

CENA1® α is applied for large size plasma display frames and liquid crystal display frames where welded lines are not allowed on frame surfaces. "CENA1® α" is the only mold material for applications where welded lines on the surface are not allowed.
The characteristics are as follows:
(1) Super-large sizes of products with high toughness are available.
(2) Showing excellent polishability, machinability, rust resistance and weldability.
"CENA1® α" can contribute to total cost reduction of molds and reducing production lead-time due to good machinability. Oil free machining, which "CENA1® α" can realize contributes to environmental protection. Furthermore ,"CENA1® α" can achieve parting line free surfaces of plastics that do not need painting. This paint free plastics enhance recyclablity.



Example of molds for weld line measures and forming

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URL http://www.hitachi-metals.co.jp/e/prod/prod19/p19_10.html
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EM-1-002

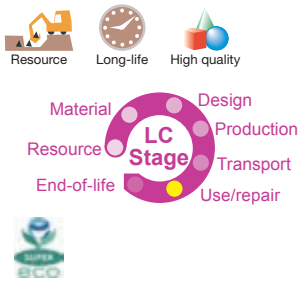
Metals

mold steel

High Performance Cold Working Tool Steel "SLD-MAGIC®"

Environmental performance

SLD-MAGIC®, newly developed Cold Working Die Steel, is showing good reputation for wear resistance and machinability along with achieving excellent characteristics of lower heat treatment distortion, versatilities for surface treatments, toughness and weldability.
"SLD-MAGIC®" can also improve the lifespan and fabricability of die molds compared to currently used die materials. Therefore, "SLD-MAGIC®" can provide opportunities to reduce energy material to be used and fabrication time for making various molds for automobile industries, and other industrial fields where molds are necessary.



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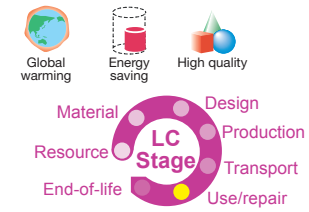
EM-1-003 Metals

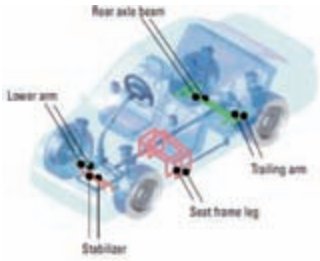
steel pipes

Automotive Steel Tubes

Environmental performance

High performance electric resistance welded steel tubes known as "HISTORY (high speed tube welding and optimum reducing technology) steel tubes" contribute to automotive weight reduction by realizing hollow tubes and properties of high strength and high formability.





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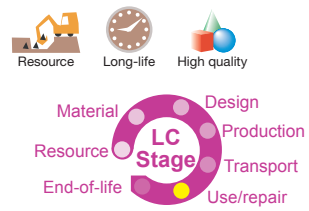
EM-1-004 Metals

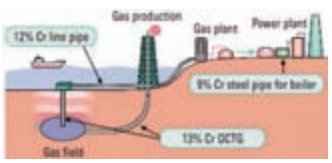
steel pipes

Martensitic Stainless Steel Tubes/Threaded Joints

Environmental performance

13% Cr OCTG (oil country tubular goods) and 12% Cr line pipe for production and transport of oil and natural gas, 9% Cr steel pipe for high-efficient power generation and threaded joints are materials having long life and low environmental loads. As for threaded joints used in combination with oil well tubes, new products using no environmental pollutants are provided.





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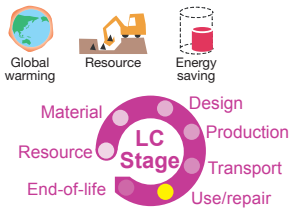
EM-1-005 Metals

steel materials

High Strength Steel Plates for Large Containers in Marine Applications

Environmental performance

These steel plates are manufactured using Super-OLAC. Compared to existing grade plates, they have high yield strength (up to 460Mpa) and superior weldability and the high-heat input welding zone shows excellent low temperature toughness. The lightening of ship hulls that is achieved through reducing the plate thickness contributes to reductions in transport energy as well as construction costs.



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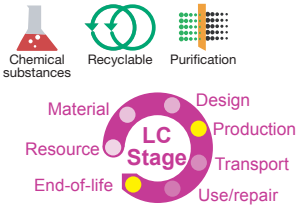
EM-1-006 Metals

steel materials

Lead-free free-cutting steel (steel bars)

Product performance

The shapes of crankshafts used in automobiles, among others, are very complicated. Manufacturers demand superior free-cutting capabilities in steel to guarantee ease of manufacturability in machine processing. They have other rigid requirements, including its effect on the life of tools, and demand that the materials they purchase address all aspects of manufacturing comprehensively. In order to meet their needs, Nippon Steel came up with free-cutting steel products free of environmentally negative lead. A range of products to meet the needs of automakers has been developed and offered by Nippon Steel.



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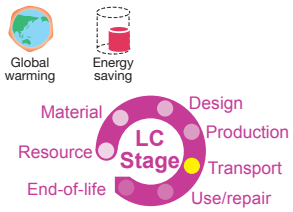
EM-1-007 Metals

sheet steel

High Tensile, Thin Walled Drum Can "Eco Feather"

Environmental performance

Using high tensile strength steel with high workability enabled us to increase the drum can strength and make the walls thinner, making this can a contribution to resource conservation.



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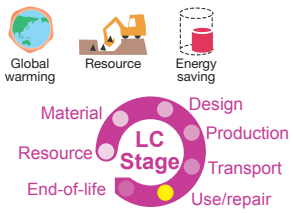
EM-1-008 Metals

sheet steel

High Tensile Steel

Environmental performance

Demand for high tensile steel sheets (HITEN) is growing as a material that enables both automobile body weight reduction and collision safety. Recently, demand has increased for higher tensile strength steel sheets (Ultra HITEN). The cold rolled 1180MPa, created with our proprietary WQ (Water Quenching) continuous annealing process, was employed for integrally molded door impact beams made with conventional press forming.



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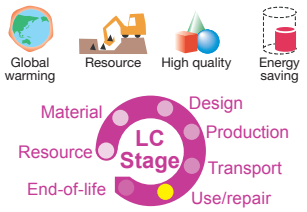
EM-1-009 Metals

sheet steel

Electrical Steel Sheets for Hybrid Cars

Environmental performance

Highly efficient and non-oriented electrical steel sheets, when adopted in driving motor cores, improve automotive fuel economy and contribute to downsizing/weight reduction of automobiles.
Meanwhile, highly efficient and silent electrical steel sheets containing 6.5% Si (known as "Super Core") are adopted in reactor cores for boost converter power systems.



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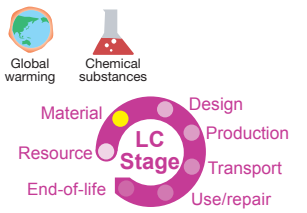
EM-1-010 Metals

sheet steel

Universal Bright F

Environmental performance

This award-winning steel sheet product enables can manufacturers to skip coating and printing processes, and thereby eliminates harmful substances and reduces CO_2 emissions.



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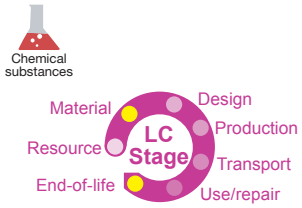
EM-1-011 Metals

sheet steel

Highly Lubricant GA Steel Sheet: "JAZ® (JFE Advanced Zinc)"

Environmental performance

As an environment-friendly product, "JAZ®" does not contain phosphate or heavy metal elements which used to be contained in conventional lubricated GA steel sheets. In this unique product, a surface reforming layer with nano-level thickness is formed on a zinc coated layer. JAZ® has been adopted in automotive outer panels or inner panels which are otherwise difficult to form. More specifically, it is used in side panels, fenders, doors, and wheelhouses, etc.



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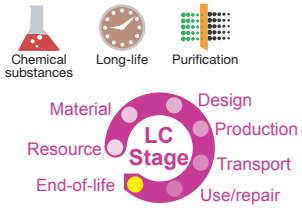
EM-1-012 Metals

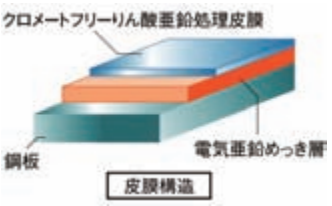
sheet steel

Chromate-free coated steel sheet

Environmental performance

Chromate-free coated steel sheet is an environment-friendly product, since it contains no chrome (VI). A uniquely designed composite film consisting of a special organic resin and inorganic substance secures as much corrosion resistance as conventional products. It is now used in internal panels of home electric appliances and vending machines, internal components of OA equipment, chassis of audiovisual equipment, and other parts.





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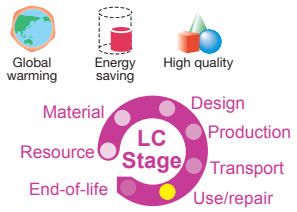
EM-1-013 Metals

sheet steel

An exhaust manifold material "JFE-WX1"

Environmental performance

An exhaust manifold material, JFE-WX1 is the only ferritic stainless steel in the world, which can be used at ultra-high temperature. It improves auto fuel economy, reduces CO_2 emissions, and contributes to exhaust gas purification.



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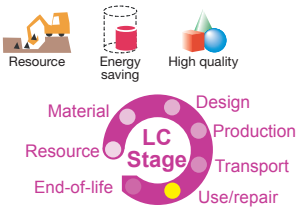
EM-1-014 Metals

sheet steel

JFE443CT

Environmental performance

JFE443CT is all-purpose stainless steel which does not contain such rare resources as nickel or molybdenum but ensures high corrosion resistance equivalent to SUS304. When applied to cooking pans for induction heating (IH), it leads to substantial energy saving because of its properties of excellent heat transmission and magnetism.



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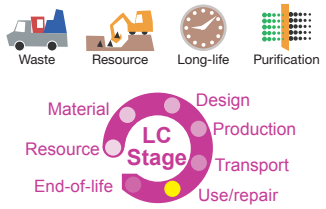
EM-1-015 Metals

sheet steel

The New S-TEN1, high corrosion resistance steel material

Product performance

Demand for steel material with outstanding anti-corrosive properties is growing rapidly, especially from waste incinerating facilities exposed to corrosive hydrochloric acid from food and plastic waste. Nippon Steel developed the new S-TEN1, with dramatically increased anti-corrosive properties to combat hydrochloric acid than conventional products. It has been on the market on a fully-fledged basis since 2003. The new S-TEN1's ability to resist hydrochloric acid is around three times higher than that of conventional products. This makes the new S-TEN1 an ideal material for use in waste processing and chemical plants. It also leads to extended product life and a reduced frequency in maintenance requirements to benefit users, as well as an overall reduction in environmental loads on a societal level.



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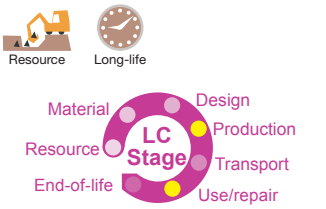
EM-1-016 Metals

sheet steel

HTUFF (Super High HAZ (heat-affected zone) Toughness

Product performance

The steel plates for ships, buildings, bridges and other large structures are prone to coarsening when exposed to the heat required during the welding process (coarsening which namely reduces toughness). Previously, a construction technique of performing welding on a gradual basis was used to ensure safety and reliability, rather than completing the welding process in one step. Nippon Steel's HTUFF super-tough and super-strong steel sheet eliminated the needed for repeated welding, since Nippon Steel radically reduced the size of metal particles in the welding-induced heat-affected areas of the HTUFF steel sheet through nanotechnology. Such miniaturization suppresses the deterioration of HTUFF's toughness, even when exposed to extreme temperatures of 1400 degrees Celsius and more. The HTUFF steel sheet drastically improved the welding efficiency of users and contributed toward energy savings. The HTUFF is the recipient of the 36th Ichimura Industrial Award presented by the New Technology Development Foundation in FY2003.



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EM-1-017

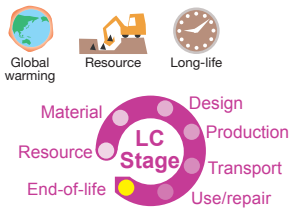
Metals

sheet steel

GA-TRIP hot-dip galvanized sheet boasts high tensile strength

Product performance

Nippon Steel was the first company worldwide to successfully develop and commercialize alloy hot-dipped galvanized steel sheets for automobiles with tensile strength in the 60 and 80 kilogram classes, by overcoming the conventional notion that high tensile would be impossible without compromising the quality of galvanization. The new product was selected as a material for new car models introduced in 2003. It greatly improves the collision safety of cars, vehicle weight and the balance between press formability and extended lifespan.



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EM-1-018

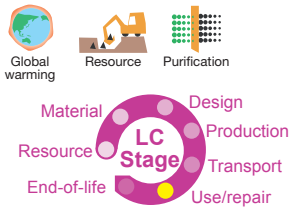
Metals

sheet steel

High-endothermic steel sheet

Product performance

In view of the trend toward higher performance, higher speed, and smaller size, it has become important for electric appliances to release internally generated heat efficiently to the outside. Nippon Steel, after the successful development of special organic film in 2002, has started to distribute high-endothermic steel sheets that release the heat generated inside electric appliances efficiently to the outside.



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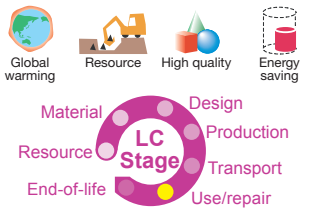
EM-1-019 Metals

coated steel

Flat rolled magnetic steel sheet/strip for high electrical efficiency

Product performance

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 disc 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 disc drive units.



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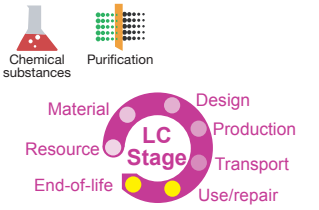
EM-1-020 Metals

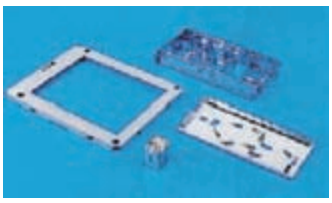
coated steel

Lead-free steel sheet for car fuel tank

Product performance

Conventially, 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 (Silver Zinc-NT). This eliminates the problem of lead in shredder dust generated when cars are scrapped.





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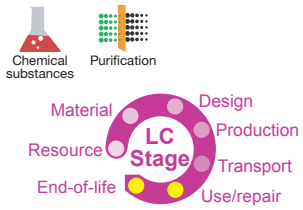
EM-1-021 Metals

coated steel

Steel sheet coated with chromate-free film

Product performance

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.



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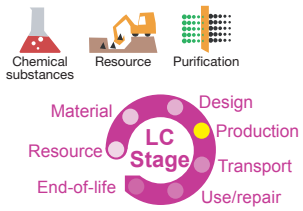
EM-1-022 Metals

construction methods

Pre-coated steel sheet; to eliminate painting

Product performance

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.



Nippon Steel Corporation

2-6-3, Otemachi, Chiyoda-ku, Tokyo, 100-8071, Japan
Tel +81-3-3275-5144 Fax +81-3-3275-5979
E-mail kankyo@nsc.co.jp
URL http://www.nsc.co.jp/en/eco/index.html

EM-1-023 Metals

copper alloy

BZ1 (leadless forging brass with dezincification corrosion resistance)

Environmental performance

Lead is added to general free-cutting brass and forging brass to improve machinability and workability. BZ1's excellent machinability without the addition of lead significantly reduces its burden on the human body and the environment while maintaining full compliance with RoHS regulations. It also has excellent recyclability as it is primarily manufactured from recovered scrap such as shavings.

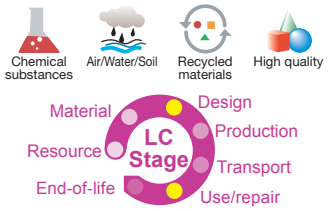
Product performance

- Excellent dezincification corrosion resistance, erosion/corrosion resistance and hot forgeability with a level of performance similar to that of existing forging brass.
- Ordinary free-cutting brass with dezincification corrosion resistance requires heat treatment after hot working. As BZ1 does not require this, it offers cost advantages from shortened processing.

☆ Patent acquired (No. 3966896). International patents applied for. Already patented in China. Patent pending in the U.S., Europe and South Korea.

- Stronger than bronze
- Corrosion resistance and machinability equivalent to those of bronze
- Cost reduction thanks to a level of forgeability that is impossible to achieve with bronze

☆ Based on these characteristics, we recommend switching from bronze casting to brass forging using BZ1.



SAN-ETSU METALS Co., Ltd.

1892 Ohta, Tonami, Toyama, 939-1315, Japan
Tel +81-763-33-1212 Fax +81-763-33-1218
E-mail kaihatu@sanetu.co.jp
URL http://www.sanetu.co.jp

EM-1-024 Metals

copper alloy

ECO BRASS (High-Performance Lead-free Copper Alloy)

Environmental performance

ECO BRASS is a lead-free brass and environmentally friendly brass material. Instead of using heavy metal harmful to the human body, a precipitating metallic compound in the metal structure realizes good machinability.

Key Features:

1) Lead-free
2) High strength equivalent to stainless steel
3) Good machinability nearly equal to brass rod containing 1% lead
4) Excellent machined surface,de-zincification corrosion resistance,stress corrosion cracking resistance,warm brittleness cracking resistance, and hot forgeability
5) Easily accepts soldering and brazing
6) Good castability

Applications:

1) Water supply devices such as faucets, valves, fittings, etc.
2) Precision parts as a substitute for stainless steel such as shafts, screws, bearings
3) Electrical parts and connectors
4) Automobile parts: lead-free requirements
5) Medical devices

Machined products using ECO BRASS rods

Mitsubishi Shindoh Co., LTD (the former Sambo Copper Alloy Co., LTD)

374, 8-cho, Sambo-cho, Sakai-ku, Sakai-shi, Osaka, 590-0906, Japan
Tel +81-72-233-1161 Fax +81-72-227-6590
E-mail tech@sambo.co.jp
URL http://www.mitsubishi-shindoh.com/en/index.html
URL http://www.mmc.co.jp/corporate/en/product/electronics/0801.html
URL http://www.mmc.co.jp/corporate/en/csr/csr.html

Available in: Except North America & Europe

EM-1-025 Metals

coated aluminum metal

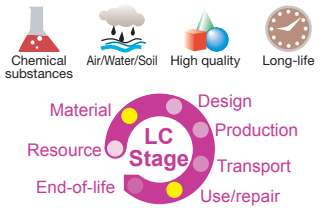
Chromium-free new surface treatment technique

Environmental performance

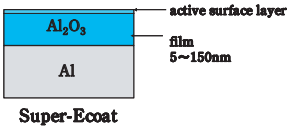
Chromium-free new surface treatment technique ("Super-Ecoat"™) is an environment-friendly surface treatment for aluminum, since it contains no chromium and other poisonous substance.

Product performance

In this newly developed surface treatment product, non-porous, dense and thin aluminum oxide film with active surface layer is formed on aluminum. Corrosion resistance, adhesion and bonding strength more than equal to that of conventional chromate treatment are obtained. It is now widely used in home electric appliances, electronic parts, beverage and food containers, etc.



【Feature and film composition of Super-Ecoat】
①aluminum oxide film (high safety)
②non-porous and dense film (corrosion resistance)
③chemical bond by active surface layer (adhesion and bonding strength)
④It forms with anodic oxidation treatment (high-speed processing and uniformity)



Super-Ecoat

Mitsubishi Aluminum Co., Ltd.

2-3-3.Shiba, Minato-ku, Tokyo, 105-8546, Japan
Tel +81-3-3769-0111 Fax +81-3-3769-0180
URL http://www.malco.co.jp/english/index.html

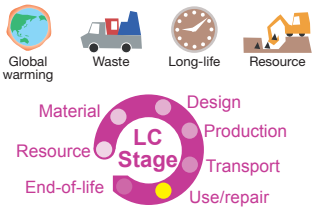
EM-1-026 Metals

granulated blast furnace slag

Construction method using thin-sheet steel

Product performance

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.



Nippon Steel Corporation

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Tel +81-3-3275-5144 Fax +81-3-3275-5979
E-mail kankyo@nsc.co.jp
URL http://www.nsc.co.jp/en/eco/index.html

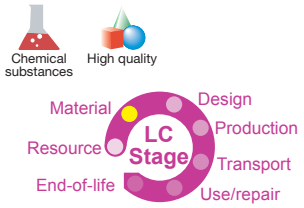
EM-2-001 Polymers

epoxy molding compound

SUMIKON EME

Environmental performance

Sumitomo Bakelite has developed an epoxy resin molding material for semiconductor sealing that is free of bromine- and antimony-based flame retardants, which have a negative impact on the environment, is free of substances for which there is concern about their environmental impact, and conforms with global environmental standards as a molding material that can be used in lead-free solder mounting. The company has developed and marketed the new SUMIKON EME G700 series for applications that require high reliability and the new SUMIKON EME G600 series for ordinary semiconductor package applications, all of which use an epoxy resin with superior fire retardant capabilities. We have also launched the SUMIKON EME E series for discrete applications.



Sumitomo Bakelite Co., Ltd.

2-5-8, Higashishinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan

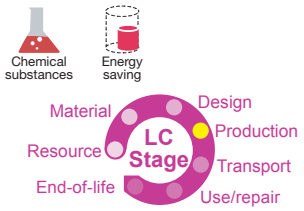
EM-2-002 Polymers

wafer coating materials

SUMIRESIN EXCEL CRC

Environmental performance

To respond to narrowing circuit widths required due to the sharp increase in semiconductor memory capacity as well as higher speeds and to satisfy strict demands for reliability, Sumitomo Bakelite has developed and marketed the SUMIRESIN EXCEL CRC 8000 series of positive photosensitive wafer coating resins. This enables semiconductor manufacturers to use alkaline water as a developing fluid and pure water as a rinsing solution, rendering special solvents unnecessary. In addition, with certain wafer level packages, it can be used in place of conventional plastic-based sealants for rewiring, reducing the length of processing and thus conserving resources and energy.



Sumitomo Bakelite Co., Ltd.

Tennosu Parkside Bldg., 2-5-8, Higashishinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan

EM-2-003 Polymers

laminates material systems

Laminates Material System for Rigid/Flex Printed Circuit Board "CUTE"

Environmental performance

Ultra thin and bendable materials contribute to reducing the size and improving the performance of mobile devices and medical equipment.

Product performance

This laminates material system offers an excellent dimensional stability by using novel low elastic modulus resin system, ultra thin glass fabric, and hard segments in the resin system.

TC-C-300/TC-F-300

Hitachi Chemical Co., Ltd.

1500 Ogawa Chikusei-shi, Ibaraki, 308-8521, Japan
Tel +81-296-20-2217 Fax +81-296-28-6128
URL http://www.hitachi-chem.co.jp/english/index.html
URL http://www.hitachi-chem.co.jp/english/products/index.html
URL http://www.hitachi-chem.co.jp/japanese/csr/index.html

Available in: Japan, U.S.A., EU, Korea, China, Taiwan, Singapore

EM-2-004 Polymers

biodegradable resin

GCS-PLA GC8000 (Pellet)

Environmental performance

1. These biodegradable products contribute to reduced environmental problems caused by conventional plastic wastes.
2. These biodegradable products are stable in the atmosphere but they are decomposed by living microorganisms in compost, wet soil, and the sea.
3. These biodegradable products can be recycled several times in most conventional plastic processing equipment.

Product performance

GCS-PLA GC8000 is used for biodegradable garbage bags, compost bags, shopping bags, etc.

Application use: Biodegradable bag for 2008 Beijing Olympic team

Green Chemical Co., Ltd

17-3, Yangpyeong-Ri, Moga-Myeon, Icheon-City, Kyunggi-Do, 467-873, Korea
Tel +82-31-632-9152 Fax +82-31-632-9152
E-mail gcspla@yahoo.co.kr
URL www.gcspla.co.kr

Available in: Worldwide

EM-2-005 Polymers

biodegradable resin

GCS-PLA GC8000T

Environmental performance

1. These biodegradable products contribute to reduced environmental problems caused by conventional plastic wastes.
2. These biodegradable products are stable in the atmosphere but they are decomposed by living microorganisms in compost, wet soil, and the sea.
3. These biodegradable products can be recycled several times in most conventional plastic processing equipment.

Product performance

This biodegradable resin (GC8000T) is used for injection and extrusion of molded products such as spoons, forks, knives, chopping boards, and straws.

Applicable products : spoon, fork, knife, chopping board

Green Chemical Co., Ltd

17-3, Yangpyeong-Ri, Moga-Myeon, Icheon-City, Kyunggi-Do, 467-873, Korea
Tel +82-31-632-9152 Fax +82-31-632-9153
E-mail gcspla@yahoo.co.kr
URL www.gcspla.co.kr

Available in: Worldwide

EM-2-006 Polymers

biodegradable resin

GCS-PLA GC8000R (Pellet)

Environmental performance

1. These biodegradable products contribute to reduced environmental problems caused by conventional plastic wastes.
2. These biodegradable products are stable in the atmosphere but they are decomposed by living microorganisms in compost, wet soil, and the sea.
3. These biodegradable products can be recycled several times in most conventional plastic processing equipment.

Product performance

GCS-PLA (GC8000R) is used for biodegradable garbage bags, compost bags, and shopping bags.

Application use : Biodegradable garbage bag and shopping bag and roll bag

Green Chemical Co., Ltd

17-3, Yangpyeong-Ri, Moga-Myeon, Icheon-Si, Kyunggi-Do, 467-873, Korea
Tel +82-31-632-9152 Fax +82-31-632-9153
E-mail gcspla@yahoo.co.kr
URL www.gcspla.co.kr

Available in: Worldwide

EM-2-007 Polymers

biodegradable resin

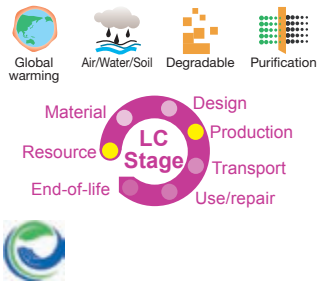
GCS-PLA GC8400 (Pellet)

Environmental performance

1. These biodegradable products contribute to reduced environmental problems caused by conventional plastic wastes.
2. These biodegradable products are stable in the atmosphere but they are decomposed by living microorganisms in compost, wet soil, and the sea.
3. These biodegradable products can be recycled several times in most conventional plastic processing equipment.

Product performance

GCS-PLA (GC8400) is used for biodegradable compost bags, shopping bags, etc. The base materials are AP (PLA) + starch



Green Chemical Co., Ltd

17-3, Yangpyeong-Ri, Moga-Myeon, Icheon-Si, Kyunggi-Do, 467-873, Korea
Tel +82-31-632-9152 Fax +82-31-632-9153
E-mail gcspla@yahoo.co.kr
URL www.gcspla.co.kr

Available in: Worldwide

Application use: Biodegradable shopping bags

EM-2-008 Polymers

plastic bags

R3plas Oxo-biodegradable plastic packaging

Environmental performance

Degrades with presence of UV, thermal and oxoidation.
Environmental friendly and good transparency
Supports Governmental and ISO 14000
Meets ATSM standards. member of Oxo-Biodegradable Plastics Intitute(USA)
http://www.oxobio.org

Product performance

R3plas Oxo-biodegradable plastics shopping bags
R3plas Oxo-biodegradable plastics food trays
R3plas Oxo-biodegradable anti-static bubble bags
R3plas Oxo-biodegradable garbage bag in rolls
R3plas Oxo-biodegradable conductive bag for semi-conductor industry
R3plas Oxo-biodegradable clean room bags
R3plas Oxo-biodegradable disposable cups
R3plas Oxo-biodegradable disposable cultery
R3plas Oxo-biodegradable agricultural seeding bags
Rplas Oxo-Biodegradable food containers

WINRIGO (S) PTE LTD

No 21 Toh Guan Road East #04-09 Toh Guan Centre, 608609, Singapore
Tel +65-63101396 Fax +65-65154557
E-mail winrigo@singnet.com.sg
URL www.winrigo.com.sg
URL www.winrigo.com.sg
URL www.winrigo.com.sg

Available in: All countries

R3plas Oxo-biodegradable garbage bag in roll and R3plas Oxo-biodegradable shopping bag

EM-2-009 **Polymers**

plastic resin

R3plas Eco-label Recycled Plastic resin

Environmental performance

Collection from post industrial waste like runner, end of life products, post industrial packaging and post consumer packaging etc

Product performance

R3plas Recycled PC
R3plas Recycled PS
R3plas Recycled PP
R3plas Recycled PE
R3plas Recycled ABS
R3plas Recycled LCP
R3plas Recycled PA
R3plas Recycled PPS

R3plas Eco-label recycled plastic resin after color compounding

WINRIGO (S) PTE LTD

No.21 Toh Guan Road East #04-09 Toh Guan Centre Singapore, 608609, Singapore
Tel +65-98715058 Fax +65-65154557
E-mail salewin@singnet.com.sg
URL www.winrigo.com.sg
URL www.winrigo.com.sg
URL www.winrigo.com.sg

Available in: All countries

EM-3-001 Natural materials

bamboo flooring

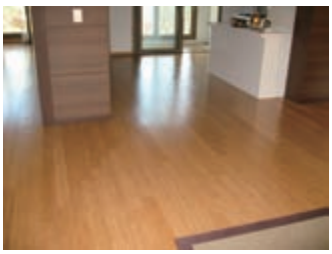
Eco-friendly Solid Bamboo Flooring

Environmental performance

Bamboo is one of the world's most renewable and strongest natural resources, and an ideal alternative to wood. Bamboo is ready for harvesting in 4 to 6 years, while trees take 20 to 80 years to mature. There is also no need to replant bamboo as it grows out from its own shoots, in direct contrast with forests which require expensive and time-consuming reforestation efforts. We only use mature bamboo harvested from government-certified forests, which ensures that the bamboo plants have enough time to re-grow.

Product performance

Our eco-flooring is made of 100% solid bamboo using European technology and comes prefinished with a German scratch-resistant polyurethane coating. The products exceed the strict international E0 standard (<0.5mg/L) for formaldehyde emissions, ensuring a healthy environment for our customers.



Bamboo flooring in luxury apartment showroom

Star Bamboo (S) Pte Ltd

51 Bukit Batok Crescent #06-41 Unity Centre, 658077, Singapore
Tel +65-6565-9217 Fax +65-6565-0508
E-mail info@starbamboo.com
URL http://www.starbamboo.com
URL http://www.starbamboo.com/bamboo-flooring

Available in: Singapore, China, Europe, Asia

EM-3-002 Natural materials

tatami matting

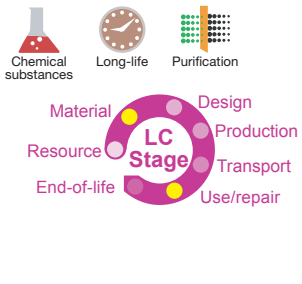
"Kanryoso®"; stronger skin rush

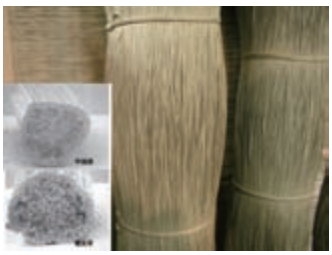
Environmental performance

Because of its strength the life of products made from "Kanryoso®" is long. Rush is a plant that grows by taking CO_2 into its body. Namely, the long-life "Kanryoso®" product fixes CO_2 for a longer period than conventional products. We are therefore contributing to the fixation of CO_2 by raising young rushes.

Product performance

Rush is widely known as a material of "tatami" in Japanese housing. The features of "tatami" are not only the fragrance and strength, but also humidity control. In addition, it has been lately found that rush has a function of adsorbing chemical substances and of deodorizing. The "Kanryoso®" rush has stronger skin compared with the previous rush, (ref., the photograph of electron-microscopy). This is a result of cultivation in which the intrinsic activity of rush has been fully leveraged. Every piece of the rush is thick and uniform.





KANRYOUSOU®

IKEHIKO CORPORATION Co.,Ltd.

1052 Miyamatsu, Ooki-machi, Mizuma-gun, Fukuoka, 830-0424, Japan
Tel +81-944-32-1203 Fax +81-944-33-1059
URL http://www.ikehiko.com

Available in: Japan

EM-3-003 Natural materials

heat-resistant polylactic acid

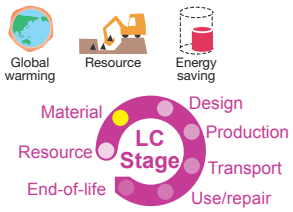
BIOFRONT®, heat resistant polylactic acid

Environmental performance

BIOFRONT® has been developed in an effort to provide a more eco-friendly alternative to traditional oil-based plastics, offering very high heat performance as well as high crystallization rate.

Product performance

The BIOFRONT® is a stereocomplex PLA that has a melting point of 210℃,or 40℃ higher than conventional PLA. This meets practical requirements in high-end markets such as Automotive, Office Equipment and Electrical & Electronics.
Fibers: Interior products and materials requiring heat-resistant, dye-affinity and anti-bacterial properties.
Films: Optical applications requiring transparency and heat resistance
Plastic resins: Electric/Electronic parts and chassis requiring heat resistance and molding.



CO_2 Circulation

Teijin Limited

2-1, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-8585, Japan
Tel +81-3-3506-4096
E-mail biofront@teijin.co.jp
URL http://www.teijin.co.jp/english/index.html

EM-3-004 Natural materials

biodegradable films

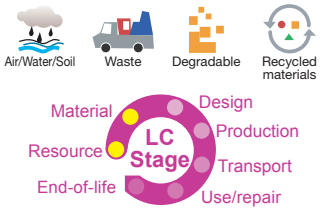
Environment-friendly biodegradable film

Environmental performance

1. These biodegradable films are stable in the atmosphere but are decomposed by living microorganisms in compost, wet soil, and the sea.
2. As an environment mark accreditation product, it is an environment-friendly raw material that can convert into H_2O and CO_2 upon complete dissolution by a soil microorganism after use.
3. These biodegradable films can be recycled several times in most conventional plastic processing equipment.

Product performance

- Garbage bags, food & drink garbage bags, shopping bags, luxury shopping bags, mulching film for agriculture, film for landscape architecture work
- Disposable gloves, disposable table cloths, roll bags



Korea UB Clean Co, Ltd.

459-11, Gilseong-ri, Hyangnam-myeon, Hwaseong-si, Gyeonggi-do, 445-921, Republic of Korea
Tel +82-1600-1649 Fax +82-31-3599177
E-mail ub@kubc.co.kr
URL http://www.kubc.co.kr

Available in: Korea, Japan, Australia, United Kingdom, Hong Kong, China, Kuwait, America, etc.

EM-3-005 Natural materials

biodegradable trays

Eco-friendly disposable molded trays

Environmental performance

We introduce ourselves as an SME engaged in manufacturing eco-friendly, biodegradable, compostable products. All our products are manufactured using sustainable materials such as cotton waste, crop waste, etc. The energy requirements of the manufacturing process are very low.

Product performance

We manufacture various types of trays and products from crop waste. These include:
1) Plant baskets
2) Punnets
3) Kidney trays
4) Egg trays
All the above products are manufactured using crop waste as raw material and are compostable and biodegradable. These products are comparable in performance with the toxic, polluting plastic versions of the same.

Degradable trays

Ideas & Solutions

A3/19, Sarita Vihar, 119/3 Parvati, Sinhagad Road, Pune-411030, India
Tel +91-9850008082
E-mail ecofocusin@gmail.com
URL www.ecofocusin.com

Available in: Worldwide

EM-3-006 Natural materials

corn fiber

CornWare

Environmental performance

CornWare is a range of eco-friendly, 100% biodegradable disposable tableware made from corn. It will biodegrade after 90 days upon discharge and is also carbon neutral. CornWare has also been awarded accreditations by Green Label Singapore & ISO for Biodegradability & Environmental Management.

Product performance

CornWare is sturdy, reliant and safe for use for adults and kids alike. It doesn't snap or break easily due to its strong structure.
CornWare is microwaveable, acid & alkali proof, water & leakage proof and able to withstand temperatures from -20°C to 150°C. It is certified safe and toxin-free by the FDA.

Olive Green Marketing Pte Ltd.

63 Hillview Avenue #03-08 Lam Soon Industrial Building, 669569, Singapore
Tel +65-67671301 Fax +65-67679908
E-mail marketing@olivegreen.com.sg
URL www.olivegreen.com.sg

Available in: Singapore

EM-3-007 — Natural materials

corn fiber

CornWare

Environmental performance

CornWare is a range of eco-friendly, 100% biodegradable disposable tableware made from corn. It will biodegrade after 90 days upon discharge and is also carbon neutral. CornWare has also been awarded accreditations by Green Label Singapore & ISO for Biodegradability & Environmental Management.

Product performance

CornWare is sturdy, reliable, and safe for use for adults and kids alike. It doesn't snap or break easily due to its strong structure.
CornWare is microwaveable, acid- and alkali-proof, water- and leakage-proof, and able to withstand temperatures from -20°C to 150°C. It is certified safe and toxin-free by the FDA.

Olive Green Marketing Pte Ltd.

63 Hillview Avenue #03-08 Lam Soon Industrial Building, 669569, Singapore
Tel +65-67671304 Fax +65-67679908
E-mail marketing@olivegreen.com.sg
URL www.olivegreen.com.sg

Biodegradable cups made from corn

EM-3-008 — Natural materials

corn fiber

CornWare

Environmental performance

CornWare is a range of eco-friendly, 100% biodegradable disposable tableware made from corn. It will biodegrade after 90 days upon discharge and is also carbon neutral. CornWare has also been awarded accreditations by Green Label Singapore & ISO for Biodegradability & Environmental Management.

Product performance

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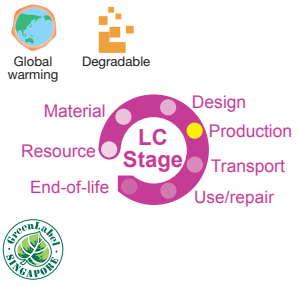

Olive Green Marketing Pte Ltd.

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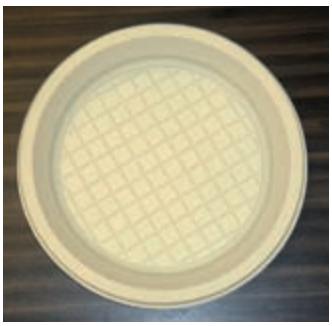

Biodegradable 6" dessert plate

EM-3-009 Natural materials

corn fiber

CornWare

Environmental performance

CornWare is a range of eco-friendly, 100% biodegradable disposable tableware made from corn. It will biodegrade after 90 days upon discharge and is also carbon neutral. CornWare has also been awarded accreditations by Green Label Singapore & ISO for Biodegradability & Environmental Management.

Product performance

CornWare is sturdy, reliable, and safe for use for adults and kids alike. It doesn't snap or break easily due to its strong structure.
CornWare is microwaveable, acid- and alkali-proof, water- and leakage-proof, and able to withstand temperatures from -20°C to 150°C. It is certified safe and toxin-free by the FDA.

Olive Green Marketing Pte Ltd.

63 Hillview Avenue #03-08 Lam Soon Industrial Building, 669569, Singapore
Tel +65-67671304 Fax +65-67679908
E-mail marketing@olivegreen.com.sg
URL www.olivegreen.com.sg

Biodegradable dessert bowl

EM-3-010 Natural materials

corn fiber

CornWare

Environmental performance

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URL www.olivegreen.com.sg

Biodegradable lunch box

EM-3-011 — Natural materials

corn fiber

CornWare

Environmental performance

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URL www.olivegreen.com.sg

Biodegradable noodle bowls

EM-3-012 — Natural materials

corn fiber

CornWare

Environmental performance

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URL www.olivegreen.com.sg

Set of biodegradable cutlery

EM-3-013 Natural materials

corn fiber

CornWare

Environmental performance

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Product performance

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E-mail marketing@olivegreen.com.sg
URL www.olivegreen.com.sg

Biodegradable dessert spoon

EM-3-014 Natural materials

corn fiber

CornWare

Environmental performance

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E-mail marketing@olivegreen.com.sg
URL www.olivegreen.com.sg

Biodegradable 9" plate

EM-3-015 Natural materials

cotton fabrics

BREVANO ECO: Anti-flaming, antistatic fabric of ecology-specs

Product performance

Fabric made from blending of excellent flameproof acrylic fiber and unused cotton generated during spinning process accounting for 10% of total material. - Having excellent anti-flaming property coupled with self-extinguishing property. LOI*(limited oxygen index)29 to 32. - Excellent in non-fusibility, compared with 100% general synthetic fibers. Safe as it would not stick to skin. - Having superior antistatic property (complying with JIS8118:friction static electrical charge less than 7micro C/m^2) - Refreshing and easy-to wear, due to their excellent sweat absorption. - Will not pill. - Good coloring, good color fastness. - Designated "EcoMark certified product", Japan's enviromental label. *Note: LOI is a measure to show the degree of flammability.The less flammable, the higher the figure is. Generally, anti-flammable materials show the figure of 26 or higher.

Combustion test

KURABO INDUSTRIES LTD.

4-31, 2-Chome, Kyutaro-machi, Chuo-ku, Osaka, 541-8581, Japan
Tel +81-6-6266-5295 Fax +81-6-6266-5539
E-mail uniform_sect@kurabo.co.jp
URL http://www.kurabo.co.jp/

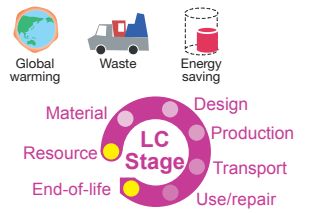
EM-3-016 Natural materials

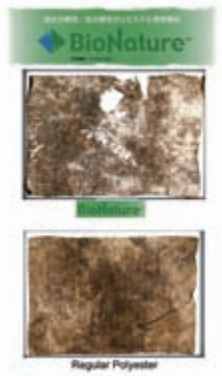
cotton fabrics

BioNature: Eco-oriented soil-returnable fabric

Product performance

A brand-new polyester and cotton mixed fabric using hydrolyzable, biodegradable polyester of DUPONT's "Biomax". When BioNature is left for a long time in a water-rich environment with appropriate temperature and lots of microorganisms, it eventually turns into water and carbon dioxide, as the result of biodegradation, after passing through the process of hydrolysis. As the process of biodegradation is very slow, it will not adversely affect animals, or plants. The amount of carbon dioxide emitted from burning this fabric is less, compared to the emitted amount when burning general fabrics, and combustion calories are also low. It is also proved that the ash does not contain any harmful substance. The fabric will hardly deteriorate in ordinary use.





Fabrics buried in the ground for 10 months

KURABO INDUSTRIES LTD.

4-31, 2-Chome, Kyutaro-machi, Chuo-ku, Osaka, 541-8581, Japan
Tel +81-6-6266-5295 Fax +81-6-6266-5539
E-mail uniform_sect@kurabo.co.jp
URL http://www.kurabo.co.jp/

EM-3-017

Natural materials

cotton fabrics

Return Cotton — an eco-friendly material for a sound recycling society

Product performance

Return Cotton is produced using our unique technology by recycling various unused fibers such as waste cotton generated in the cotton-spinning process. This is an eco-friendly material aimed at helping to achieve a sound recycling society. (An Eco Mark-certified product)

Brand logo

KURABO INDUSTRIES LTD.

4-31, 2-Chome, Kyutaro-machi, Chuo-ku, Osaka, 541-8581, Japan
Tel +81-6-6266-5295 Fax +81-6-6266-5539
E-mail uniform_sect@kurabo.co.jp
URL http://www.kurabo.co.jp/

EM-3-018

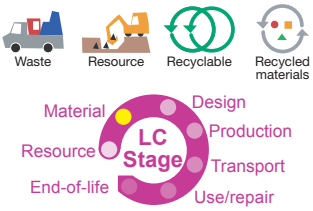
Natural materials

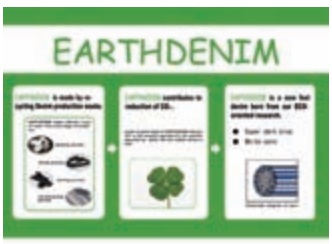
cotton fabrics

EARTHDENIM: New feel denim born from our ECO-oriented research.

Product performance

EARTHDENIM makes effective reuse of waste from each stage of production. It makes possible a super dark blue color as unmatched by normal dyeing. And it contributes to reduction of CO_2. -EARTHDENIM is made by recycling denim production waste. -A pair of jeans made of EARTHDENIM reduces CO_2 in a quantity equivalent to the quantity absorbed by about 180 four-leafed-clovers a year. -Super dark blue and White core





Brand logo

KURABO INDUSTRIES LTD.

4-31, 2-Chome, Kyutaro-machi, Chuo-ku, Osaka, 541-8581, Japan
Tel +81-6-6266-5326 Fax +81-6-6266-5204
E-mail Casual_sect@kurabo.co.jp
URL http://www.kurabo.co.jp/

EM-3-019

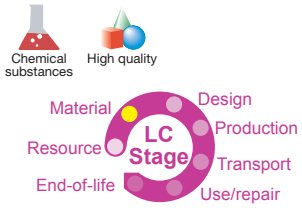
Natural materials

pure worsted yarn

ECO-WASH: Eco-friendly shirink-resistant wool

Product performance

Conventional chlorination treatment applied for shrink-proofing of wool fiber causes environmental contamination. This is because residual chlorine in industrial waste water drained into rivers reacts with organic matter and turns into a carcinogen (AOX=Absorbable Halogens), a harmful substance to humans and the environment. While in Kurabo's ECO-WASH treatment, ozone is used instead of chlorine, which is non-AOX and greatly reduces the burden of contamination to the environment, and further, it has much less damaging effects to wool fiber than done by the conventional chlorine treatment for shrink-proofing. Thus, ECO-WASH is the world first shrink-resistant wool by ozone treatment. - Smooth and neat surface look, fluffess - Natural stretchability - Excellent shrink-resistance - Water repellency is retained (together with moisture releasing property of wool makes ECO-WASH comfortable)



Water repellent test of various treated wool

KURABO INDUSTRIES LTD.

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E-mail Takashi_Kanda@kurabo.co.jp
URL http://www.kurabo.co.jp

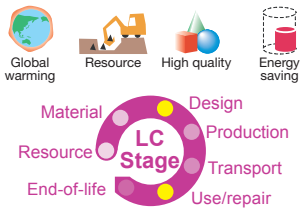
EM-4-001 Foam

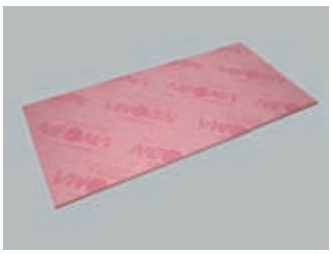
phenolic foam insulation

Freon-gas-free sophisticated high-performance phenolic foam insulation

Environmental performance

The use of combustible hydrocarbon gas as a blowing agent and flame resistant property of the product are both accomplished by its unique foaming technology. It contributes to the prevention of the ozone layer and the mitigation of global warming by not using Freon gases. 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 thermal resistance, significantly administering to high athermalize (energy-saving) of the structures.





ASAHI KASEI CONSTRUCTION MATERIALS CORPORATION

1-105 Kanda Jinbocho,Chiyoda-ku,Tokyo, 101-8101, Japan
Tel +81-3-3296-3529 Fax +81-3-3296-3535
URL http://www.asahikasei-kenzai.com

EM-5-001 Ceramics and glass

optical glass

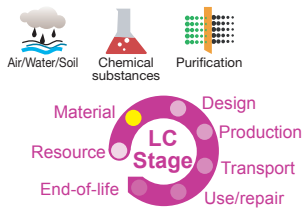
Optical glass (Eco-glass) without harmful lead and arsenic

Environmental performance

There are more than 100 types of optical glass and, in the past, generally, huge amounts of lead has been used for about half of them, and a small amount of arsenic also used in most types. These two elements have high risks of damaging to the environment.
However, Nikon has developed almost full types of optical glass referred to Eco-glass without these two elements, and has applied them to Nikon's products.

Product performance

Optical glass has, in general, high transmission, high homogeneity and optical constants, and is used for lenses or prisms of optical products, for example, cameras, binoculars, telescopes, microscopes, etc.
Nikon has developed optical glasses in collaboration with optical design division, and has established production technologies and mass-production system by Nikon's own glass production facilities. The produced glasses have contributed to achieve high performances of Nikon's products.



Lenses and prisms made with Eco-glass

NIKON CORPORATION

Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo, 100-8331, Japan
Tel +81-3-3214-5311
URL http://nikon.com/
URL http://nikon.com/about/csr/report/index.htm

Available in: Worldwide

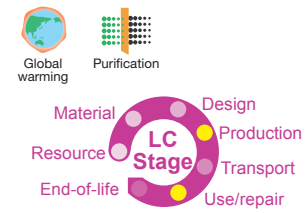
EM-5-002 Ceramics and glass

ceramic, stone, and clay products

Marine Block®

Environmental performance

JFE has been developing restoration technologies for marine environments by utilizing steel slag, which is a byproduct of manufacturing. Porous Marine Block®, which is JFE's block product made from steel slag and CO_2 through a solidification reaction, has been adopted for coral reef restoration works in Sekisaishoko on a trial basis. So far, good results have been observed.
Marine Block® has also been used in rejuvenation experiments for seaweed reefs close to Japan because of its excellent performance as an implantation base for seaweed.



JFE Steel Corporation

2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo, 100-0011, Japan
Tel +81-3-3597-3111 Fax +81-3-3597-4860
URL http://www.jfe-steel.co.jp/

EM-5-003 Ceramics and glass

ceramic bearing balls

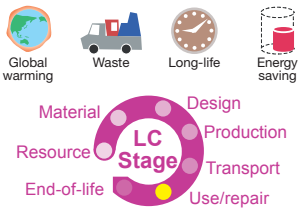
Long Life, High Reliability and Anticorrosion Minimize Environmental Impacts

Environmental performance

- Mitigation of climate change: Reduction in the rotational energy loss of ball bearings.
- Efficient use of resources: Resource saving as a result of longer ball bearing life (3 times longer). Reduction in the waste of worn-out bearings because our ceramic bearings do not require frequent replacement.
- Management of chemicals: Environmentally beneficial reduction in the amount of bearing grease required.

Product performance

- Maintenance saving: Easy maintenance thanks to a highly durable and reliable generator bearing system which is substantially free from electric corrosion because of its ceramic balls' good insulation property.



Toshiba Materials Co., Ltd.

1-1, Shibaura 1-Chome, Minato-Ku, Tokyo, 105-8001, Japan
Tel +81-3-3457-4875 Fax +81-3-5444-9235
URL http://www.toshiba.co.jp/index.htm
URL http://www.toshiba-tmat.co.jp/tmat/corp/env.htm

Ceramic balls for windmill power generator bearings

EM-5-004 Ceramics and glass

granulated blast furnace slag

VCEM brand, ground granulated blast furnace slag (GGBS)

Environmental performance

GGBS's raw material is a by-product of the iron-making industry derived from iron blast furnaces. The manufacture of GGBS reduces landfill problems and cuts gas emissions at steel plants. Every ton of GGBS reduces almost 1 ton of CO_2 by replacing Ordinary Portland Cement (OPC), a material normally used in concrete. Every ton of GGBS produced consumes only 10% of the energy required to produce 1 ton of OPC.

Product performance

Using GGBS in concrete improves workability, high compressive and flexural strengths, and resistance to damaging / aggressive chemicals. GGBS lowers permeability in concrete, therefore reducing the potential for reinforcing steel to corrode when exposed to chlorides. GGBS reduces the risk of thermal cracking in large concrete pours. GGBS's off-white color reduces the "urban heat island" effect by making lighter-color concrete, enabling it to reflect more light and cooling structures and pavements with exposed concrete.

70kg-CO_2	Resource/Materials/Production/ Transfer/Use/End-of-Life
Inspection	

EnGro Corporation Ltd.

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Tel +65-6561-7978 Fax +65-6561-9770
E-mail vincent.loh@engro-global.com
URL www.engro-global.com
URL www.vcem-global.com

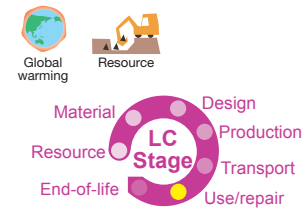
EM-5-005 Ceramics and glass

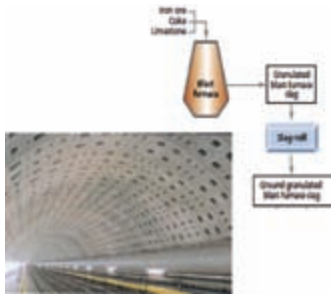
carbon-fiber sheets for repairing

Granulated Blast-Furnace Slag, Superior alternate material for clinker and cement

Product performance

The Granulated Blast-Furnace Slag ("GBFS") is produced by rapid granulation of molten slag that is obtained during the iron making process. GBFS primarily consists of CaO and SiO_2 together with minor chemical components such as Al_2O_3, MgO and others. GBFS can be used as an alternate of clinker that is the raw material of cement. Especially, GBFS shows excellent hydration character when it is further ground, which is called Ground Granulated Blast-Furnace Slag ("GGBFS"). The character of GBFS or GGBFS has been widely known as an excellent alternate of clinker or cement. Recent concerns for global warming highlighted the value of GBFS and GGBFS. GBFS and GGBFS contributes to reduce CO_2 emission amount equal to approximately 700Kg per each metric ton of GBFS or GGBFS through energy and natural resource saving during clinker burning process and cement production once GBFS or GGBFS are used instead of clinker and cement. Nippon Steel Corporation supplies GBFS or GGBFS from 5 steel works that are distributed across Japan to domestic as well as overseas customers.





Segments (GBFS,GGBFS are blended) of Trans Tokyo Bay Highway

Nippon Steel Corporation

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E-mail kankyo@nsc.co.jp
URL http://www.nsc.co.jp/en/eco/index.html

EM-5-006 Ceramics and glass

blast furnace cement

P4246 High Slag Portland Blast Furnace Cement (HSPBFC) is a homogeneous blend of OPC and GGBS

Environmental performance

GGBS emits 20 times less CO_2 as compared to OPC. In P4246 HSPBFC, GGBS replaces a high percentage of OPC, up to 75%. GGBS replaces OPC, a material that contributes about 1 ton of CO_2 for each ton of OPC produced. By using more GGBS, it helps to conserve primary resources, reduce CO_2 emissions caused by OPC, and enhance a building's energy efficiency through mitigation of the heat island effect.

Product performance

Key features of HSBFC
1) Good workability
2) Prolonged slump retention
3) Higher ultimate compressive strength
4) Higher flexural strength
5) More aesthetically pleasing appearance of lighter color in HSBFC concrete

Key benefits of using HSPBFC
1) Reduces the risk of early-age thermal cracking especially in mass concreting
2) Improves resistance to sulphate and chloride attacks on concrete, especially for marine structures
3) Eliminates the risk of damage caused by alkali-silica reaction (ASR) in concrete
4) Improves long-term strength development of concrete

EnGro's P4246 brand of HSPBFC is Green Label certified

EnGro Corporation Ltd.

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E-mail vincent.loh@engro-global.com
URL www.engro-global.com

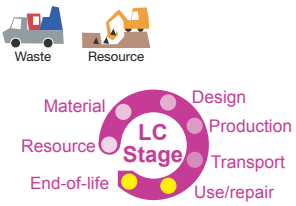
EM-5-007 Ceramics and glass

steel bars

Tow Sheet, maintenance and reinforcement material for concrete structures

Product performance

As many highways are increasingly aged, maintenance and repairing work are in great demand to expand or extend the life of structures. The "Tow Sheet Method" supplied by Nippon Steel and Nippon Steel Composite is widely used in repairing and reinforcement work where "Tow Sheet" formed into sheet of carbon-fiber is affixed over the surface of concrete with resin adhesive. "Tow Sheet" work is easy and resists rust, thus contributing to the extended life of facilities and buildings. Nippon Steel looks forward to reducing the amount of construction waste and further to global environmental preservation through the promoted use of its "Tow Sheet".



Nippon Steel Corporation

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Tel +81-3-3275-5144 Fax +81-3-3275-5979
E-mail kankyo@nsc.co.jp
URL http://www.nsc.co.jp/en/eco/index.html

EM-6-001 Composites

reconstituted wood

Recycled wood (Toppan Material Wood)

Environmental performance

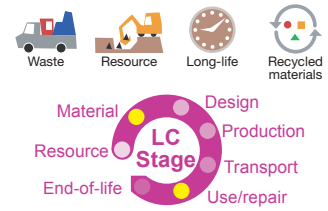
Toppan Material Wood is a recycled industrial material made entirely from waste and waste plastic. This industrial material can be re-crushed and recycled time and time again with no change in its original form and function.

Product performance

- High processability
- Steady strength
- High strength
- Anti-bacillus corrosion
- Water-proofing, weather resistant

"TOPPAN MATERIAL WOOD" is a product sold by Toppan Cosmo, Inc. that employs ECO-M-WOOD, a product for which ECOWOOD Co. Ltd. has acquired an Ecomark authorization number.

* ECOWOOD Co., Ltd.
12-1, HIbikimachi, Wakamatsu-ku, Kitakyushu-shi, 808-0021, Japan
Tel +81-93-751-2424 Fax +81-93-751-2430 E-mail info@eco-wood.jp



Toppan Material Wood has high processability because it is made by extrusion.

TOPPAN COSMO, INC.

Toppan Shibaura Building, 26-19-3, Shibaura, Minato-ku, Tokyo, 108-8536, Japan
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E-mail eco@toppan.co.jp
URL http://www.toppan.co.jp/english/products_service/business/industrial/index.html
URL http://www.toppan.co.jp/english/csr/

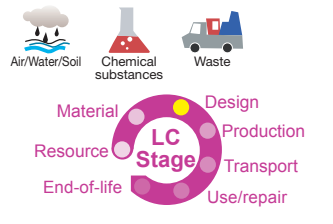
EM-6-002 Composites

adhesive products

Water-based emulsion adhesive products with various foams

Environmental performance

These are pressure-sensitive adhesive (PSA) products which have no organic solvent. Conventional PSA has organic solvent, which is half the weight of undiluted solution of adhesives. Therefore, conventional PSA has emitted a lot of organic solvents in the air, and caused air pollution and sick house syndrome.
New type PSA solves these problems. It has water instead of organic solvents, but its performance is equal to conventional one. It's very easy on the environment.
New PSA is applicable to various products. For example, polyurethane foam, polyethylene foam, and EPDM foam.



Water-based Emulsion adhesive products with various foams

Bridgestone Corporation

1-6-6, Yaesu, Chuo-ku, Tokyo, 103-0028, Japan
Tel +81-3-5202-6830 Fax +81-3-5202-6833
URL http://www.bridgestone.co.jp/english/index.html

EM-6-003 Composites

rubber-reforming materials

Sulfron™ improves fuel consumption and enhances the durability of tires

Environmental performance

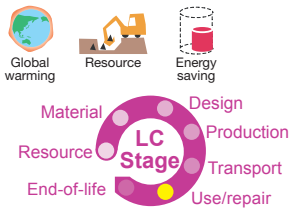
Sulfron™ contributes to automobiles CO_2 reduction by a 5% improvement in fuel consumption.

Product performance

Sulfron™, a modified aramid derived from Twaron®, is a unique rubber ingredient that has been chemically processed from cut fiber. When absorbed by the tread of a tire, it disperses inside the rubber and as it conforms to the rubber, the tire becomes more durable. It also reduces rolling resistance, which improves fuel efficiency.

Performance of Sulfron:

1. Improves fuel consumption by 5%
2. Increases tire durability by suppressing heating while moving
3. Prevents tire tread cracking



Teijin Aramid BV

Westervoortsedijk 73 P.O.Box 9600 6800 TC Arnhem, The Netherlands,
100-8585, Japan
Tel +31-26-366-4396 Fax +31-26-366-4110
E-mail k.kashiwagi@teijin.co.jp
URL http://www.teijinaramid.com/

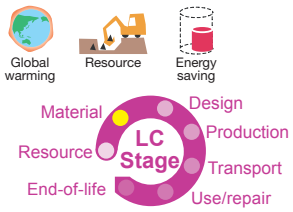
EM-7-001 Others

polycrystalline silicon

Polycrystalline Silicon (Materials for solar power systems)

Environmental performance

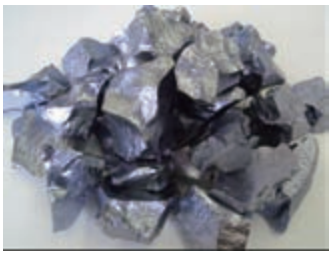
We are producing polycrystalline silicon for semiconductor and solar cell from metallurgical silicon by processing it through chlorination, distillation and reduction processes.
The polycrystalline silicon for solar cells is a major raw material for photovoltaic industry and the energy generated from solar cells is clean without any generation of CO_2.
Global warming is an urgent issue not only for human beings but also any lives on the globe now. We are contributing to preservation and restoration of the natural environment on the earth by supplying polycrystalline silicon.



Mitsubishi Materials Corporation (Yokkaichi Plant)

5 Mita-cho, Yokkaichi, Mie, 510-0841, Japan
Tel +81-59-345-5191 Fax +81-59-346-5815
E-mail toishii@mmc.co.jp
URL http://www.mmc.co.jp/corporate/en/index.html
URL http://www.mmc.co.jp/corporate/en/product/electronics/1001.html
URL http://www.mmc.co.jp/corporate/en/csr/csr.html

Available in: Japan, USA, Europe, and Southeast Asia



Polycrystalline silicon

EM-7-002 Others

columnar-crystal large-diameter silicon

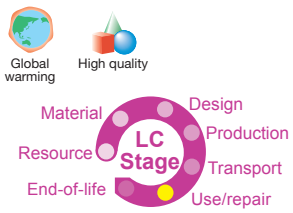
Columnar-crystal large-diameter silicon for solar cell and semiconductor apparatus

Environmental performance

From the view-point of the global environmental problems, the product contributes to energy saving and CO_2 emission reduction as solar cells. In comparison with the competitive Si product in the same field, our product is superior in the efficiency of component manufacturing owing to its large diameter. This reveals an environmentally low-load manufacturing process.

Product performance

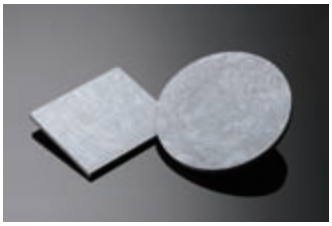
The product is excellent in machining characteristics, mechanical strength, and chemical resistance, compared with the poly-crystal products prepared by other methods. Moreover, it has the performance at almost the same level as that of single crystal. It is therefore expected as a substitute in the field where the single crystal has been used. Since a large-diameter product can be made, the demand for columnar silicon crystal is rapidly increasing in fields where SiC, quartz and carbon have been used.



JEMCO Inc.

3-1-6 Barajima, Akita City, Akita, 010-8585, Japan
Tel +81-18-864-6011 Fax +81-18-864-4002
URL http://www.mmc.co.jp/corporate/en/product/electronics/0101.html
URL http://www.mmc.co.jp/corporate/en/csr/csr.html

Available in: Global



Columnar Crystal Silicon of plate type

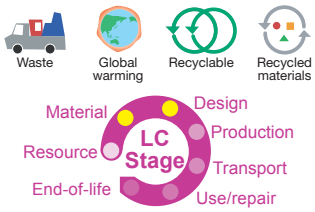
EM-7-003 Others

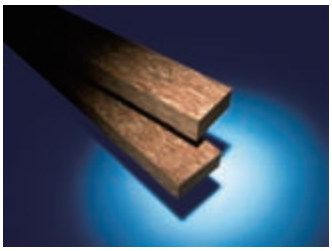
construction materials

Environmentally friendly EcoValue Wood made from recycled wood materials

Environmental performance

Unused lumber from thinning and discarded timber are manufactured into EcoValue Wood, a homogeneous, high-quality wood material. This type of environmental conservation initiative is possible only as a community-based enterprise. Sekisui helps to turn unused wood materials into resources by leveraging the know-how acquired in the development of EcoValue Wood. To pursue the concept of local production for local consumption, we will work to turn the region's unused timber into resources, and propose the establishment of environmental partnerships to realize such a virtuous circle.





SEKISUI CHEMICAL CO., LTD.

2-3-17 TORANOMON, MINATOKU, TOKYO, 105-8450, Japan

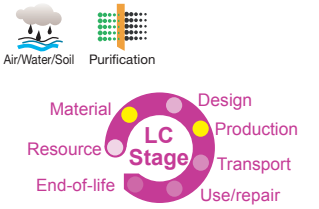
EM-7-004 Others

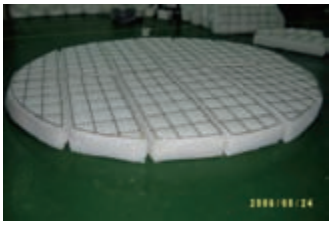
demister

P.P MESH DEMISTER

Environmental performance

1. High collection efficiencies of up to 99% at the velocity of a moving fluid of 1 to 8 m/sec
2. Provides free area of up to 98% for operation and low pressure drop (0.1" ~ 1.0" W/G)
3. A variety of materials in accordance with temperature and corrosion resistance
4. Easy to install by using M/H
5. Usable without any restriction and interchangeable with existing facilities
6. Designed for self-cleaning (semi-permanent and economical)





DAE SHIN INDUSTRIAL CO.,LTD

A-1, NAM DONG INDUSTRIAL COMPLEX (45BLOCK 6LOT), 435-6 NON-HYUN DONG, NAM-DONG GU, IN CHEON, 405-848, KOREA
Tel +82-32-814-0211 Fax +82-32-814-0213
E-mail dsdemister@naver.com
URL www.dsdemister.com

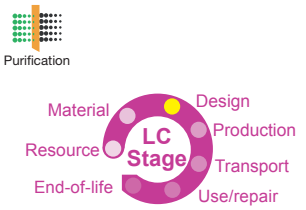
EM-7-005 Others

concrete blocks

Environment-conscious porous concrete

Product performance

Environment-conscious construction methods are recently required for bank protection work. Porous concrete has been developed to be a material for bank protection to satisfy both strengthening and environmental functions.
The void size of this environment-conscious porous concrete (maximum diameter size of inscribed circle: 14 mm) is about double that of conventional porous concrete, which improves the living environment for various plants and animals and enables cheap soil filling materials to be used. In spite of its large void size, its compressive strength is 10N/mm^2, which is a necessary condition for a porous concrete bank.
This product can be made from aggregate (5~40 mm) from crushed concrete. The related construction costs are reduced because it can be produced using crushed concrete at the construction site itself.
Efficient large-scale construction is possible using the admixture machines and quality control methods that we have developed.



Environment-conscious porous concrete

Kajima Corporation

6-5-11, Akasaka, Minato-ku, Tokyo, 107-8348, Japan
Tel +81-3-5544-0741 Fax +81-3-5544-1733
E-mail env-act@ml.kajima.com
URL http://www.kajima.co.jp/tech/env_planning/seitaikei/seitaikei02.html

EM-7-006 Others

photo voltaic systems

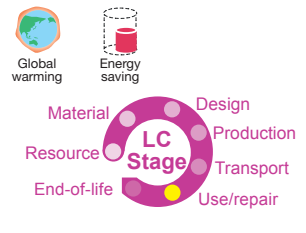
KRISTAL™ Multi-functional PV System

Environmental performance

Enable your roof, facade, or wall to generate electricity, provide skylighting, and many more functions with our Kristal™ Multi-functional PV System.
Grenzone Kristal™ Multi-functional PV System is a versatile customizable system that can be easily integrated for roofing, wall, or facade that has a different look and feel.

Product performance

The durability of Kristal™ is enhanced by the use of UV-resistant, outdoor weather-proof polyurethane (PU) which is extensively used by the automotive industry. The molded frame enables different designs and components to be embedded and hence is easily customizable. The possibility of configuring a roof or facade meeting your unique requirements is highly achievable by Kristal™.



Kristal Multi-functional PV System

Grenzone Pte Ltd.

Woodlands Spectrum 1, 2 Woodlands Sector 1, #05-14, 738068, Singapore
Tel +65-6579-0560 Fax +65-6579-0561
E-mail info@grenzone.com
URL www.grenzone.com

Available in: Global

EM-7-007 Others

poly lactic acid

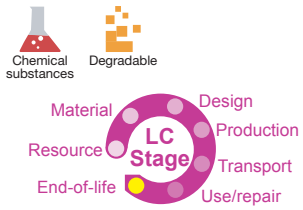
PLA LID

Environmental performance

• 100% biodegradable and compostable and environmentally friendly
• Harmless to the human body

Product performance

- Coffee & fast food stores -Take out stores (Beverages, ice cream, etc)



HANCHANG PAPER CO., LTD.

EXCON VENTURE BLDG., 15-24, YEOUIDO-DONG, YOUNGDEUNGPO-GU, SEOUL, 150-969, KOREA
Tel +82-2-3774-5484 Fax +82-2-3774-5487
E-mail wonchoong@hanchangpaper.co.kr
URL www.hanchangpaper.co.kr

EM-7-008 Others

ammonia

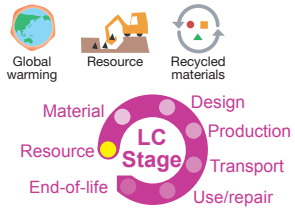
Ecoann™ ammonia produced from recycled plastics

Environmental performance

Compared with the traditional process of producing ammonia from naphtha or natural gas, Ecoann™ partially produced from recycled plastics helps reduce CO_2 emissions by around 35% (in the case of Showa Denko).

Product performance

Ammonia produced is mainly used for fertilizing agricultural crops.
Ammonia is also used for the production of plastics, synthetic fibers, resins, adhesives, explosives, pharmaceuticals, and intermediates for dyes.
In addition to above, Ecoann™ is used for removing nitrogen oxide emissions from thermal electric power stations and other plants, contributing to reductions in environmental impact.

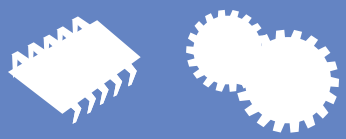


ammonia produced from recycled plastics

Showa Denko K.K

5-1, Ougi-machi, Kawasaki-ku, Kawasaki-shi, Kanagawa, 210-0867, Japan
Tel +81-44-329-0768 Fax +81-44-329-0798
E-mail Kazunori_Ando@sdk.co.jp
URL http://www.sdk.co.jp/html/english/index.html
URL http://www.sdk.co.jp/aa/english/news/2008/aanw_08_0938.html

Eco-components



1 Construction components
2 Electrical and electronic components
3 Semiconductor-related devices and components
4 Machine parts
5 Automobile parts
6 Packaging
7 Others

In the *Eco-products Directory 2009*, "eco-components" refer to "environment-friendly components and functional parts assembled using such components." Eco-components include components that have only low environmental impact when manufactured and components that enable finished (assembled) products to help reduce environmental impact. For example, vacuum insulation materials can be used in refrigerators to achieve energy savings. Components are often called "half-finished products" relative to "finished products," i.e., many are used in finished products.

As for eco-materials, environmental impact reduction throughout the life cycle is a key point for eco-components. Hence, the six criteria under the definition of eco-materials (see the page titled "Eco-materials" in the directory) also partly apply to eco-components. For example, when eco-components can provide "high performance when used," they can increase the energy saved by finished products. The reuse of components as functional parts is a good example of "high recyclability." It should be noted, however, that various requirements must be met prior to the reuse of used components, e.g., in terms of long life, quality, and reliability.

EC-1-001

Construction

fiber wall materials

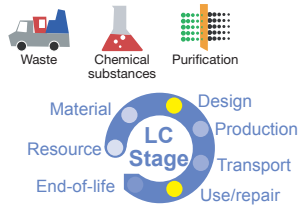
"Air-nice," a Plastered Wall Material using Rush and Natural Materials

Environmental performance

Rush is used in Japanese housing as "tatami," which is known to help with humidity control. In general, until the completed "tatami" mat is woven up, one-third of the rush is emitted as waste. Recently, it has been proven that "tatami" adsorbs chemical substances such as NO_2 and HCHO. With this in mind, we pulverized the waste, of rush mixed with natural materials and made a plastered wall material as a commercial product. Completed was a wall material that gives a warm atmosphere which is not felt from usual plaster and diatomaceous earth.

Product performance

The new product regulates the indoor environment by humidity control and adsorption, and restrains the emission of CO_2 by preventing the incineration of waste. As for air-tight houses, the influence of chemical substances on the human body is a serious matter. By using the rush wall-material, we can improve living conditions.



RushFiberWallMaterial "KUUKIYOI"

IKEHIKO CORPORATION Co.,Ltd.

1052 Miyamatsu, Ooki-machi, Mizuma-gun, Fukuoka, 830-0424, Japan
Tel +81-944-32-1203 Fax +81-944-33-1059
URL http://www.ikehiko.com

Available in: JAPAN

EC-1-002

Construction

heat insulating films

Reftel®, Highly Transparent, Heat Insulating Film

Environmental performance

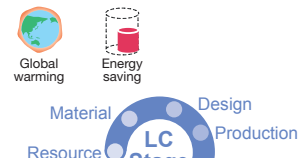
Reftel® contributes to the energy conservation of air conditioning by intercepting the heat rays entering indoors from windows.

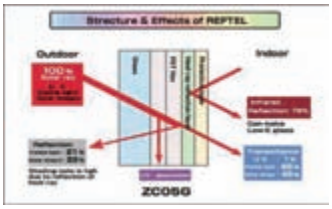
Product performance

Reftel® is the world's first highly transparent and heat reflective insulating film developed by Teijin.

It is made by coating Teijin's polyester (PET) film with ultra thin metal layers using a sputtering method. It has a selective heat and light transmittance, and gives higher transparency, higher heat shielding and better durability compared with aluminum vapor deposited films, colored films or IR (Infrared) absorbing films. It is hardly noticeable when it is installed on a glass window because it has a 60 to 80% transmittance of visible light

There are a variety of grades which have different visible light transmittance to meet any requirement. It has high infrared reflectivity and thus yields high energy saving effectiveness.





Structure and effect of Reftel®(Type ZC05G)

N.I. Teijin Shoji Co., Limited

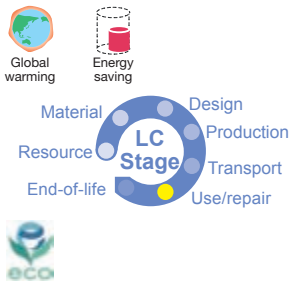
Sumitomo Fudosan Shibadaimon Bldg, 5-5, Shibadaimon 2-chome, Minato-ku, Tokyo, 105-0012, Japan
Tel +81-3-6402-7006 Fax +81-3-6402-7071
E-mail tshinguu11134@ni-teijinshoji.co.jp
URL http://www.teijin.co.jp/english/index.html
URL http://www.teijin.co.jp/english/about/reftel/

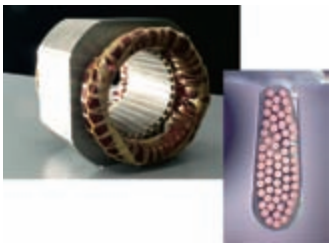
EC-2-001 Electrical and electronic wire cables

Self-lubrication enameled wire "KOMAKI" for higher space factor

Environmental performance

- "KOMAKI Series" of enameled wires provide a coil with high space factor, and so meets the demand for high-efficiency compact motors while conserving energy.
- "KOMAKI" wires deliver much stronger adhesion with impregnating vanish compared to existing self-lubricated enameled wires.





Stator of high efficiency motor that used, "KOMAKI"

Hitachi Cable, Ltd.

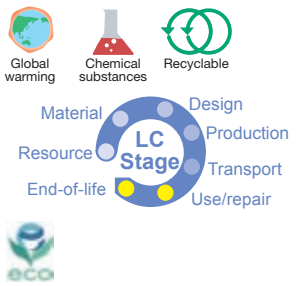
Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/en/products/cable/magnetwire/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html

EC-2-002 Electrical and electronic wire cables

Eco-green® Environment-conscious type

Environmental performance

- A recycling system of waste electric wires is established.
- There is no dioxin emission when incinerating and no harmful substance when buried underground.
- The amount of material used is reduced and the amount of waste is also small.
- Halogen gas is not generated and less smoking occurs in case of fire.



Eco-green® Environment-conscious type

Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/en/products/cable/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html

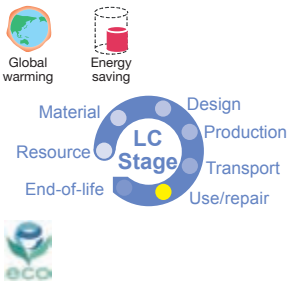
EC-2-003

Electrical and electronic wire cables

Inverter surge resistant enameled wire "KMKED"

Environmental performance

- "KMKED" has an insulation film that is hardly eroded by inverter surges.
- "KMKED" also provides much higher mechanical strength than existing products.
- These features contribute to the longer life of motors.



Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
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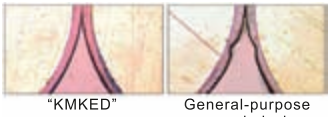
URL http://www.hitachi-cable.co.jp/en/products/cable/magnetwire/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html



Cross section of wire after voltage endurance test (1.1kVp-11.2h)

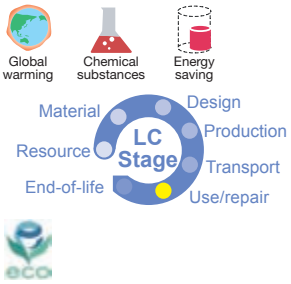
EC-2-004

Electrical and electronic wire cables

Solder Coated Copper Wire for Solar Cells

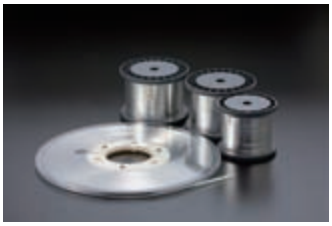
Environmental performance

- Lead Free and comply with RoHS directive.
- Contribution to energy conservation by offering various conductors specific to usages and needs.
- Stress caused by connection has been decreased using super-soft annealing copper wire that is suitable for thin type Si cells.



Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html



Solder coated copper wire for solar cells

EC-2-005 Electrical and electronic motors

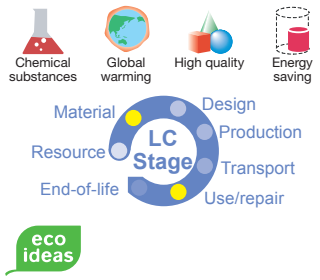
A dual-rotor direct-drive motor for drum-type washing machines

Environmental performance

Compared with motors with the conventional inner-rotor-type structure, this product excels in energy and resource savings with the following characteristics:
Energy saving
① The dual-rotor structure allows a dewatering efficiency of 80%, an improvement of two percentage points on the inner-rotor-type structure's figure of 78%.
Resource saving
② Compared with the inner-rotor-type structure, the output density is 1.9 times higher and motor weight 600 g (11%) lower.
③ Hazardous chemical substances: compliant with the EU RoHS directive.

Product performance

This product is a brushless motor for drum-type washing machines. Boasting the world's first dual-rotor structure, it enables high output density and noise reduction at the same time.



Panasonic Corporation, Motor Company

7-1-1, Morofuku, Daito, Osaka, 574-0044, Japan
Tel +81-778-22-8743 Fax +81-778-23-0218
URL http://panasonic.net/csr/

EC-2-006 Electrical and electronic motors

Motor for electric vacuum cleaners

Environmental performance

- Long life: Improvement by 30% of the wear life of brushes (which determines the life of the commutator motor) compared with conventional models.
- Higher durability extends the life cycle and helps conserve resources.
- Hazardous Chemical Substances: compliant with the EU RoHS directive and efforts to reduce environmental burdens.

Product performance

- This product is a commutator motor to create suction in electric vacuum cleaners. Its higher level of performance enables superior suction power in such cleaners.
- Due to the improved efficiency of the motor and fan units that rotate the motor fan with long life and excellent performance, it improves PQ efficiency at an air volume of 1.6 m^3/min. by 1.5 percent over that of conventional models with no corresponding increase in weight.

Panasonic Corporation, Motor Company

7-1-1, Morofuku, Daito, Osaka, 574-0044, Japan
Tel +81-778-22-8709 Fax +81-778-23-8709
URL http://panasonic.net/csr/

Available in: Japan

EC-2-007 Electrical and electronic

electric contacts

Environment-friendly cadmium-free electric contact

Environmental performance

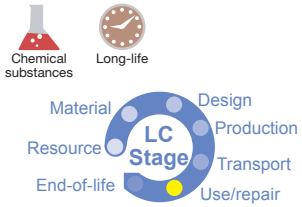
(Features)

This product is a high-reliability cadmium-free electric contact, which is excellent in welding resistance and consumption resistance.
These electric contacts provide relays and switches with longer life and higher capacity, also making them much smaller in size.

Product performance

(Uses)

They have been widely used in relays, switches, magnetic contactors, circuit breakers and circuit protectors in on-vehicle electrical components, home appliances, power distribution apparatus, switchboards and others. They are also widely adopted in hybrid cars making them suitable for high voltage power systems.



Cadmium-free electric contacts

Mitsubishi Materials C.M.I. Corporation

46-1 Sempuku, Susono City, Shizuoka, 410-1116 , Japan
Tel +81-55-992-6111 Fax +81-55-992-6137
URL http://group.mmc.co.jp/cmi/en/index.html
URL http://group.mmc.co.jp/cmi/en/0102.html

Available in: Japan, Asia, Europe, North America

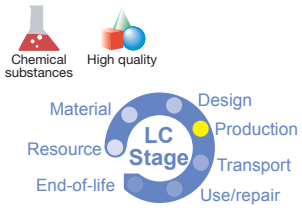
EC-2-008 Electrical and electronic

audio cables

High-end audio cable, HDMI cable, interconnect cable

Environmental performance

For long time usage, with high quality and fantastic design to decorate your home entertainment equipment.



Varo Technology Co., Ltd.

11F-4, No. 27, Sec. 3, Chung Shan N. Road, Taipei, Taiwan, R.O.C.

EC-2-009 Electrical and electronic

X-ray tube assemblies

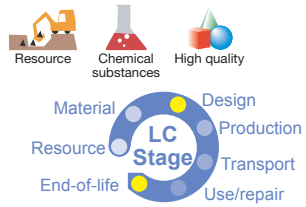
X-ray output power 4 times greater than that of a conventional tube. Reduced investigation time for X-ray fluorescent spectroscopy

Environmental performance

- Mitigation of climate change: 20.6 kg reduction in CO_2 emissions compared with a conventional X-ray tube as a result of the reduced use of materials.
- Efficient use of resources: 3.9 kg reduction in the product weight compared with a conventional X-ray tube as a result of the reduced use of materials.
- Management of chemicals: Reduced environmental risks during use and disposal because of the elimination of the use of insulation oil, which is not readily biodegradable.

Product performance

- Quick investigation: 4 times greater throughput thanks to enhanced X-ray output power.
- Compact: As compact as a conventional unit despite high performance.



Oil-free X-ray Tube Assembly for Industrial Use AFX-200RA-Pd

Toshiba Electron Tubes & Devices Co.,Ltd

1385, Shimoishigami, Otawara-shi, Tochigi, 324-8550, Japan
Fax +81-287-26-6059
URL http://www.toshiba-tetd.co.jp/tetd/index_j.htm
URL http://www.toshiba-tetd.co.jp/tetd/eng/company/env.htm

Available in: Worldwide

EC-2-010 Electrical and electronic

CCD cameras

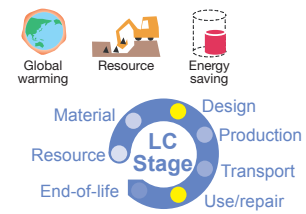
Lightweight, Compact, Energy-saving CCD Camera System

Environmental performance

- Mitigation of climate change: Power consumption 9% lower than for the previous model.
- Efficient use of resources: Compact system thanks to about 50% reduction in weight and about 60% reduction in volume compared with the previous model.
- Management of chemicals: Compliant with regulations covering the use of specific hazardous substances.

Product performance

- High brightness: Advanced technology miniaturizes columnar crystals with optical fiber structure.
- Low noise: The high-contrast, high-brightness image is virtually defect-free. Newly developed processing technology greatly reduces structural noise.



CCD camera system for X-ray image intensifier VP-34019

Toshiba Electron Tubes & Devices Co.,Ltd

1385,Shimoishigami, Otawara-shi, Tochigi, 324-8550, Japan
Fax +81-287-26-6059
URL http://www.toshiba.co.jp/index.htm
URL http://www.toshiba-tetd.co.jp/tetd/eng/company/env.htm

Available in: Worldwide

EC-2-011 Electrical and electronic rechargeable batteries

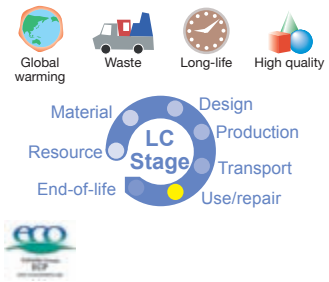
Innovative rechargeable battery with a long life of 6,000 charge-discharge cycles and rechargeable in 5 minutes.

Environmental performance

- Mitigation of climate change: Battery for eco products, such as electric bicycles, electric motor bikes, and HEV (Hybrid Electric Vehicle).
- Efficient use of resources: A long life of 6,000 charge-discharge cycles leads to a reduction of waste.

Product performance

- Safety: Excellent safety thanks to a structure resistant to internal short circuiting and thermal runaway.
- Long life: Capacity loss after 6,000 charge-discharge cycles is less than 20%.
- Rapid charging: Rapid charging in 5 minutes (up to 90%) at cell level.



SCiB, New Rechargeable Battery TBP series (battery module)

TOSHIBA CORPORATION Transmission Distribution & Industrial Systems Company

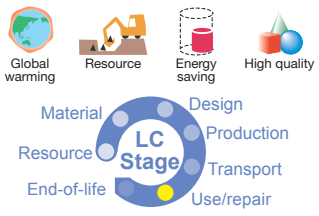
1-1, Shibaura 1-Chome, Minato-Ku, Tokyo, 105-8001, Japan
URL http://www.toshiba.co.jp/index.htm
URL http://www.toshiba.co.jp/env/en/report/index.htm

EC-2-012 Electrical and electronic secondary batteries

NAS battery systems

Environmental performance

The NAS battery is an energy storage battery that uses sodium in the negative electrode, sulfur in the positive electrode, and solid electrolyte made from beta-alumina ceramics. It is a clean battery that has high energy density, high efficiency, and long life compared to a lead-acid battery. This technology is primarily being introduced into factories, office buildings and sewage treatment facilities that wish to economize their energy cost through load leveling, and into semiconductor plants and customers that need high-quality and highly reliable electric power.



Tokyo Electric Power Company

1-1-3 Uchisaiwai-cho, Chiyoda-ku, Tokyo, 100-8560, Japan
Tel +81-3-6373-1111 Fax +81-3-3596-8520
URL http://www.tepco.co.jp/en/index-e.html
URL http://www.tepco.co.jp/en/challenge/environ/report-e.html

Available in: Japan

EC-2-013 Electrical and electronic

alkaline dry batteries

Alkaline dry battery EVOLTA/EVOIA

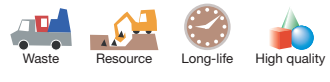
Environmental performance

- Alkaline dry batteries are disposable, but are products of canned electricity for everyone to safely use without emitting CO_2.
- Their special features which can be obtained anywhere and stored for a long time results in a consumption of 1.4 billion cells a year in Japan.
- Its industry minimum mass per battery's capacity also achieves resource-saving.
- Due to the extended preservation by achieving a 10-year recommended shelf-life, the number of discarded dry batteries is expected to be reduced.

Product performance

- This product succeeded in a performance gain of 16% vs. our previous one and was validated by Guinness as the World No.1 long-lasting (*1).
- A 10-year recommended shelf-life achieved twice the duration of our previous and is the industry's longest (*2).

As of Jan.15 '08: *1) Mean value of all electrical discharge modes for AA global standard & *2) Preservation Temp. 20±2℃, Relative Humidity 60±15%.



eco ideas

EVOLTA-LR6EG, LR03EG EVOIA-LR6EE, LR03EE
EVOLTA-LR20EJ, LR14EJ, LR6EJ, LR03RJ (JAPAN MODEL)

Panasonic Corporation, Energy Company

1-1 Matsushita-cho, Moriguchi City, Osaka, 570-8511, Japan
Tel +81-6-6991-1141
URL http://panasonic.net/ec/
URL http://panasonic.net/ec/products/evolta/
URL http://panasonic.net/csr/

Available in: Globally

EC-2-014 Electrical and electronic

nickel metal hydride batteries

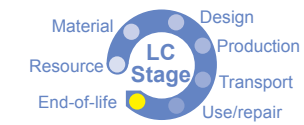
Rechargeable battery (nickel-metal-hydride battery) Rechargeable up to 1,000 times; top-up recharging possible

Environmental performance

Unlike traditional disposable batteries, these can be used repeatedly, reducing waste.

Product performance

Reusable for up to 1,000 times. Top-up recharging possible. Long-life low self-discharge rate.



Kanematsu corporation

N TOWER,1-2-1, SHIBAURA, MINATO-KU, TOKYO, 105-0023, Japan

EC-2-015 Electrical and electronic

nickel metal hydride batteries

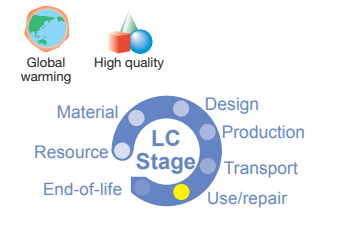
Advanced Nickel-Metal Hydride Battery "GIGACELL"

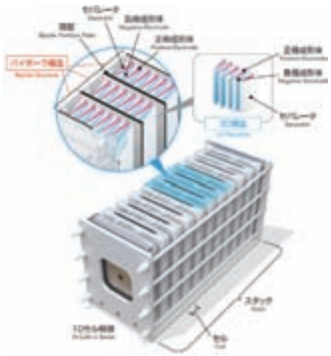
Environmental performance

(1) High Charge/Discharge Efficiency (Low internal resistance)
(2) Environmental Freiendliness (No use of hazardous materials)
(3) Easy Decomposition for Material Recycling (Structure without welding)
(4) Maintenance-Free Sealed Structure

Product performance

The Advanced Nickel-Metal Hydride Battery "GIGACELL" can be charged/discharged rapidly with its low internal resistance brought by the specific Bipolar-3D structure. Wind and photovoltaic power outputs fluctuate with weather at every moment. "GIGACELL" makes such renewable energies more useful by stabilizing their output fluctuations.





Nickel-Metal Hydride Battery

KAWASAKI HEAVY INDUSTRIES, LTD.

1-1, Kawasaki-cho, Akashi, 673-8666, Japan
Tel +81-78-921-1972 Fax +81-78-921-1973
E-mail gigacell@khi.co.jp
URL www.khi.co.jp
URL www.khi.co.jp/gigacell/

Available in: Japan

EC-2-016 Electrical and electronic

button batteries

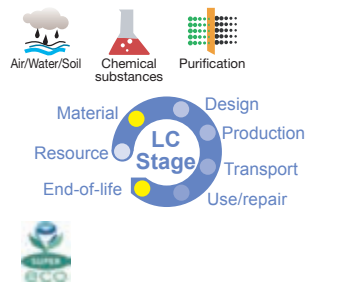
Zero Mercury and Zero Lead Added Silver Oxide Battery

Environmental performance

Zero mercury and zero lead added.
Conventional Silver Oxide Batteries have a small but non-negligible amount of mercury and lead added to the anodal zinc to prevent emission of gasses.
Through the development of original zinc corrosion prevention technologies, Maxell has eliminated the use of mercury and lead. This initiative to reduce environmental impact has drawn enthusiastic acclaim from outside the company.
Furthermore, lower materials consumption and higher productivity reduced CO_2 emissions by 23%.

Product performance

Indemnified against leakage due to its Excellent Leakage Resistance.
Twice as Long Lasting as LR Button Battery.



Hitachi Maxell, Ltd.

5, Takumidai, Ono-shi, Hyogo, 675-1322, Japan
Tel +81-794-63-8054 Fax +81-794-63-8445
E-mail akira-asada@maxell.co.jp
URL http://www.maxell.co.jp

Available in: Worldwide

EC-2-017 Electrical and electronic

solar charging controllers

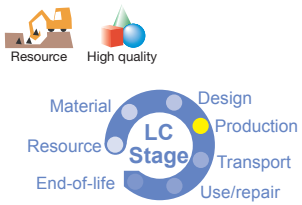
Solar charging controllers

Environmental performance

Phocos is one of the largest suppliers of off-grid power supply system components in the world. Headquartered in Ulm, Germany, Phocos develops, designs, and manufactures products to suit the needs of all stake-holders in the global solar power market.
Phocos is strongly committed to developing and producing products that meet the company's strict specifications in terms of quality, innovation, and technology.

Product performance

We manufacture a wide range of core system components for energy conversion, energy management, and energy utilization in photovoltaic and other renewable energy sources.
We offer a comprehensive range of solar charge controllers between 4A to 300A with charging currents of 12, 24, and 48V. Flexible programmable hybrid system controllers are available as well.



Phocos SEA Pte Ltd.

Woodlands Spectrum 1, 2 Woodlands Sector 1, #05-14, 738068, Singapore
Tel +65-6579-0598 Fax +65-6579-0599
E-mail info-sea@phocos.com
URL www.phocos.com

Phocos Charge Controllers

Available in: Global

EC-2-018 Electrical and electronic

lighting

Energy efficient DC lamps

Environmental performance

Phocos is one of the largest suppliers of off-grid power supply system components in the world. Headquartered in Ulm, Germany, Phocos develops, designs, and manufactures products to suit the needs of all stake-holders in the global solar power market.
Phocos is strongly committed to developing and producing products that meet the company's strict specifications in terms of quality, innovation, and technology.

Product performance

Besides the comprehensive range of solar charge controllers, Phocos is offering quality 12/24 V DC lamps that have very high illumination efficiency at low power consumption. Our DC lamps have a life span of over 8,000 hours at 25 degrees C ambient temperature, with more than 500,000 switching cycles (IEC925).

For Phocos 11W DC Lamps, an average luminous efficacy is 63lm/W for Warm Light and 61lm/W for Cool Light. The equivalent brightness compared to a standard incandescent lamp is 65W.

Phocos SEA Pte Ltd.

Woodlands Spectrum 1, 2 Woodlands Sector 1, #05-14, 738068, Singapore
Tel +65-6579-0598 Fax +65-6579-0599
E-mail info-sea@phocos.com
URL www.phocos.com

Phocos DC Lamps

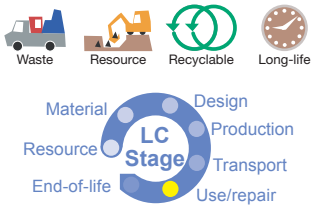
Available in: Global

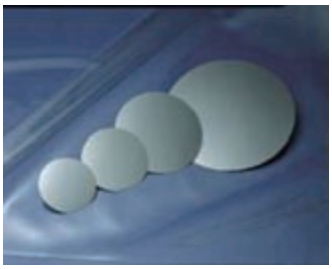
EC-3-001 Semiconductor-related parts of semiconductor manufacturing equipment

Dummy Wafer

Environmental performance

A high-purity silicon carbide sintered product of the highest quality; created through the combination of high-level polymer technology. With Bridgestone's recently developed nano-technologies, Purebeta is manufactured on a very clean production line that integrates the synthesis of SiC powder, by sintering, processing and cleaning. PureBeta provides high performance and cost efficiency compared to Si. In the semiconductor manufacturing process, Si wafers are typically used as dummy wafers, however, they are scrapped after several usage. On the other hand, because of its excellent resistance against wet cleaning, SiC wafers can be used almost permanently which is also good for the environment. This is an ultra high purity dummy wafer suitable for various applications. Also applicable to the 300mm wafer processes.





Dummy Wafer

Bridgestone Corporation

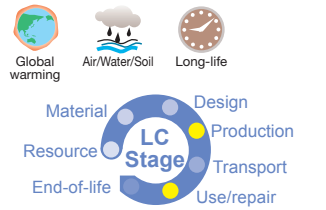
3-1-1, Ogawahigashi-Cho, Kodaira-Shi, Tokyo, 187-8531, Japan
Tel +81-42-342-6486 Fax +81-42-342-6428
E-mail pbinfo@group.bridgestone.co.jp
URL http://www.bridgestone.co.jp/english/index.html
URL http://www.purebeta.com/global/

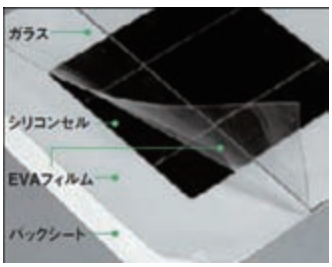
EC-3-002 Semiconductor-related films for solar cells

EVA film for solar cells

Environmental performance

The photovoltaic system represents a clean system on zero emission basis and produces no harmful by-products. Hence, it becomes more important from the viewpoint of global environment preservation.
Bridgestone product "EVA-film (brand name: EVASKY)" is a vital component for the photovoltaic (solar) modules using silicon or other media.
Bridgestone EVASKY offers special advantages in a form of high efficiency, high productivity and excellent durability.





EVA film for solar cells

Bridgestone Corporation

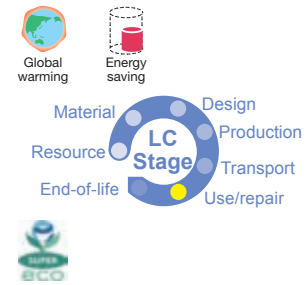
1-6-6, Yaesu, Chuo-ku, Tokyo, 103-0028, Japan
Tel +81-3-5202-6907 Fax +81-3-5202-6842
URL http://www.bridgestone.co.jp/english/index.html

EC-3-003 Semiconductor-related permanent magnets

Neodymium-Iron-Boron Permanent Magnets "NEOMAX®"

Environmental performance

High-energy neodymium-iron-boron (Nd-Fe-B) magnets have the most powerful magnetic properties available today. These products are suitable for use in such high temperature situations as alternators and drive motors of hybrid/electric vehicles (HEVs), which contribute to reduced automobile fuel consumption. "NEOMAX®" products are also used in household applications such as refrigerators and air conditioners as well as in wind-powered electricity generation, thereby significantly contributing to the prevention of global warming.



Hitachi Metals, Ltd.

SEAVANS North Building, 1-2-1, Shibaura, Minato-ku, Tokyo, 105-8614, Japan
Tel +81-3-5765-4202
E-mail hmcc@hitachi-metals.co.jp
URL http://www.hitachi-metals.co.jp/e/
URL http://www.hitachi-metals.co.jp/e/prod/prod03/p03_21.html
URL http://www.hitachi-metals.co.jp/e/corp/corp14_01.html

NEOMAX®

EC-3-004 Semiconductor-related permanent magnets

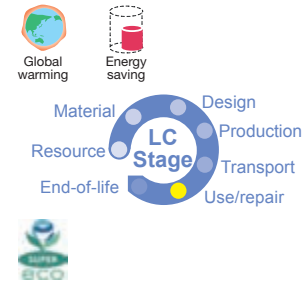
Ferrite Magnet "NMF-12 Series"

Environmental performance

Hitachi Metals' new ferrite magnet "NMF-12 series" is greatly superior to its previous product. Among ferrite magnets, it provides the world's best magnetic characteristics.
These products significantly contribute to the prevention of global warming by being used within motors for electrical components such as starters, anti-lock brake systems, electric power steerings, engine cooling fans as well as within home appliances such as air-conditioner compressors, refrigerator compressors, and washing machines.

Product performance

Temperature coefficient of intrinsic coercive force has been lowered to 2/3 of La-Co substitute Sr ferrite magnets, which means little demagnetization even at a low temperature and high resistance against temperature fluctuation.



Hitachi Metals, Ltd.

SEAVANS North Building, 1-2-1, Shibaura, Minato-ku, Tokyo, 105-8614, Japan
Tel +81-3-5765-4202
E-mail hmcc@hitachi-metals.co.jp
URL http://www.hitachi-metals.co.jp/e/
URL http://www.hitachi-metals.co.jp/e/prod/prod03/p03_10.html
URL http://www.hitachi-metals.co.jp/e/corp/corp14_01.html

Ferrite Magnet "NMF-12 Series"

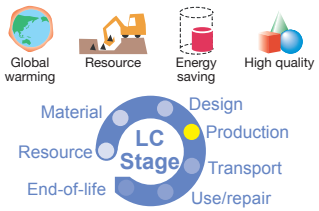
EC-3-005 Semiconductor-related power modules

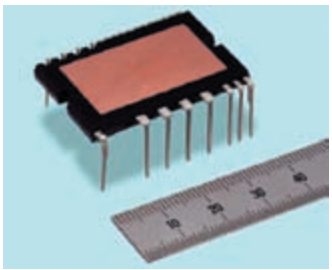
Intelligent Power Module

Environmental performance

---------<< M : Material >>---------
Use of a high heat dissipation insulation structure achieved a reduced junction temperature rise in power chips. This allowed for a smaller package and led to a significant reduction (about 40%) of the mounting area on the PCB compared to our current products.
----------<< E : Energy >>---------
By integrating a full-gate CSTBT™*, which is one of Mitsubishi Electric's advanced IGBTs, electric power consumption in the system was reduced.
* CSTBT™(Carrier Stored Trench Gate Bipolar Transistor): Mitsubishi's original IGBT Utilizing the novel carrier storage effect.
--------<< T : Toxicity >>----------
Introduction of lead-free process for soldering power chips and plating outer terminals realized all lead-free products (RoHS compliant).

☆Awarded the 52nd Okochi Prize(Production award)





DIP-IPM(Dual-in-line Package Intelligent Power Module)

Mitsubishi Electric Corporation

2-7-3, Marunouchi, Chiyoda-ku, Tokyo, 100-8310, Japan
Tel +81-3-3218-9024 Fax +81-3-3218-2465
E-mail eqd.eco@pj.MitsubishiElectric.co.jp
URL http://global.mitsubishielectric.com/index.html
URL http://global.mitsubishielectric.com/company/csr/environment/products/index.html
URL http://global.mitsubishielectric.com/company/csr/index.html

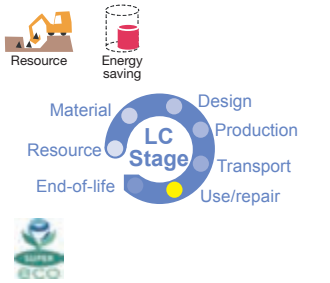
Available in: Worldwide

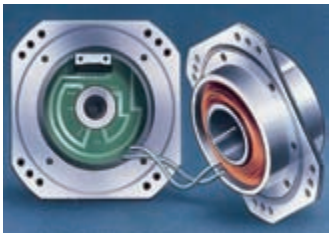
EC-3-006 Semiconductor-related single chip inverter

Single Chip Inverter IC

Environmental performance

The Single-chip inverter IC integrates various devices and circuits that are necessary for inverter control onto a single die. The inverter IC controls a motor at various speeds. The variable speed control improves the efficiency of motors. The inverter IC downsizes the control board of motors utilizing single chip structure, which allows the control board mounting the inverter IC to be embedded into a motor. The inverter IC, which is a lead-free (Pb-fee) product conforming to JEITA Phase 3A, is environmentally friendly.





Hitachi, Ltd.

Akihabara Daibiru Building,18-13 Soto-Kanda 1-chome, Chiyoda-ku, Tokyo, 101-8608, Japan

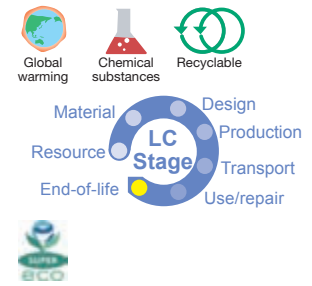
Available in: Japan

EC-3-007 Semiconductor-related wiring devices

Modified Ⅱ Tin Plating FFC (Flexible Flat Cable)

Environmental performance

- Lead-free and complies with RoHS directive.
- Mitigate Whisker (Crystallization of thin needles) from tin plated conductor surface without gold plating, which prevents resource depletion.



Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/ICSFiles/cable/ewc/07/cuj/all.pdf
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html

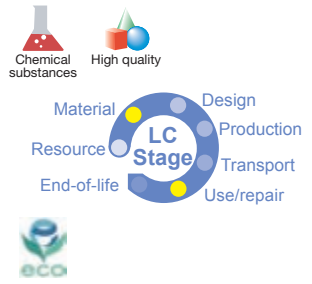
Modified Ⅱ tin plating FFC (Flexible Flat Cable)

EC-3-008 Semiconductor-related soft magnetic parts

EMC Noise Reduction Products

Environmental performance

While IT and electronics devices continue to become smaller and achieve greater performance as well as increased functionality, EMC regulations are becoming even more stringent. In this situation, electronics manufacturers require materials and components with high EMC noise suppression capabilities. Hitachi Metals offers its "FINEMET® series" of nanocrystalline soft magnetic materials for high-performance EMC noise reduction. These products are lead-free and RoHS compliant.



Hitachi Metals Singapore Pte. Ltd.

12 Gul Avenue, 629656, Japan
Tel +65-6861-7711
E-mail hmcc@hitachi-metals.co.jp
URL http://www.hitachi-metals.co.jp/e/
URL http://www.hitachi-metals.co.jp/e/prod/prod02/p02_22.html
URL http://www.hitachi-metals.co.jp/e/corp/corp14_01.html

EMC Noise Reduction Products

EC-3-009 Semiconductor-related wireless modules

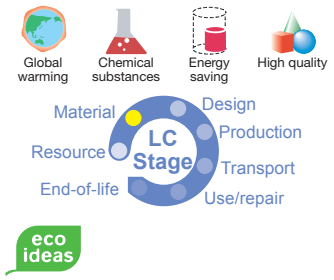
Small and low-power, Bi-directional Wireless Module: GB-M1CSB21

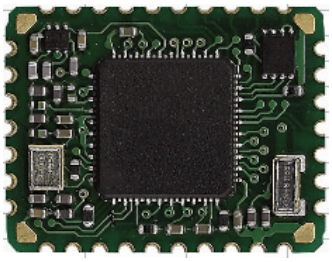
Environmental performance

- This bi-directional wireless module achieves small size and low-power.
- Low transmitting and receiving current and hi-speed carrier sense makes low time and power consumption.
- Small size with 1-chip LSI (wireless circuit + icrocomputer) leads resource saving. About 57% reduction in power consumption and about 98% reduction in volume compared with FY 2000 model (GB-E01).

Product performance

- Radio Frequency 426MHz/429MHz
- Transmission Speed 2400bps/4800bps
- Radiation Power 1mW/10mW
- Sensitivity -118dBm





Small and low-power, Bi-directional Wireless Module: GB-M1CSB21

Panasonic Corporation, Home Appliances Company

800 Tsutsui-cho, Yamato-Koriyama, Nara, 639-1188, Japan
Tel +81-743-56-9176 Fax +81-743-56-0154
URL http://panasonic.co.jp/csr/

Available in: Japan

EC-3-010 Semiconductor-related detector switches

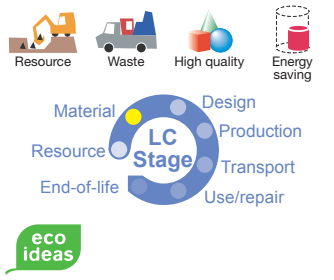
Detector switch, featuring the industry's smallest mounting area

Environmental performance

This detector switch not only features the industry's smallest mounting area but also contributes to resource saving and reduction of waste. Achieved a miniaturized implementation space (57%) compared with our previous model (ESE21series).

Product performance

As devices have become more compact, lighter and thinner in the fast-growing mobile phone industry and DSC industry, detector switches to be mounted also have been required to be smaller, especially for the mounting area. This developed product makes the industry's smallest mounting area possible and contributes to downsizing the set devices.



Detector switch of ESE 16 series

Panasonic Electronic Devices Co.,Ltd.

1006 Oaza Kadoma, Kadoma, Osaka, 571-8506, Japan
Tel +81-6-6907-4781 Fax +81-6-6907-4799
URL http://panasonic.net/csr/

Available in: Japan, North America, Europe

EC-3-011 Semiconductor-related circuit substrate for motor-drives

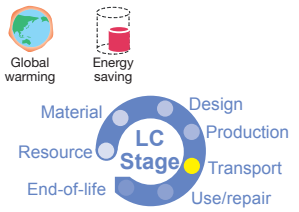
High-reliability Al circuits substrate (DBA substrate) for motor-drive of eco-cars

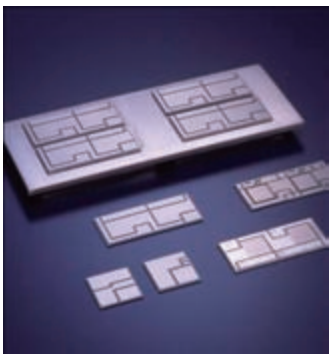
Environmental performance

Al circuits substrate (DBA substrate) with high reliability for power modules have been mounted on the hybrid vehicles of above one million since the beginning of our mass-production. At present, AlN insulator is the main stream, but we promote also the practical use of various ceramics including silicon nitride and others for DBA substrates.

Product performance

As the parts for the automobile field, it is required that peeling-off and cracking at the junction portion do not occur by the thermal cycling test (-40~125°C, more than 3000 cycles).
Compared to the conventional substrates, our company's product satisfied such severe requirements, and has been used as an important part in the mobile application which needs high reliability. For example, it is used as a part of the inverter for motor drive of the eco-cars such as hybrid vehicles and electric automobiles.





DBA (Direct Brazed Aluminum) Substrates

Mitsubishi Materials Corporation (Sanda Plant Shizuoka DBA Center)

1400 Suganuma, Oyamacho, Suntogun, Shizuoka, 410-1312 , Japan
Tel +81-550-76-3106 Fax +81-550-76-3107
E-mail suzukiss@mmc.co.jp
URL http://www.mmc.co.jp/corporate/en/index.html
URL http://www.mmc.co.jp/corporate/en/product/auto/0602.html
URL http://www.mmc.co.jp/corporate/en/csr/csr.html

Available in: Japan, USA, and Europe

EC-3-012 Semiconductor-related solid state relays

The smallest Solid State Relay / SON package

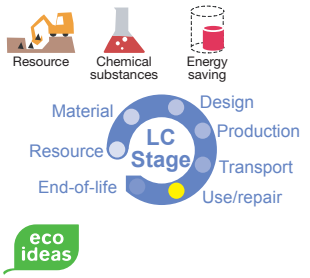
Environmental performance

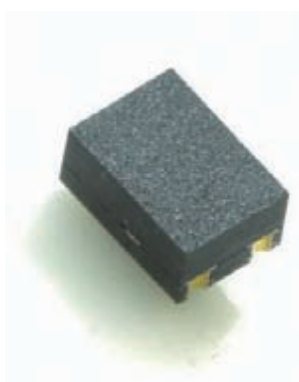
The smallest solid state relay with 50% of the volume of a conventional SSOP (Small Shrink Outline Package) type with a lead-frame structure, has been achieved by a cavity-shaped substrate. Additionally, micro-miniature lead-less structure made it possible to reduce the mounting space, which realized further downsizing and high density mounting of measuring device.

Product performance

- Significant downsizing and remarkable electrical characteristics with low C×R*
- High speed performance with 0.02ms of operate time and release time

* C: Capacity between outputs R: ON Resistance





The smallest Solid State Relay / SON package: AQY221N3M

Panasonic Electric Works Co., Ltd.

1048, Kadoma, Kadoma-shi, Osaka, 571-8686, Japan
Tel +81-6-6908-1073 Fax +81-6-6909-2415
URL http://panasonic-electric-works.net/
URL http://panasonic-denko.co.jp/ac/j/index.jsp
URL http://panasonic-denko.co.jp/e/corp/csr/index.html

Available in: Japan, Europe, North America, Asia Pacific Region

EC-3-013 Semiconductor-related

LCD modules for mobile phones

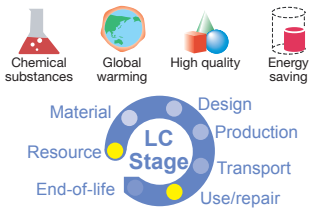
Reduced Power Consumption by Controlling Backlight According to Screen Brightness

Environmental performance

- Mitigation of climate change: Max. 50% reduction in power consumption because of the adjustment of the backlight according to the screen brightness.
- Management of chemicals: Elimination of the use of mercury because of the adoption of an LED backlight.

Product performance

- Ease of viewing: Natural reproduction as a result of backlight adjustment according to the screen brightness.



Reduction of Backlight Consumption for Mobile Applications LTM033D J 20

Toshiba Matsushita Display Technology Co.,Ltd.

Rivage Shinagawa 4-1-8, Konan, Minatoku, Tokyo, 108-0075, Japan
Tel +81-3-5462-7331 Fax +81-3-3458-0075
E-mail greenproc@tmdisplay.com
URL http://www.toshiba.co.jp/index.htm
URL http://www.tmdisplay.com/tm_dsp/en/profile/csr.html

EC-3-014 Semiconductor-related

flash memory

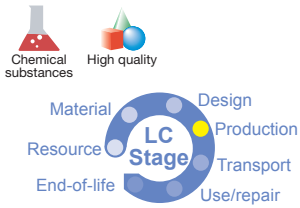
Reliable Memory — Suitable for Mass-storage Devices and Numerous Applications

Environmental performance

- Mitigation of climate change: At our advanced semiconductor plant, energy consumption has been greatly reduced by a novel air conditioning system and the use of waste heat.
- Efficient use of resources: Use of materials per bit is cut by advanced processing technology and multi-level cell technology.

Product performance

- Large capacity: 1,000 times greater capacity than a memory of the same size introduced in 2000



SD-C32GT4

TOSHIBA CORPORATION Semiconductor Company

1-1, Shibaura 1-Chome, Minato-Ku, Tokyo, 105-8001, Japan
Tel +81-3-3457-3375 Fax +81-3-5444-9342
URL http://www.toshiba.co.jp/index.htm
URL http://www.toshiba.co.jp/env/en/report/index.htm

EC-4-001 Machine parts

parabolic mirrors

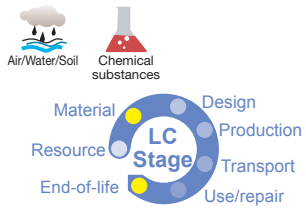
High-Precision, High-Quality OFF-AXIS PARABOLIC MIRRORS SPA Series

Environmental performance

Off-axis parabolic mirrors turn plane waves into spherical waves, and vice versa, at high precision. These aspherical mirrors are essential for spectrometers and interferometers that require high resolution.
The Off-axis Parabolic Mirrors SPA Series has the following features:

- Surface accuracy of λ/6 has been achieved through the application of a newly-developed precision replicating technology (conventional Shimadzu product: λ/2)*1.
- Stable quality due to the production of a replica mirror using a high-precision master mirror.
- Proven mass-production technology ensures a stable supply of large quantities.
- Non-Use of specific chemical substances*2.

*1. λ =632.8 nm
*2. RoHS Directive: Directive on the restriction of the use of certain hazardous substances (mercury, cadmium, lead, hexavalent chromium, PBB and PBDE) in the EU. (EU Directive 2002/95/EC)



Off-Axis Parabolic Mirror SPA Series

SHIMADZU CORPORATION

1, Nishinokyo-Kuwabaracho, Nakagyo-ku, Kyoto, 604-8511, Japan
Tel +81-75-823-1113 Fax +81-75-823-2062
URL http://www.shimadzu.com/index.html
URL http://www.shimadzu.com/about/environmental/index.html

Available in: Worldwide

EC-4-002 Machine parts

stabilizers

Calcium Zinc one pack stabilisers

Environmental performance

Calcium Zinc one pack stabilisers are free from heavy metal ingredients and offer efficient stabilisation and processability during the manufacturing of PVC products.

Product performance

The one pack stabiliser complies with RoHS requirements for electrical application. This ensures ease of recycling of the finished product whilst minimising impact on the environment during use and life cycle of the product. This is possible with suitable selection of other additives needed in the total formulation of the PVC compound used in conversion to the finished product form.

Calcium Zinc one pack stabiliser for cable

Sun Ace Kakoh (Pte.) Ltd

34 Tanjong Penjuru, Jurong Town, 609030, Singapore
Tel +65-6264-0255 Fax +65-6265-7038
E-mail sales@sunace.com.sg
URL www.sunace.com.sg

Available in: Singapore

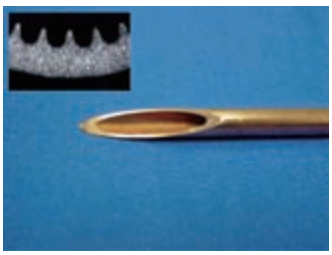
EC-4-003 Machine parts

heat transfer tubes

High Performance Heat Transfer Tube

Environmental performance

Features of high performance heat transfer tube for ECO CUTE;
- Spiral grooves keep the flow of the refrigerant unsteady, which increases the heat transfer rate in a way more efficient than increasing the inner surface area.
- More increase in the heat transfer rate than that of pressure loss is acquired in comparison with smooth tube.
- Achieved the industry top heat transfer rate for ECO CUTE (as of July 2006).
- The copper material can be recycled by 100%.



Thermo-fin tube

Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/en/products/copper/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html

EC-4-004 Machine parts

magnet rolls for feeding toner

Long-lived Magnet Roll for feeding toner of PPC copy machine with low material costs

Environmental performance

This long-lived product is able to reduce the consumption of natural resources and the amount of waste. The product lifetime has 3 times greater longevity compared with our previous SUS model (ETM17K223AC).

Product performance

While the industry's standard specification is to process sandblasting on the surface with SUS as a base material, this product is processed with high-precision fine surface etching using inexpensive and soft aluminum to achieve excellent toner feeding function and the long product lifetime.

Etching sleeve magnet roll : ETM21K584AB and other series

Panasonic Electronic Devices Co.,Ltd.

1006 Oaza Kadoma, Kadoma, Osaka, 571-8506, Japan
Tel +81-6-6907-4781 Fax +81-6-6907-4799
URL http://panasonic.net/csr/

Available in: Japan North America Europe China

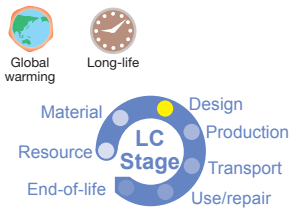
EC-5-001 Automobile parts

power cable harnesses

Power Cable Harness for Hybrid Vehicles

Environmental performance

- Sizes of cable and connection methods that are specific to individual vehicle systems and spaces are offered.
- Heat and oil resistance has been greatly improved through the use of Fluonlex for the insulator.
- Safety for high voltage, noise reduction, and easier installation into the car are considered.



Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/en/products/vehicle/eco/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html

Power Cable Harness for Hybrid Vehicles

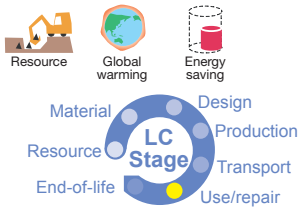
EC-5-002 Automobile parts

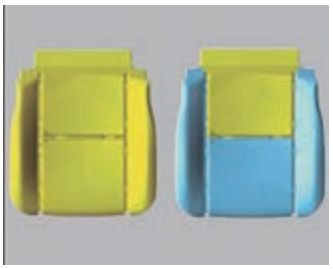
parts for motor vehicles/motorcycles

Seat Pad with Different Density but Usual Hardness

Environmental performance

We conventionally reduce the weight of seat pads with a lightweight formulation, but this sometimes reduces ride comfort and durability. Bridgestone has developed a seat with the usual hardness but less density with reduced weight without compromising ride comfort. This advantage is realized not only through high-performance formulation of the base parts that are important for ride comfort, but also through the adoption of a lightweight formulation for other parts, without reducing the weight of the whole seat pad.





Bridgestone Corporation

1-6-6, Yaesu, Chuo-ku, Tokyo, 103-0028, Japan
Tel +81-3-5202-6959 Fax +81-3-5202-8173
URL http://www.bridgestone.co.jp/english/index.html

The same hardness and different density seat pad

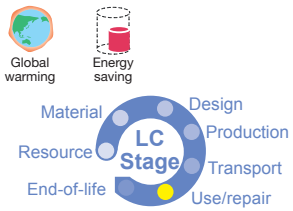
EC-5-003 Automobile parts

tires for passenger cars

Eco-friendly tire "ECOPIA EP100"

Environmental performance

The ECOPIA EP100 employs a new top rubber which applies Bridgestone's unique materials technology NanoPro-Tech to reduce rolling resistance.
Comparing the ECOPIA EP100 with the general commodity tire, rolling resistance is cut down 30%, so it contributes to save energy and reduce CO_2 emissions when running.
Also ECOPIA EP100 has outstanding braking performance in wet conditions in order to maintain safety.



ECOPIA EP100

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

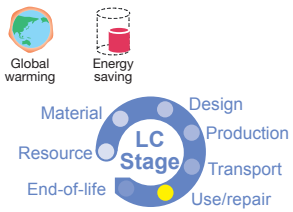
EC-5-004 Automobile parts

tires for passenger cars

Eco-friendly tire "REGNO"

Environmental performance

REGNO provides you first class ride comfort & super-excellent silence in your car.
REGNO focuses on high frequency tire noise reduction by applying Bridgestone's latest silence technology.
Also REGNO reduces rolling resistance about 16%* compared with the previous model, so it contributes to save energy and reduce CO_2 emissions when running.
* REGNO GR-9000



①REGNO GRV ②REGNO GR-9000

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

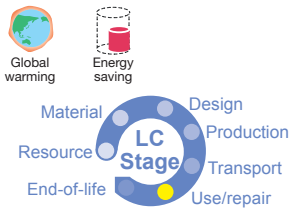
EC-5-005 Automobile parts

tires for passenger cars

Eco-friendly tire "Playz"

Environmental performance

Playz provides you a smooth ride by controlling car trembling.
In environmental side, Playz reduces rolling resistance about 3% compared with the previous model, so it contributes to save energy and reduce CO_2 emissions when running.



Playz PZ-X

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

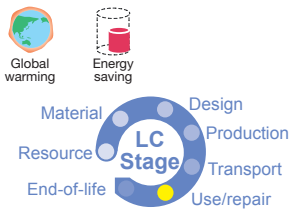
EC-5-006 Automobile parts

tires for passenger cars

Eco-friendly tire "B'STYLE EX"

Environmental performance

B'STYLE EX is a well balanced tire that combines safety with ECO friendly performance.
B'STYLE EX possesses outstanding braking performance in wet conditions, and reduces rolling resistance about 10%.
So B'STYLE EX gives you safe driving and contributes to save energy and reduce CO_2 emissions when running.



B'STYLE EX

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

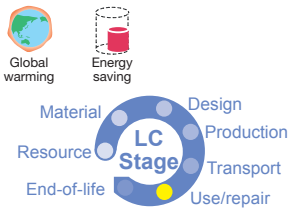
EC-5-007 Automobile parts

tires for passenger cars

Eco-friendly tire "SNEAKER"

Environmental performance

SNEAKER gives you basic and economic performance as a standard tire. On the environmental side, SNEAKER reduces rolling resistance about 10% compared with the previous model, so it contributes to save energy and reduce CO_2 emissions when running.



SNEAKER SNK2

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

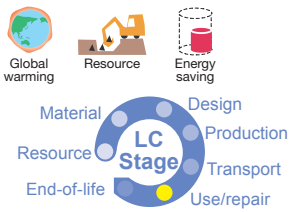
EC-5-008 Automobile parts

tires for trucks and buses

Fuel economy Truck and Bus Tires "ECOPIA M891 Ⅱ "

Environmental performance

It is necessary to develop a new generation tire for fuel savings and to preserve the earth's environment. Especially, it is useful for trucks and buses, as fuel-guzzling vehicles, to reduce the rolling resistance of tires.
Bridgestone corporation has developed low rolling resistance truck and bus tires, and has already launched them into the market as the "ECOPIA" line. ECOPIA has superior low rolling resistance for long haul users, while maintaining basic tire performance.
Newly introduced ECOPIA M891 Ⅱ is the successor to ECOPIA M881.



ECOPIA M891 Ⅱ

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

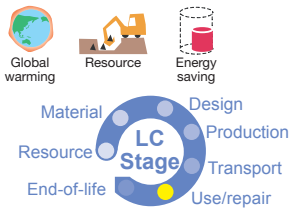
EC-5-009 Automobile parts

tires for trucks and buses

Fuel economy Truck and Bus Tires "ECOPIA R221 Ⅱ "

Environmental performance

It is necessary to develop a new generation tire for fuel savings and to preserve the earth's environment. Especially, it is useful for trucks and buses, as fuel-guzzling vehicles, to reduce the rolling resistance of tires.
Bridgestone corporation has developed low rolling resistance truck and bus tires, and has already launched them into the market as the "ECOPIA" line. ECOPIA has superior low rolling resistance for long haul users, while maintaining basic tire performance.
Newly introduced ECOPIA R221 Ⅱ is the successor to R221, maintaining basic tire performance and improved fuel economy.



ECOPIA R221 Ⅱ

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

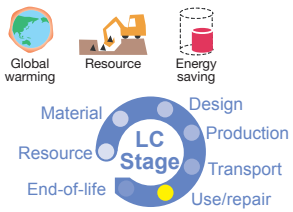
EC-5-010 Automobile parts

tires for trucks and buses

Fuel economy Truck and Bus Tires "ECOPIA W911"

Environmental performance

It is necessary to develop a new generation tire for fuel savings and to preserve the earth's environment. Especially, it is useful for trucks and buses, as fuel-guzzling vehicles, to reduce the rolling resistance of tires.
Bridgestone corporation has developed low rolling resistance truck and bus tires, and has already launched them into the market as the "ECOPIA" line. ECOPIA has superior low rolling resistance for long haul users, while maintaining basic tire performance.
ECOPIA W911 has been introduced as an all-round studless tire for snow/ice performance and improved fuel economy.



ECOPIA W911

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

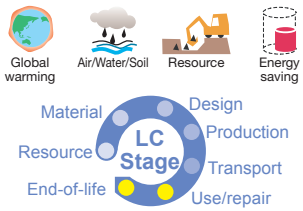
EC-5-011 Automobile parts

tires for trucks and buses

Tire for Super Single Drive Axle "GREATEC"

Environmental performance

Bridgestone launched the GREATEC line in 2000 as ultralow aspect ratio tires to replace dual drive tires on trucks and buses with single tires.
GREATEC tires improve fuel economy because a GREATEC tire and rim weighs less than two conventional tires and rims.
In addition, this concept contributes to waste saving.



GREATEC

Bridgestone Corporation

10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Tel +81-3-3563-6972 Fax +81-3-3563-1165
URL http://www.bridgestone.co.jp/english/index.html

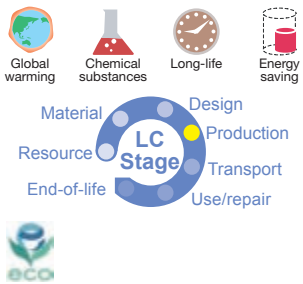
EC-5-012 Automobile parts

rubber hoses

Brake Hose

Environmental performance

- Long life is achieved by developing new materials and re-designing the structure.
- A new forged manufacturing method of metal fittings is developed which eliminates material loss and reduces energy consumption.
- Adoption of new surface treatment that doesn't use hexavalent chromium.



Brake hose

Hitachi Cable, Ltd.

Hitaka Works, 5-1-1 Hitaka-cho, Hitachi-shi, Ibaraki-ken, 319-1414, Japan
Tel +81-294-25-3835 Fax +81-294-43-3852
E-mail taketani.noriaki@hitachi-cable.co.jp
URL http://www.hitachi-cable.co.jp/en/index.html
URL http://www.hitachi-cable.co.jp/en/products/rubber/index.html
URL http://www.hitachi-cable.co.jp/en/about/publish/csr/index.html

EC-5-013 Automobile parts

parts for driving, transmission, and operating components

Variable Displacement Pump for Automobile Power Steering

Environmental performance

Fuel consumption is reduced by about 1.5% by reducing driving torque of pump.
Pump displacement is controlled appropriately according to engine revolution speed.
Cooling piping is simplified with increased reliability by decreasing the oil temperature in the system.

Product performance

This hydraulic power steering pump driven by engine power is a Variable Displacement Pump, of which flow rate can be controlled according to the engine speed.

Hitachi, Ltd., Automotive Systems

1-18-13, Sotokanda, Chiyoda-ku, Tokyo, 101-8608, Japan
Tel +81-3-3258-1111

Available in: Japan, North America

EC-5-014 Automobile parts

parts for driving, transmission, and operating components

Energy Saving Electrical Power Steering (Motor and Controller)

Environmental performance

--------<< Material >>--------
Compact size and High power Motor/Controller contributes to the design of light weight vehicles.
--------<< Energy >>--------
Consumes energy only when the steering wheel is operated and this improves a vehicle's fuel consumption efficiency.
--------<< Toxicity >>--------
Maintainance free

Product performance

The electric power steering system assists the driver in steering only when he or she turns the steering wheel; hence it serves to improve fuel economy by 3 to 5% compared with the conventional hydraulic system. It is also easy to install because of its modular design. The compact yet high-power motor has realized system lineups for a full range from light motor vehicles up to oversized vehicles. It has its original control algorithm that creates excellent steering feeling and stability.

Motor for Electrical Power Steering

Mitsubishi Electric Corporation

2-7-3, Marunouchi, Chiyoda-ku, Tokyo, 100-8310, Japan
Tel +81-3-3218-9024 Fax +81-3-3218-2465
E-mail eqd.eco@pj.MitsubishiElectric.co.jp
URL http://global.mitsubishielectric.com/index.html
URL http://global.mitsubishielectric.com/company/csr/environment/products/index.html
URL http://global.mitsubishielectric.com/company/csr/index.html

Available in: Worldwide

EC-5-015 Automobile parts

parts for internal combustion engines

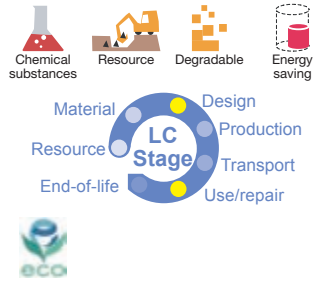
Pulley Assy-VTC for Automobile Engines

Environmental performance

VTC designed for continuously controlling the phase of the valve timing in automobile engines depending on the load conditions, improving the torque/fuel efficiency and reducing the volume of discharged gas.
Lightweight, compact VTC that reduces the impact on the environment by restricting the use of hazardous substances.

Product performance

VTC shifts and controls the valve opening/closing timing of the automobile engine, utilizing the oil pressure.



Hitachi, Ltd., Automotive Systems

1-18-13, Sotokanda, Chiyoda-ku, Tokyo, 101-8608, Japan
Tel +81-3-3258-1111

Vane type VTC

Available in: Japan. North America

EC-5-016 Automobile parts

parts for internal combustion engines

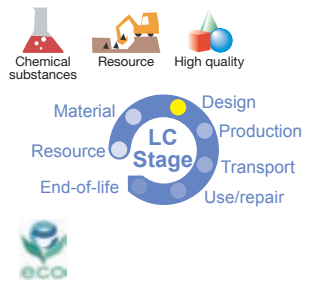
Automobile Electronic Controller

Environmental performance

Compactness and lightweight have been achieved by applying high-density packaging.
Hazardous substances have been reduced by using lead-free soldering.

Product performance

High-reliability electronic control unit for high reliable uses such as automobile engine control.



Hitachi, Ltd., Automotive Systems

1-18-13, Sotokanda, Chiyoda-ku, Tokyo, 101-8608, Japan
Tel +81-3-3258-1111
URL http://www.hitachi.co.jp/Div/apd/

Water-proof type Engine Control Unit

Available in: Europe, North America, Asia, Japan

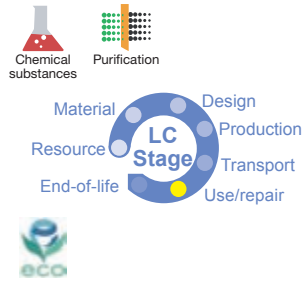
EC-5-017 Automobile parts

parts for internal combustion engines

Diesel Particulate Filter

Environmental performance

Composed of cordierite ceramics, our Diesel Particulate Filter reduces particulate matter (PM) of exhaust gas in medium- and heavy-duty diesel commercial vehicles. This environmentally conscious product functions effectively to help vehicles meet increasingly stringent exhaust gas regulations.
Our Diesel Particulate Filter has been developed through Hitachi Metals' accumulated ceramics manufacturing technologies. Our unique filter with an optimal pore structure, size and distribution demonstrates both low-pressure loss characteristics to contribute to lower fuel consumption and high PM trapping performance, enabling the capture of micro-particles as small as 10nm.



Diesel Particulate Filter

Hitachi Metals, Ltd.

SEAVANS North Building, 1-2-1, Shibaura, Minato-ku, Tokyo, 105-8614, Japan
Tel +81-3-5765-4512
E-mail hmcc@hitachi-metals.co.jp
URL http://www.hitachi-metals.co.jp/e/
URL http://www.hitachi-metals.co.jp/e/prod/prod06/p06_09.html
URL http://www.hitachi-metals.co.jp/e/corp/corp14_01.html

EC-5-018 Automobile parts

parts for chassis and bodies

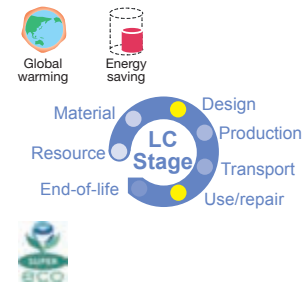
Plastic Back Door Module for Automotive

Environmental performance

Plastic back door modules for automotive have two benefits compared to conventional steel ones: the first is around 30% of weight reduction by integrating components, and the other is much better for design flexiblities for their styling or form.

Product performance

Our plastic back door modules have been supplying to OEM since 2001 as a pioneering product in Japan. Our products have realized a lighter door module by adopting the structure of joining with adhesives the inner panel made of glass fiber reinforced thermoplastic having high strength and rigidity and the outer one made of thermoplastic having excellent appearance.



Plastic Back Door Module for Automotive

Hitachi Chemical Co., Ltd.

Shibaura Square Building, 4-9-25 Shibaura, Minato-ku, Tokyo, 108-0023, Japan
Tel +81-3-5446-9006 Fax +81-3-5446-9469
URL http://www.hitachi-chem.co.jp/english/index.html
URL http://www.hitachi-chem.co.jp/japanese/products/arp/016.html
URL http://www.hitachi-chem.co.jp/english/csr/index.html

Available in: Japan

EC-5-019 Automobile parts

alternators

Water Cooled Alternator

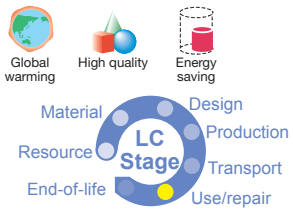
Environmental performance

Higher power generation efficiency (Approximately 7% higher than the conventional unit)

Product performance

This product can contribute to less emission and improvement in fuel consumption of the vehicle having features as follows:

- A compact size alternator with high output (44% higher than conventional (air cooled) unit at engine idling speed)
- Higher power generation efficiency (Approximately 7% higher than the conventional unit)
- Low acoustic noise (20 dB at 10,000 r/min(alternator speed) lower than air cooled unit)
- Potential for applying to a variety of systems (Ex. Motorized 4WD system; one of Hitachi's other contributions for ecology)



LR945-901B

Hitachi, Ltd., Automotive Systems

1-18-13, Sotokanda, Chiyoda-ku, Tokyo, 101-8608, Japan
Tel +81-3-3258-1111

Available in: Europe, U.S.A., Japan

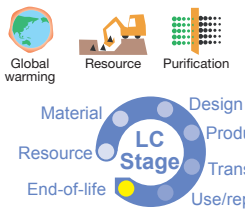
EC-5-020 Automobile parts

titanium mufflers

Titanium muffler

Product performance

Nippon Steel's titanium materials have high corrosion resistance and are used in a lot of applications: industrial use in the field of electricity and chemicals, marine structures, civil applications including sports goods and office appliances, and the field of construction materials such as roofing and exterior walls which include those used in historical buildings, temples, and shrines. The titanium materials contribute to the extended service life of the finished products. For the purpose of reducing the weight of automobiles and motorcycles, mufflers made of Nippon Steel's titanium were employed in commercialized products for the first time in the industry in FY 2002. Titanium is not only light in weight but also suitable for the thermal resistance required for the application temperature range of mufflers (approx. 600°C). Nippon Steel is going to further expand the application range of titanium by improving the spring characteristics and engine-sound muffling performance in addition to lightness.



Nippon Steel Corporation

2-6-3, Otemachi, Chiyoda-ku, Tokyo, 100-8071, Japan
Tel +81-3-3275-5144 Fax +81-3-3275-5979
E-mail kankyo@nsc.co.jp
URL http://www.nsc.co.jp/en/eco/index.html

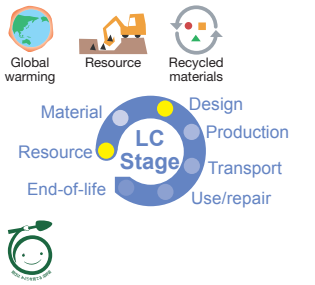
EC-6-001 Packaging

beverage for baby & kids

Paper container "Cartocan" using the forest thinning material

Environmental performance

Wakodo Co., Ltd. has acquired the public mark for "Forest Thinning Material" on its paper container "Cartocan," because it uses more than 30% domestic wood comprising forest thinning materials greater than 10%. Through the positive use of domestically obtained wood, some of the expense to repair local forests is fed back to the mountains, thus promoting a healthier forest. This activity coincides with a national project the Japan Forest Agency is promoting: "National campaign to promote the making of beautiful woods" and "The campaign to use domestic wood." This is helping the construction of a recycling society and the absorption of CO_2. Beverages sold include a 125 ml pack for children, including Genkicchi (consisting of roasted barley tea, ion drink aqualyte apple flavor, apple & vegetables, fruit & vegetables, and the popular yogurt-flavored drink "Yokkuru"), the caffeine-free blended tea "Juroku-Cha," and an organic drink (fruit & vegetables plus carrot).



Beverage for baby & kids 125ml pack(7 items)

Wakodo Co., Ltd.

2-14-3 Kanda Tsukasa-machi, Chiyoda-ku, Tokyo, 101-0048 , Japan
Tel +81-3-5296-6815 Fax +81-3-5296-6808

EC-6-002 Packaging

paper beverage containers

Cartocan

Environmental performance

The Cartocan uses domestic lumber, including wood from forest-thinning, for over 30% of its raw materials and thus contributes to the prevention of global warming by helping to nurture healthy forests. Using domestic lumber advances domestic forest development and contributes to achieving Japan's target of reducing CO_2 emissions by 6% as stipulated in the Kyoto Protocol.

Product performance

An aseptic filling system is used and deterioration due to heat is minimal, meaning that the content's original quality is not lost. Toppan GL Film is used for the barrier layer. GL Film has outstanding barrier properties, enabling distribution at ambient temperatures and stable content conservation. The Cartocan has a cylindrical shape that can be held easily even by small hands and overflow of the content is minimized.

Cartocan paper beverage container with special Toyako Summit design

TOPPAN PRINTING CO., LTD.

1, Kanda Izumi-cho, Chiyoda-ku, Tokyo, 101-0024, Japan
Tel +81-3-3835-5549 Fax +81-3-3835-0847
E-mail eco@toppan.co.jp
URL http://www.toppan.co.jp/english/
URL http://www.toppan.co.jp/english/csr/

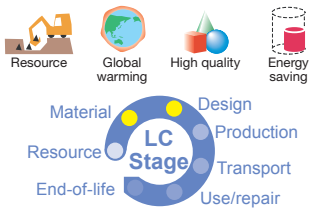
EC-6-003 Packaging

beverage

PET bottle based on universal design for environment load reduction

Environmental performance

① PET bottle with hollow surface and thermal adhesion label
Hollow bottle reduced the used quantity of resin by 21%. Its feature is that it is easy to hold and to pour. It is being used as the bottle of the tea drink for a famous brand. The thermal adhesion label can be thermally stuck at only one spot after it is wound up on the body of the bottle. It can reduce the used amount of label by 22% compared to conventional. The label is easy to be stripped, and it is expected to promote the classification and discharge of the bottle.
② PET bottle with an eco-grip cap
The eco-grip cap has the shape of a wave which makes it easy to add finger force. Its feature is that children, aged persons and women can open it easily. In addition, it can reduce the used amount of resin by about 10%, and it is therefore an environment-friendly cap.



①Juroku-Cha PET ②Collagen Water PET

Asahi Soft Drinks Co., Ltd.

1-23-1 Azumabashi, Sumida-ku, Tokyo, 130-8602, Japan
Tel +81-3-5608-7227 Fax +81-3-5608-7248

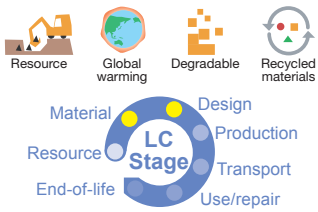
EC-6-004 Packaging

beverage

PET bottle using biomass plastic label

Environmental performance

Asahi Soft Drinks Co., Ltd. introduced the eco-friendly "biomass label" on 490ml Juroku-cha PET bottles (released in February 2008). Using 25% or more plant-derived polylactic acid made from corn starch, it is the first soft drink PET bottle label to attain the "biomass plus mark." As the labels reduce the use of fossil fuel resources, CO_2 emissions can be limited. Compared with conventional labels, approximately 340 tons of CO_2 per year will be reduced (estimated on assumption that 120 tons of labels are used for 2.5 million cases of 490ml Juroku-cha PET bottles sold in 2007). This product won the Beverage Packaging Category Award of the Japan Packaging Contest. Asahi Soft Drinks Co., Ltd. contributes to the realization of rich, healthy eating habits of the consumers, through various company activities aimed at passing the earth on to the next generation in a healthier state.



Juroku-Cha PET

Asahi Soft Drinks Co., Ltd.

1-23-1 Azumabashi, Sumida-ku, Tokyo, 130-8602, Japan
Tel +81-3-5608-7227 Fax +81-3-5608-7248

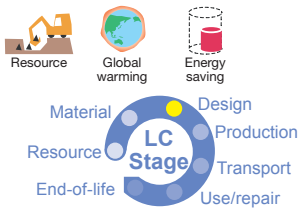
EC-6-005 Packaging

beer

Can beer using a light can

Environmental performance

With the Asahi Breweries, Ltd, we are working on the lightweighting of the can to be used with beer. In 2006, we reduced the weight of aluminum to be used per 1 liter of beer, by 10.6% at the ratio of 1990. Asahi Breweries is committed to developing environmentally friendly containers and packaging while promoting the 3 Rs (Reduce, Reuse and Recycle) toward the establishment of a recycling-oriented society.



Asahi Super Dry 350ml, 500ml

Asahi Breweries, Ltd.

1-23-1 Azumabashi, Sumida-ku, Tokyo, 130-8602, Japan
Tel +81-3-5608-5195 Fax +81-3-5608-5201
URL http://www.asahibeer.co.jp/english/

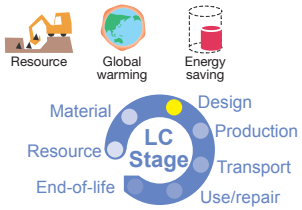
EC-6-006 Packaging

beer

Beer in 206-diameter SuperEnd next-generation lightweight-end cans

Environmental performance

Asahi Breweries, Ltd. is introducing efforts to reduce the weight of beer-can ends. In 2007, the company reduced the surface area of these ends by approx. 6% and their thickness by 0.01 mm through the introduction of 206-diameter SuperEnd next-generation lightweight ends featuring an exclusive countersink wall. This design reduces aluminum consumption by about 9% compared with the conventional model (approx. 0.3 g per end). Using this type of end for beer cans will save approx. 1,200 tons of aluminum annually and reduce CO_2 emissions by about 9,000 tons per annum. Asahi Breweries is committed to developing environmentally friendly containers and packaging while promoting the 3 Rs (Reduce, Reuse and Recycle) toward the establishment of a recycling-oriented society.



Asahi Super Dry

Asahi Breweries, Ltd.

1-23-1 Azumabashi, Sumida-ku, Tokyo, 130-8602, Japan
Tel +81-3-5608-5195 Fax +81-3-5608-5201
URL http://www.asahibeer.co.jp/english/

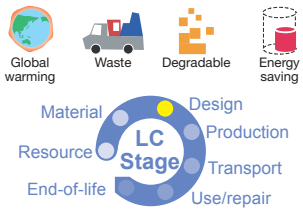
EC-6-007 Packaging

beer

A beer-keg cap made from polylactic acid (a plant-derived plastic)

Environmental performance

Asahi Breweries, Ltd. is introducing efforts to develop environmentally friendly containers and packaging materials. This product is a cap seal that protects the mouthpiece of kegs, and is made from polylactic acid (a plant-derived plastic). It is used for stainless kegs that contain beer and RTD, and is manufactured using a type of plant-derived plastic that has no petroleum content in its raw materials and is biodegradable. This is the world's first cap seal to be introduced for keg products. CO_2 emissions in the product cycle, from raw materials to manufacturing and disposal, will be reduced by approximately 60%, which amounts to about 150 tons per year. Asahi Breweries is committed to developing environmentally friendly containers and packaging while promoting the 3 Rs (Reduce, Reuse and Recycle) toward the establishment of a recycling-oriented society.



Asahi Super Dry

Asahi Breweries, Ltd.

1-23-1 Azumabashi, Sumida-ku, Tokyo, 130-8602, Japan
Tel +81-3-5608-5195 Fax +81-3-5608-5201
URL http://www.asahibeer.co.jp/english/

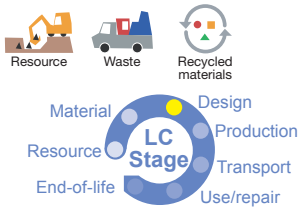
EC-6-008 Packaging

wine

Wine in lightweight Ecology Bottles

Environmental performance

Asahi Breweries, Ltd. is introducing efforts to reduce amounts of waste containers and packaging materials and to promote recycling in order to save resources. This product uses a lightweight wine bottle called the Ecology Bottle, which uses more than 90% recycled glass. It maintains the same height as existing wine bottles, but its weight is reduced by approx. 18%. CO_2 emissions during the model's manufacture are reduced by approx. 180 tons per year, and the resulting enhancements in transportation efficiency have also led to reduced CO_2 emissions. Asahi Breweries is committed to developing environmentally friendly containers and packaging while promoting the 3 Rs (Reduce, Reuse and Recycle) toward the establishment of a recycling-oriented society.



Sainte Neige Wine

Asahi Breweries, Ltd.

1-23-1 Azumabashi, Sumida-ku, Tokyo, 130-8602, Japan
Tel +81-3-5608-5195 Fax +81-3-5608-5201
URL http://www.asahibeer.co.jp/english/

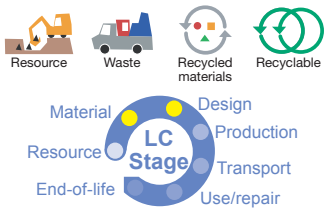
EC-6-009 Packaging

whisky

Whisky bottle with cap made from end-of-use barrel

Environmental performance

At Nikka Whisky Distilling Co., Ltd., the barrel material of whisky barrels that have finished their use period is recycled as the caps of whisky bottles; it is used in "NIKKA Taketsuru 12 Years Old Pure Malt." In addition, the company addresses in various ways the establishment of a recycling society and the prevention of the global warming.



NIKKA Taketsuru 12 Years Old Pure Malt

The Nikka Whisky Distilling Co., Ltd.

5-4-31, Minami-Aoyama, Minato-ku, Tokyo, 107-8616, Japan
Tel +81-3-3498-0331 Fax +81-3-3498-1783
URL http://www.nikka.com/eng/index.html

EC-6-010 Packaging

films

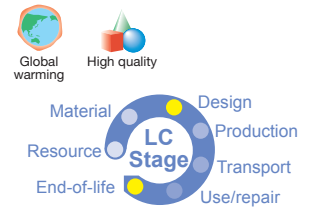
Clear high barrier film — GL and GX Film

Environmental performance

GL and GX Film are collective names for Toppan's clear high barrier films developed using coating and deposition technologies.
Since these films do not use chlorine-based resins, no chlorine gases are released on incineration. When they are used as packaging material, the high barrier properties preserve contents and best before and sell by dates can be extended. This therefore contributes to reducing waste from products that have passed their use or sell by dates. It is also possible to reduce waste because the packaging material itself is rationalized and reduced in volume.

Product performance

GL and GX Films have outstanding barrier properties and stability achieved through original deposition processing technologies. They hold the top share of the global market and are used widely for various applications including food packaging, toiletries, electrical components, and industrial materials. (As of the end of FY2008)



GL and GX clear high barrier films

TOPPAN PRINTING CO., LTD.

1-5-1 Taito, Taito-ku, Tokyo, 101-0024, Japan
Tel +81-3-3835-5549 Fax +81-3-3835-0847
E-mail eco@toppan.co.jp
URL http://www.toppan.co.jp/english/
URL http://www.toppan.co.jp/english/csr/

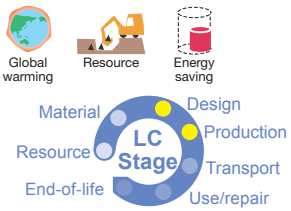
EC-6-011 Packaging films

Lighter gauged EC laminates

Environmental performance

The adoption of a special resin enables a reduction in the weight of laminate film that needs to be used while maintaining its functions. Since the thickness of extruded laminated resin can be reduced to 5 μm, the weight of packing materials used can be minimized, thus mitigating environmental burdens. Non-anchor coated laminates are also applicable depending on material composition.

<Major applications>
Outer packing of snacks, candy and chewing gum, chazuke toppings



Dai Nippon Printing Co., Ltd.

1-1-1, Ichigaya-Kagacho, Shinjuku-ku, Tokyo, 162-8001, Japan

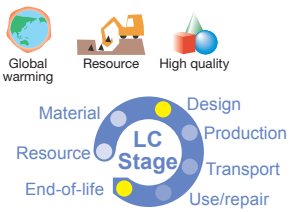
EC-6-012 Packaging films

IB-Film®

Environmental performance

IB-film is a transparent film with high barrier performance as an oxygen and moisture barrier. It is made by depositing aluminum oxide and silicon oxide onto polyester and nylon films. Its transparency, high barrier features and suitability for printing make it useful as a base material for packaging.
IB-film allows the elimination of layers (such as aluminum foil), aluminum vapor deposition and other plastic films with barrier capability. This reduces the weight of packing materials, thus contributing to a reduction of the environmental burden it creates. With IB-film, inspection with metal detectors (which is not possible with packaging materials that have metal layers) can be conducted, helping to promote food safety. It can be used for heating in microwaves, thus enhancing convenience. In addition, it is suitable for use in various fields since it has the high barrier performance required in non-food fields.

<Major applications>
Food, snacks, beverages, drugs, medical materials, industrial materials, packaging materials



Dai Nippon Printing Co., Ltd.

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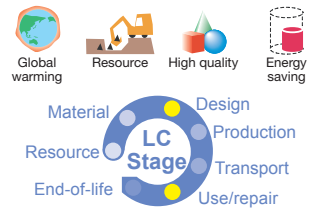
EC-6-013 Packaging films

Refill pouch (ELBOW®)

Environmental performance

The use of a flexible pouch for refills allows the volume of such containers to be reduced by folding after consumption of the contents, and also promotes the reuse of the original bottle. To make refilling easier, changes have also been made to the shape of the pouch mouth and the rib design for pouring stability.

<Major applications>
Liquid detergent, shampoo, conditioner, cosmetics, spray deodorant



Dai Nippon Printing Co., Ltd.

1-1-1, Ichigaya-Kagacho, Shinjuku-ku, Tokyo, 162-8001, Japan

EC-6-014 Packaging beverage filling systems

Synchronized aseptic filling system

Environmental performance

- This is an aseptic system that enables the filling of light PET bottles that have no heat resistance at normal temperatures in place of heavy heat-resistant PET bottles designed for hot filling.
- The technique represents a low-cost, environmentally friendly system that has integrated processes from blow molding to filling by making effective use of the residual heat from blow molding to sterilize bottles.
- The system has enabled a reduction in the weight of bottles and the use of bottles with improved design characteristics, thereby significantly cutting the amount of energy used.
- Scope of reduction

Installation space: Reduced by 50%
Utility used: Reduced by 50%

<Major applications>
Beverages

Dai Nippon Printing Co., Ltd.

1-1-1, Ichigaya-Kagacho, Shinjuku-ku, Tokyo, 162-8001, Japan

EC-6-015 Packaging

biodegradable containers

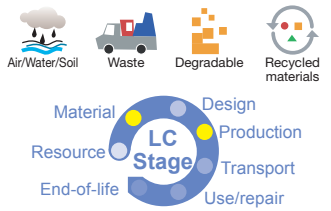
Environment-friendly biodegradable containers

Environmental performance

- Prevention against environmental pollution: As it is a nature-friendly circulation approach that uses a material obtained from nature and which returns to nature upon disposal, it helps prevents global warming with very little environmental load.
- Safety: Since a non-toxic natural material (corn starch) is used, it does not release harmful hormones or other substances into the environment.
- Economic efficiency: Saves expense compared to wood pulp products, and contributes to reduced use of petroleum resources.
- Environmental preservation: Does not discharge hazardous gases upon incineration, and can extend the life span of the incinerator since no clinker slag occurs.

Product performance

Fast food packaging containers like hamburger packaging, etc.
Disposable cups, case for packaging, ice cake containers, lunch boxes, fruit containers, etc.



Food, fruit tray and lunch box. etc

Korea UB Clean Co, Ltd.

459-11, Gilseong-ri, Hyangnam-myeon, Hwaseong-si, Gyeonggi-do, 445-921, Republic of Korea
Tel +82-1600-1649 Fax +82-359-9177
E-mail ub@kubc.co.kr
URL www.kubc.co.kr

Available in: Korea, Japan, Hong Kong, China, United Kingdom, America, Australia, etc.

EC-6-016 Packaging

biodegradable foam

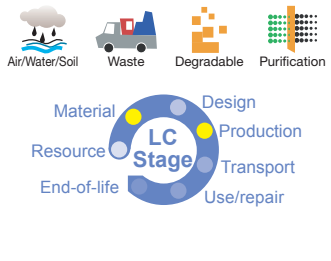
Environment-friendly biodegradable foam (regreen-foam)

Environmental performance

It not only can substitute completely for existing styrofoam buffering material used for packaging but also can be used widely compared to styrofoam since it is produced by corn starch that is naturally obtained and does not generate static electricity.
Furthermore it is a good choice for export goods packaging as it meets environmental rules and regulations that many countries follow.

Product performance

- Packaging for high-end electronic parts that are sensitive to a static electricity, ceramic ware, glass products, etc.
- Packaging for airmail, parcel post, personal belongings to be moved, mail-ordered products, and export goods packaging that requires biodegradability
- Breakage prevention against various chemicals and pharmaceuticals and dangerous articles, learning material for infants



Korea UB Clean Co, Ltd.

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E-mail ub@kubc.co.kr
URL www.kubc.co.kr

Available in: Korea, Japan, Hong Kong, China, Australia, United Kingdom, America, Kuwait, etc.

EC-6-017 Packaging

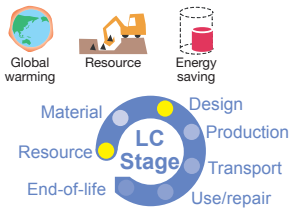
plastic cups

Beaubelcup®- Light

Environmental performance

Beaubelcup®- Light is an environmentally friendly container made with in-mold labels. The amount of resin used is reduced by approx. 18% compared with the previous model. A redesigned bottom shape gives it a similar or higher shatter strength to that of the previous model, despite its reduced thickness.

<Major applications>
Beverages, desserts



Dai Nippon Printing Co., Ltd.

1-1-1, Ichigaya-Kagacho, Shinjuku-ku, Tokyo, 162-8001, Japan

EC-6-018 Packaging

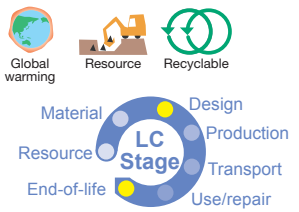
paper trays

「ECOCAL®」tray

Environmental performance

The use of specially laminated release base paper enables the easy removal of the carton's inner film after use, making it easy to separate for disposal. The contents do not touch the carton directly, thus keeping it clean and making recycling of the paper possible.

<Major applications>
Prepared daily dishes, boxed meals



Dai Nippon Printing Co., Ltd.

1-1-1, Ichigaya-Kagacho, Shinjuku-ku, Tokyo, 162-8001, Japan

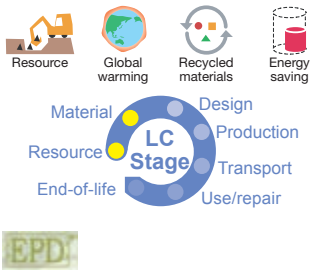
EC-6-019 Packaging

aluminum beverage cans

Aluminum Beverage Cans made from Used Beverage Cans

Environmental performance

The aluminum beverage can is made up of a can body and a can end. Universal Can Corporation (hereinafter called "UNICAN") has been in the aluminum can business for over 35 years. Our aluminum beverage cans include UBCs (used beverage cans), which account for over 50% of the total weight of aluminum can bodies. (Certified according to the Environmental Product Declaration "EPD" Environmental Labels Type III). Recycling aluminum from UBCs uses 97% less energy than making new aluminum from bauxite. Usage of more UBCs and less new virgin metal will contribute to saving bauxite and energy and the prevention of global warming. Mitsubishi Materials Group including UNICAN has established a unique integrated recycling process which consists of retrieving UBCs, pouring recycled aluminum into long ingots and producing can body stocks. This process can help "the Can to Can cycle" function more effectively.



Universal Can Corporation

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URL http://www.unican.co.jp/

EC-6-020 Packaging

food boxes

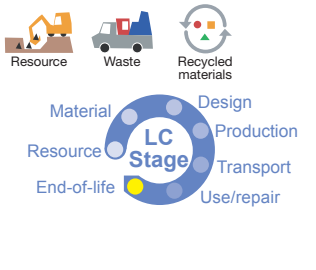
One Dish Aid confectionery container (circulation system of returnable ceramic confectionary containers)

Environmental performance

Ceramic confectionary containers used for puddings, etc., are usually disposable. The One Dish Aid confectionery container is made using 20% crushed (recycled) material from waste tableware collected from households, etc. This is Japan's first product for which a deposit system for container reuse was adopted. It also contributes to nature conservation and CO_2 reduction through a system in which 2 yen of the profits from each container are donated to tree planting activities and the like. Promotion of this product not only contributes to recycling of exhaustible ceramic materials, but also if use at least 5 times during its total lifecycle, reduces CO_2 emissions to 1/4 those of conventional containers.

Product performance

To enable this product to be used repeatedly, it has an antifouling highly-glazed finish, an easy-to-wash shape, slits to facilitate drying of the base, and thick edges to improve its washing efficiency and strength. The containers come in three sizes frequently used for confectionery, and two colors (white and brown), with an extemely safe glaze. A stackable type has also been put on the market to improve storage efficiency in shops and homes.



NPO JAPAN One Dish Aid Association

Shibuya Bldg. 5F 6-10 Samon-cho, Shinjuku-ku, Tokyo, 160-0017, Japan
Tel +81-3-3354-9012 Fax +81-3-3354-9013
E-mail info@e-sakon.co.jp
URL http://onedish.net
URL http://onedish.net/youki/youki_top.html
URL http://onedish.net/katsudou/index.html

EC-6-021 Packaging

polylactic acid

PLA paper cup

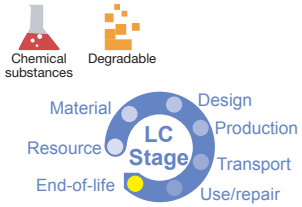
Environmental performance

• 100% biodegradable & compostable and environmentally friendly
• Harmless to the human body

Product performance

High-quality virgin pulp products
Various colors, sizes, and designs, superior printing quality

- Coffee & fast food stores -Take out stores (Beverages, ice cream, etc)



HANCHANG PAPER CO., LTD.

EXCON VENTURE BLDG., 15-24, YEOUIDO-DONG, YOUNGDEUNGPO-GU, SEOUL, 150-969, KOREA
Tel +82-2-3774-5484 Fax +82-2-3774-5487
E-mail wonchoong@hanchangpaper.co.kr
URL www.hanchangpaper.co.kr

Pla Paper Cup

EC-6-022 Packaging

polylactic acid

PLA-coated cupboard

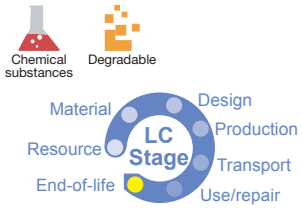
Environmental performance

• 100% biodegradable & compostable and environmentally friendly
• Harmless to the human body, instead of PE coating

Product performance

High-quality virgin pulp products
Various colors, sizes, and designs, superior printing quality

Paper cup manufacturer



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URL www.hanchangpaper.co.kr

EC-6-023 Packaging

plastic products

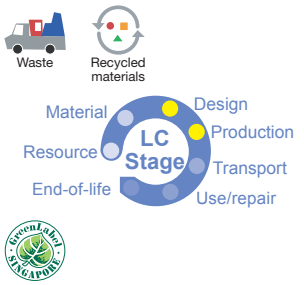
R3plas Eco-label Recycled Plastics Products (Turn-Key Projects)

Environmental performance

R3plas Recycled resin closed loop system, R3plas Oxo-Biodegradable Packaging,R3plas Spectacle box and R3plas Eye-wear made from post closed loop recycling system from post industrial waste and consumer waste.

Product performance

International Design awards
Green Label awards
Meet ASTM standards
Support ISO14000 and Green purchasing requirement



WINRIGO (S) PTE LTD

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E-mail winrigo@singnet.com.sg
URL www.winrigo.com.sg
URL http://www.nanyang.com.sg/products.html

Available in: All countries

EC-6-024 Packaging

paper food packaging containers

TicTob HealthyPack

Environmental performance

Made from long term sustainable renewable fibre obtained from trees that are from reforestation plantations, minimizing cutting of virgin forest and sustaining natural habitat of animals,insects,water and land.
Reforestation plantations are earth's long-term sustainable, natural,oxygen factories converting carbon dioxide into oxygen.
Post consumer recyclable and degradable. No emission of ODS during incineration.

Product performance

Design advantages include keep warm efficiency, safety interlocking efficiency and super compression strength for mass catering deliveries.
Technological advantages include high speed cooking during microwave cooking reducing energy usage as well as maintaining maximum succulence of food textures.
Award winner of AsiaStar: Beijing / Tokyo and WorldStar USA.

Microwave Packaging Singapore Pte Ltd

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E-mail leonard@microwave-packaging.com
URL www.microwave-packaging.com

Available in: Singapore only

EC-7-001 Others

color filters

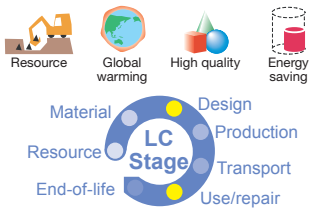
Color filter (BM made of organic resin)

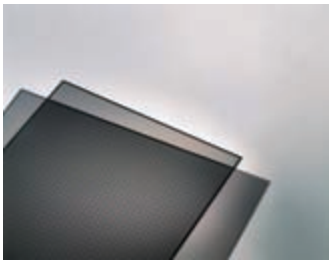
Environmental performance

To improve light transmission that contributes to saving electric power for liquid crystal display panels(LCDs), the width of the color filter's black matrix (BM) is formed narrower than before.
In addition, more environmentally friendly materials, resin, is used instead of chrome which has been widely used as BM material.

Product performance

Color filters are key components of color LCD panels and consist of primary three-color patterns of RGB.
In the process of manufacturing them, it is necessary to form BM first on a glass substrate in order to prevent unnecessary leakage of light through patterns.





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