

## Environmentally-Conscious, Safety-Conscious and Health-Conscious Products and Technologies

Our corporate philosophy is “Using innovative technologies, we strive to create a broad spectrum of life-enhancing products and services that work in harmony with people, society and the environment.”

In this section, we introduce a few examples of the “environmentally-conscious, safety-conscious and health-conscious products and technologies” that we have developed and are delivering to people around the world.

### Kanevinyl (polyvinyl chloride)

#### Plastic that is easy on the global environment

About 60% of the raw material used in polyvinyl chloride resin is salt, making this resin's reliance on petroleum resources relatively low compared to other plastics. This resin also has excellent stability and durability, so it lasts for a long time when used in products, and is also easy to recycle. The photograph on the right shows assembled bricks that are made from recycled polyvinyl chloride resin. With these features, polyvinyl chloride resin can be said to be a material that is easy on the global environment. In addition to being widely used in building materials and ordinary goods, the popularity of using polyvinyl chloride products for green products and similar items is increasing again. The Japanese Ministry of the Environment's decision to use polyvinyl chloride resin sashes for the multi-paned glass windows in its offices is a result of their understanding the merits of this material.

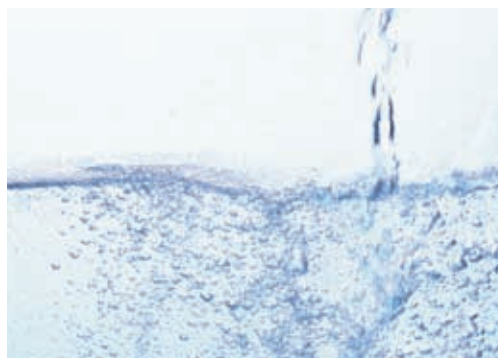


### Hyperchlor

#### Contributing to a safer tap water supply

Hyperchlor is a chemical product (sodium hypochlorite) that is used to sterilize tap water. Based on the drinking water quality guidelines of the World Health Organization (WHO), the Ministry of Health, Labour and Welfare of Japan, seeking to assure a safer public drinking water supply, revised standards in 2008 to further reduce bromic acid and chloric acid in this chemical.

By improving our manufacturing and storage methods, we succeeded in greatly reducing these substances and began the sales of Hyperchlor which meets the new standards. We are proud that many public water bureaus are now using this product, serving to satisfy people's demand for the provision of safer tap water.



### Kaneka KP08 (Lactic acid bacteria derived from plants)

#### Lactic acid bacteria derived from plants that contribute to healthy lives

Kaneka KP08 (Kaneka's *Lactobacillus brevis*) is one of lactic acid bacteria derived from plants that has been isolated in *sugukizuke*, which is a type of pickle that originates in Kyoto and has been eaten by Japanese for centuries. In order to stay healthy, maintaining a good intestinal environment is crucial, and this requires increasing the beneficial bacteria and decreasing the harmful bacteria in the intestines. It is commonly known that by consuming living lactic acid bacteria, beneficial bacteria in the intestines can easily be increased while the propagation of harmful bacteria is suppressed. Kaneka KP08 features the ability to survive even in harsh environments, and its capability of surviving in the intestines is particularly strong. Kaneka KP08 has been prepared as a immaculate white powder containing this living *Lactobacillus brevis*.



## Thin Film Photovoltaic Modules

### Contributing to the prevention of global warming

Our hybrid photovoltaic modules, which are thin and have a conversion efficiency that is of the highest level in the world, layer conventional amorphous solar cells with thin film crystal. While maintaining the high resource conservation that is a feature of amorphous solar cells, we have improved the output per unit of area by over 30%, making hybrid photovoltaic modules a product that contributes to the prevention of global warming even more than previous types of solar modules. Moreover, we are seeking to realize products that are good for people and the earth by clearing international standards related to safety and having all our photovoltaic modules meet the strict environmental standards that have been established in Europe. These include the RoHS directives, which regulate dangerous substances contained in electrical and electronic equipment and prohibit the use of some substances, and the REACH European chemical regulations.



## PHBH Biopolyester-type Biodegradable Polymer

### A biodegradable polymer that uses renewable raw materials

Kaneka PHBH (provisional), which is a biopolyester-type biodegradable polymer that we have developed, is a polymer that is not derived from petroleum, but rather is produced by microorganisms using oil from plants. With excellent biodegradability, this material breaks down in a relatively short amount of time in the natural environment in anaerobic, aerobic and compost conditions. Moreover, it has soft and heat-resistant characteristics that are similar to polyethylene and polypropylene. For this reason, we expect that it will be used in a variety of applications, including in materials for packaging and materials for applications in forestry, agriculture and fisheries, as well as in automotive parts, textiles, paints and paper product coatings.



## Eperan and Eperan PP

### Contributing to reduced resource consumption with light weight, cushioning and recyclability

Making use of their outstanding flexibility, rigidity and heat resistance characteristics, our Eperan (polyethylene foam made with the bead method) and Eperan PP (polypropylene foam made with the bead method) are utilized in returnable containers for precision equipment and liquid crystal glass panels. Thus, they serve to reduce weight and conserve resources. In addition, Eperan PP is used in automobiles, including as a core material for bumpers and seats and in trunk toolboxes, contributing to making them lighter and thus reducing emissions of greenhouse gases. Furthermore, used products that are collected are put through a process of pulverization, volume reduction and repelletization, so that some can be mixed into raw material for its recycle. We are also considering the environment during production, and increasing the use of equipment that has a low environmental impact because it does not use hydrocarbon gas in foaming.



## Kaneparl Soil Block

### Supporting construction with Polystyrene foam blocks

"Kaneparl Soil Block" is a large foam block made from Kaneparl, expandable polystyrene. Not only light with a density of about 1/100 that of soil, "Kaneparl Soil Block" also has sufficient strength to bear the load on roads as civil engineering materials. Because of its lightness and strength, "Kaneparl Soil Block" has various applications. For example, "Kaneparl Soil Block" is used to improve weak ground for roads, to prevent landslides as well as to protect tunnels from falling rocks. Also, "Kaneparl Soil Block" is used as an embedded material for railway station platforms, artificial hills in parks or bases of buildings. "Kaneparl Soil Block" is not conspicuous, but is effective for constructing stable bases in a short amount of time.

