TEIJIN Human Chemistry, Human Solutions

NEWS RELEASE

September 12, 2007

Teijin Launches BIOFRONT Heat-Resistant Bio Plastic
- 100% BIOFRONT car seat fabrics developed with Mazda -

Teijin Limited

Teijin Limited announced today the group-wide marketing launch of an innovative, heat-resistant bioplastic, BIOFRONT^{TM}, which initially will be used for the manufacture of a high-quality, highly durable car-seat fabric made of 100% BIOFRONT fibers.

The new BIOFRONT fabric, developed by Teijin Fibers Limited, the Teijin group's core polyester fiber company, and automaker Mazda Motor Corporation, will be featured in the new Premacy Hydrogen RE Hybrid vehicle that Mazda will premier at the 40th Tokyo Motor Show 2007 at the Makuhari Messe exhibition center in Chiba City from October 26th to November 11th.

Background

Although bioplastics have attracted much attention due to their environmentally friendly nature, polylactide and other bioplastics currently on the market do not offer the same level of performance as oil-based plastics in terms of heat and shock resistance. Accordingly, the use of bioplastics has been limited so far.

In 2004, however, Teijin began researching bioplastics with Musashino Chemical Laboratory, Mutual Corporation and Professor Yoshiharu Kimura from the Kyoto Institute of Technology. The result was the development of an all-new type of heat-resistant bioplastic that was officially introduced in March 2006.

BIOFRONT incorporates technologies developed at Teijin Fiber's Matsuyama plant, including those to combine polymer from non-oil materials, such as starch, and those related to yarn production, such as fiber spinning and drawing.

The melting point of BIOFRONT fibers is 210ºC, significantly higher than the 170ºC melting point of polylactide fibers. As a result, BIOFRONT readily accepts high-temperature, high-pressure polyester dyeing. Such improvements have brought BIOFRONT to the same level of performance of PET (polyethylene terephthalate).

Collaboration with Mazda

Fabrics for car-seat skins must satisfy stringent conditions demanded by automotive makers. As a result, polyester fibers have been used as the main material for car-seat skins, since conventional plant-based fibers are not capable of meeting all demands sufficiently.

Thanks to the convergence of the Teijin Group's polymer technologies and Teijin Fiber's yarn-production know-how, however, BIOFRONT fully satisfies the requirements for high quality and durability, including high heat resistance. Moreover, surface-treatment technologies for car-seat skins developed with Mazda have made it possible to develop a car-seat fabric that is 100% bio-based fibers.

Fiber, film and plastic resin applications

Teijin Group companies are focusing on additional applications for BIOFRONT fibers, films and plastic resins, where the heat-resistance of BIOFRONT is expected to be particularly useful in meeting demanding requirements for fabrication and actual use.

- Teijin Fibers Limited - fibers
- Hasegawa Fellow Laboratory (Teijin Limited) - films
- Teijin Chemicals Ltd. - plastic resins

The following applications are envisioned in fields such as automotives, industrial materials and apparel textiles:

- **Fibers**: In-vehicle products, interior products and materials requiring heat-resistant, dye-affinity and anti-bacterial properties,
- **Films**: Optical applications requiring transparency and heat resistance, and
- **Plastic resins**: Electric/Electronic parts and chassis requiring heat resistance and molding

Teijin expects BIOFRONT production to reach several hundred tons in fiscal 2008 (ends March 31, 2009). The company plans to increase production at its Iwakuni plant in Yamaguchi Prefecture in 2008, as part of raising output capacity to several thousand tons.

Media Contacts:
Hidemi Kitamura
Teijin Limited PR&IR Office
+81-3-3506-4055
hi.kitamura@teijin.co.jp

About Teijin

Teijin is a global technology-driven group operating in five main fields: synthetic fibers; films and plastics; pharmaceuticals and home health care; trading and retail; and IT and new products. Teijin Limited is listed on the Tokyo and Osaka stock exchanges and has a market capitalization of USD 5.2 billion. The company had consolidated sales of USD 8.5 billion in fiscal 2006, and employs approximately 19,000 people worldwide. In line with its brand statement, "Human Chemistry, Human Solutions," the Teijin Group continues to develop chemical technologies that are friendly to people and the global environment, and to provide solutions that deliver real value to customers and society.

Attachment

Overview of BIOFRONT™

- The raw materials used to produce BIOFRONT are plant-based, so BIOFRONT is a biodegradable, environmentally friendly material, just like existing bioplastics.
- The raw materials in BIOFRONT are L-lactate, which is used in polylactide, and its enantiomer D-lactate, which has a unique crystalline structure offering a level of high heat resistance not possible with polylactide.
- BIOFRONT has a melting point of 210ºC, or 40ºC higher than that of polylactide, which has been thought to be the commercial bioplastic with the most potential.
- BIOFRONT's level of heat resistance—equal to that of polybutylene terephthalate (PBT), one of the main heat-resistant plastics—had been regarded as unattainable with a bioplastic.
- Whereas existing bioplastics can substitute for only a limited range of materials, such as polypropylene (melting point approx. 160ºC), BIOFRONT is expected to substitute for a wide range of versatile materials, including PBT and PET.
- BIOFRONT fibers can be ironed, something that is impossible with existing bioplastics. BIOFRONT also accepts high-temperature molding for films and plastics. No bioplastic has ever offered such resilient properties.
- BIOFRONT also offers superior transparency, equal to that of the highly versatile polyethylene terephthalate (PET).

NEWS TOP