Fujitsu and Toray Develop World's First Environmentally-Friendly Large-Size Plastic Housing for Notebook PCs

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Fujitsu Limited, Fujitsu Laboratories, Ltd., and Toray Industries, Inc. today announced their joint development of the world's first large-size notebook PC plastic housing made of plant-based plastic with low environmental burden. The new environmentally-friendly plastic is used in Fujitsu's 2005 spring model FMV-BIBLO NB80K notebook PC.

The three companies plan to expand on various applications for this plastic, thereby further contributing to a reduction in the environmental burden as well as lower consumption of petroleum resources.

In recent years, environmental issues such as ozone depletion, air pollution, environmental pollution, and rapid increase of industrial waste and toxic waste, have emerged worldwide. To address these problems, there is a need for the development of a recycling-based society. Currently, various environmental laws and regulations are being legislated on a global scale, to reduce burden on the environment. The IT industry is no exception to these trends, and in Japan, environmental awareness is on the rise with a number of environmentally-related laws that been passed: the Law on Promoting Green Purchasing(1), the Law for the Promotion of Effective Utilization of Resources (2), and the Pollutant Release and Transfer Register (PRTR) Law (3).

Use of fossil fuels, such as petroleum and coal, increases CO2 in the atmosphere and causes rapid spread of the greenhouse effect, resulting

in an urgent need to reduce CO2 emissions.

Given these circumstances, there is increasing interest in applications of plastics created from plant materials, as an alternative to petroleum-based plastics which are limited in resource.

In June 2002, Fujitsu and Fujitsu Laboratories announced the development of the world's first technology for plant-based plastics that could be used for small-size housing components in notebook PCs, using polylactic acid(4) derived from corn and other plants. This technology was used in one of Fujitsu's FMV-BIBLO notebook PC models.

Toray positions polylactic acid as an environmentally-friendly, advanced material and has been developing markets for fibers, textiles, plastics and films under the brand name Ecodear®, while conducting ongoing research in ways to obtain better performance from polylactic acid.

In order to broaden the applications for plant-based plastics, the three companies have been improving the materials' heat resistance and flame retardance properties. The new material formerly was not suited for volume production and use in large-size housing, due to its use of polylactic acid which has low glass transition temperature(5), making it difficult to mold.

The companies have now developed a new type of plastic that uses polymer alloy technology(6) blending polylactic acid and a non-crystalline plastic with a high glass transition temperature as well as flame-retardant technology(7). These advances have resulted in a material with the heat resistance and flame retardance mandatory for a large-size housing for IT devices, which features easy moldability, making it suitable for mass production.

On the environmental front, the new plastic consists of roughly 50%

natural products (including plant- based materials), reducing the use of petroleum resources. When used to manufacture a notebook PC, CO2 emissions over the product's entire lifecycle are reduced by roughly 15%, thereby further reducing the impact on the environment.

Fujitsu, Fujitsu Laboratories, and Toray plan to expand the range of uses for this new material as a way to further reduce overall environmental burden and consumption of petroleum resorces in the IT industry.

Glossary

(1) Law on Promoting Green Purchasing: (enacted April 2001) A law intended to build a sustainable society by promoting the purchasing and procurement of products with low environmental impact to national institutions, local and prefectural institutions, corporations, individuals, and manufacturers.
(2) Law for the Promotion of Effective Utilization of Resources : (enacted April 2001) To create a recycling-based economic system, this law: 1) obliges companies to recover and recycle their products; 2) promotes reduced waste by minimizing materials used in products and by increasing their longevity; 3) promotes the re-use of components in recovered products.
(3) Pollutant Release and Transfer Register (PRTR) Law : (enacted March 2000) This law requires companies to report to the government the quantities of chemical emissions and wastes they release, with the intention of reducing the risk to the environment from these chemicals and pollutants by making these statistics public.
(4) polylactic acid: A plant-based plastic made from lactic acid derived from the fermentation of starches and saccharides in corn and sweet potatoes.
(5) glass transition temperature: The temperature at which the transition in the amorphous regions between the glassy and rubbery state occurs.
(6) polymer alloy technology: A technology in which two polymers with

different characteristics are compounded, to obtain a new material with better performance and functionality.
(7) flame-retardant technology: Technology which prevents plastic from burning when exposed to flames, using flame- retardant. Standards for flame-retardance are given in the UL-94 standard.