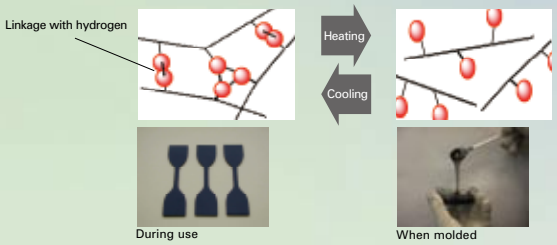
Reduction, Reuse, and Recycling Technologies

World's First Recyclable Thermoplastic Reversible Rubber

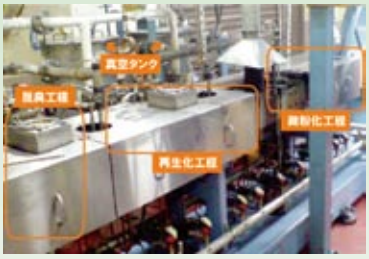
When sulfur is added to normal rubber and the rubber then heated, polymers form crosslinks and can no longer be made fluid again. In thermoplastic reversible rubber, however, the polymers become linked with hydrogen. Even once the rubber has solidified, these crosslinks will collapse when heated, restoring the rubber to its original liquid state and allowing it to be remolded again and again. Uses presently under consideration include grips for golf clubs and adhesives.

Molecular structure when used and molded



Material Recycling of Rubber Waste Generated During the Production Process

At our Mie Plant, a new mass material recycling system has been introduced to reuse vulcanized rubber waste generated during the production process as raw material for tire products, and mass production of recycled material began in earnest in January 2007. This technology does away with the need for chemical processing using chemical agents, and allows the points of crosslinkage of the vulcanized rubber to be selectively decoupled, making it possible to recycle high-quality rubber with workability and physical properties that are almost on a par with new rubber.



Recycling system at Mie Plant (biaxial screw extractor)

Road Paving Made from Scrap Tires Reduces Noise by 90%

Yokohama Rubber is developing a road surfacing material (porous elastic road-surfacing material) made out of scrap tires. Measurements of noise levels on a section of highway surfaced with the material for trials (on City Road 17 in front of the Zama City Office in Kanagawa Prefecture) conducted in December 2006 showed the noise produced to be reduced by over 10 decibels when travelling at 40 kilometers per hour, which is equivalent to an approximately 90% reduction in the volume of traffic. Porous elastic road-surfacing material is made out of rubber chips recycled from powdered scrap tires. Fine sand is then added as an aggregate, and the material glued together and hardened by urethane resin.

Main test-surfaced sections of road

Sponsor	Location	Time of surfacing
Zama City, Kanagawa Prefecture	City Road 17 in front of Zama City Office	November 2006
Sapporo City, Hokkaido	Takinosawa route	October 2007
Hiratsuka City, Kanawaga Prefecture	Minamihara route (Sengen-cho/Hiratsuka City)	July 2008

Section of road in Zama City, Kanagawa Prefecture, test-surfaced with porous elastic road-surfacing material (darker section in foreground)