

What Tire Technology Can Do for the Global Environment

Giving due consideration to how its tire technologies can benefit the global environment, the Sumitomo Rubber Group's product development focuses on three things: innovative materials, fuel efficiency and resource conservation. Accordingly, the Group actively works to devise new materials, innovative production methods and technologies to ensure the more effective utilization of natural resources and enhance the functions of naturally derived ingredients.

Developing Eco-Friendly Tires

ADVANCED 4D NANO DESIGN New Material Development Technology

In 2015, the Sumitomo Rubber Group successfully completed the development of its ADVANCED 4D NANO DESIGN material development technology, an upgrade of its previous technology that realizes a significantly improved synthesis of simulation and analysis. Built on a foundation of cutting-edge computer simulation technologies and state-of-the-art testing facilities boasting world-leading capabilities, the Sumitomo Rubber Group's ADVANCED 4D NANO DESIGN enables the precise control and simultaneous enhancement of the three, often contradictory, tire performance requirements—fuel efficiency, wet



Wear-resistant max-tread rubber*

* This is a concept tire and, as such, there are no current plans to make it available for sale. (Max: Refers to our company's highest grade of tread rubber.)

grip performance and wear resistance—in the process of material design. We plan to use this technology in the development of products to be released in 2016 and beyond.

NEO-T01 Next-Generation Tire Manufacturing System

Since 2012, we have been applying NEO-T01, an innovative tire manufacturing system focused on achieving the ultimate in precision, to the development of superior next-generation tires. Our runflat tires manufactured using this system are attracting growing attention for their potential to contribute to driving safety as well as resource conservation and weight reduction as they eliminate need for spare tires.



Runflat tires

SP SPORT
MAXX 050 NEO



AZENIS
FK453
RUNFLAT



Promoting the Effective Utilization of Natural Resources

Developing Alternative Sources of Natural Rubber

Currently, Asian countries account for 90% of worldwide natural rubber production. The geographical distribution of these producers and potential impact of transportation and other operations on the environment pose a number of challenges the Group must address as it strives to expand its global tire production

network. In response, we have turned our attention to the Russian dandelion, initiating joint research on this plant with Kultevat, a U.S. venture company boasting biomass technologies, as it can be cultivated in a range of regions throughout the world and is expected to help us secure a stable new source of tire material.



Realizing Greater Functionality by Utilizing Naturally Derived Materials

Creating Biomass Materials with Superior Functions

In 2015, the Group's R&D efforts centered on biomass material technologies led to the successful creation of a plant-based softener that enhances the resilience of rubber materials. When mixed with rubber, this softener forms molecular-level linkages with the rubber,

resulting in a material that conforms to its initial performance parameters for a longer period of time. Efforts are now under way to release products incorporating this softener by the end of 2016.



Next-Generation Tire Technologies

Airless Tire Technology GYROBLADE

This technology produces a tire that meets basic performance requirements* but has no need to be filled with air. GYROBLADE consists of a tire tread affixed to the circumference of a tire body that is composed of a metallic wheel surrounded by special resin spokes. Tires using this technology are immune to flats and can be used without worrying about maintaining optimal air pressure. GYROBLADE thus greatly decreases the vehicle repair workload while reducing the environmental burden by eliminating the need for spare tires.

* (1) Supporting vehicle weight; (2) Transferring driving and braking power to the road; (3) Absorbing and dampening shock; and (4) Changing or maintaining vehicle direction



GYROBLADE



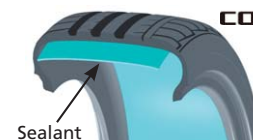
Sealant Tire Technology CORESEAL

A sealant with high adhesiveness and viscosity designed to be applied to the lining of a tire tread, CORESEAL prevents air leakage from a tire when the tread is punctured* through its entire thickness. This technology helps improve driving safety in circumstances where tires may otherwise go flat due to contact with stabbing objects while facilitating resource conservation, weight reduction and greater freedom in vehicle design by eliminating the need for spare tires.

* Prevents air leakage when a tire tread has been punctured by a nail or other foreign object of up to 5mm in diameter, regardless of whether the object remains lodged in the tread or has fallen out



CORESEAL



Sealant