

Product Development

Eco-friendly Product Development



Products that Promote Energy Saving

Synthetic rubber for fuel-efficient tires

Synthetic rubber is the primary material used in the car tires that contribute to the safety and comfort of vehicles. In developing synthetic rubber that makes tires more fuel-efficient, ZEON has succeeded improving energy losses by 20%. Tires produced using this rubber can improve fuel consumption by 1.5% (estimate by ZEON), saving on fuel use and reducing CO₂ emissions.

Automobile tire made of fuel-efficient synthetic rubber

Using tires to help reduce fuel consumption

The general-purpose rubber development team has the job of developing environmentally friendly rubber for use in tires. While fuel-efficient vehicles with hybrid engines are one way of reducing vehicle CO₂ emissions, reducing the rolling resistance of tires also reduces fuel consumption. We work at the molecular level to design and develop rubber with excellent fuel-efficiency performance that we then supply to tire manufacturers. Seeing these eco-tires becoming more widely used makes us feel for a moment that we are contributing to the society and the environment.



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Products that Promote Energy Saving

Zeoglobule[®] polymerized toner

Pulverization is the conventional method for producing the toner used in copiers and similar equipment. However, it is also known that using polymerization for toner production reduces energy consumption during production and results in finer toner particles.



Toner electron microscope image

The microcapsule toner produced using a polymerization method developed by ZEON contributes to better print quality and allows the fixing temperature to be lowered. This in turn allows faster printing speeds, smaller printers, and better energy efficiency.



Products that Help Eliminate Use of Organic Solvents

Quintac[®] solvent-free thermoplastic elastomer for adhesive tape

Previous production methods for adhesive tape required the use of solvents and therefore resulted in the release of VOCs (volatile organic compounds) into the environment.

On the other hand, using ZEON's Quintac[®] thermoplastic elastomer which has a block structure of polystyrene and polyisoprene allows adhesive tape to be produced without the use of solvents and therefore helps reduce VOC pollution. It also saves on the energy that was previously used to evaporate the solvent in the final stages of production.



Adhesive tapes produced using thermoplastic elastomer

Products that Encourage the Elimination of Organic Solvents

Quintone[®] C5 petroleum resin for hot-melt road marking

Quintone[®] C200 series

Hot melt road marking paints that use the Quintone C200 series as a binder can be used without solvents. This helps reduce VOC (volatile organic compound) pollution.



Traffic paint that uses Quintone C5 petroleum resin

Products that Help Protect the Ozone Layer and Prevent Global Warming

Next generation fluorocarbon detergent **Zeorora® H**

As recently discussed at the Toyako Environmental Summit held in Hokkaido, measures to deal with environmental problems on a global scale such as preventing global warming and the depletion of the ozone layer are becoming important issues. Zeorora® H is a detergent with excellent environmental characteristics including an ozone depletion coefficient of zero and minimal effect on global warming. The benefits of the product have been publically acknowledged through commendations such as the Stratospheric Ozone Protection Award from the U.S. EPA and the GSC Environmental Award from the Green & Sustainable Chemistry Network (GSCN). It is now exhibited at the "Aiming for Green Chemistry" booth at the National Science Museum in Tokyo.



Detergent Objects



EPA Ozone Protection Award

Products with Low Environmental Risks

New ether solvent **Cyclo-pentyl methyl ether (CPME)**

CPME is used as a solvent in chemical processes for pharmaceuticals, agrichemicals and electronic materials as a substitute for existing ethers (THF, ether, etc.) which have a number of different problems.

If CPME is used in ways that take advantage of its characteristics, the benefits include energy savings and less impact on the environment.

- 1) Its lack of water solubility means it can easily be separated from water and recycled. This reduces waste water and waste fluid volumes.
 - 2) Because it does not readily form peroxides, it can easily be recovered by distillation.
 - 3) Significant cost savings can be achieved on both variable and fixed costs because the reaction, extraction and crystallization processes can all use the same solvent.
- CPME won the 2006 prize from the Society of Synthetic Organic Chemistry in Japan.

Global Warming Prevention

Reducing Environmental Risks

Products with Low Environmental Risks

Plant growth regulator **Jasmonate®**

This product is a plant growth regulator derived from jasmonic acid (an aroma compound of flowers) that controls the ripening process of fruits and improves the environmental resilience of plants. It helps prevent problems such as discoloration in apples and skin damage in mandarins that have become more common in recent years due to climatic warming.

Jasmonate® has been well received by the agriculture industry and was awarded the 2005 Technology Prize by the Japanese Society for Chemical Regulation of Plants. It is becoming more widely used for nashi in South Korea and grapes and tropical fruit in Taiwan.



Jasmonate Solution

Products made with Zeonex or Zeonor

Products with Low Environmental Risks

Cycloolefin polymer **ZEONEX®** **ZEONOR®**

ZEONEX® and ZEONOR® are new thermoplastics with superior physical properties that were developed using our unique technology with consideration for the environment, safety and health.

These polymers have very low levels of impurities compared to other plastics and because they are manufactured from hydrocarbon resins with low environmental risks, no hazardous gases are released during incineration. They are widely used in various fields including cameras and office equipment, liquid crystal and other optical components, medical and inspection equipment, containers, and electronic devices.



Lenses and prisms

Research into environmental solvents is well-regarded

We are involved in research and sales of products such as solvents that contribute to environmental protection and agrichemicals that improve fruit harvests. This work has been well-regarded outside the company and has been rewarded with awards from various industry associations.



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