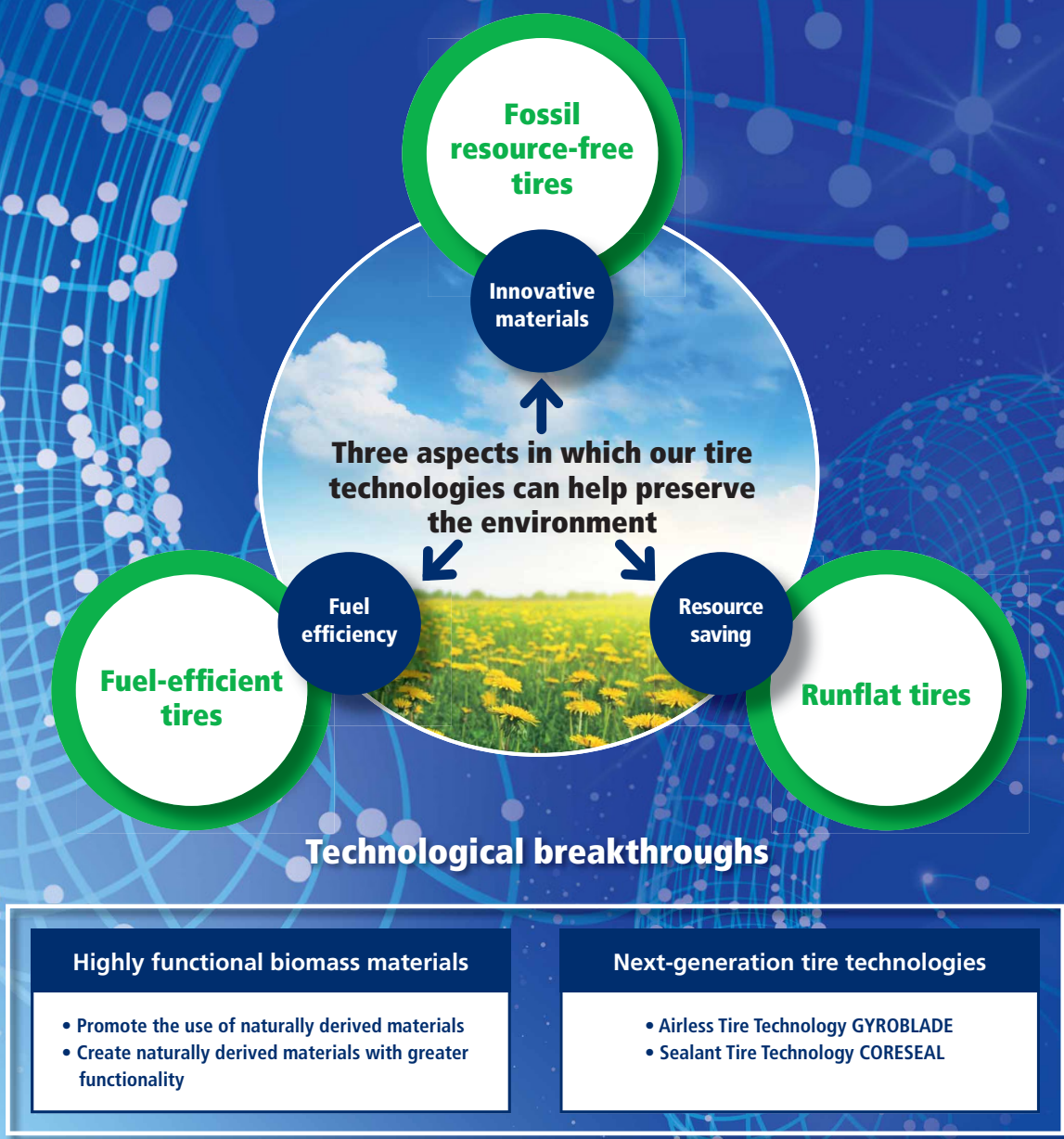


Creating Innovative Tires to Contribute to Sound Social Development

With an eye to achieving VISION 2020—the Group's long-term vision that sets targets for fiscal 2020—the Sumitomo Rubber Group is pushing forward with the expansion of sales of such high-value-added products as fuel-efficient tires, rallying all its strengths to secure business growth and greater earnings capabilities.

At the same time, we aim to benefit the global environment through the advancement of tire technologies. In this regard, we believe that our product development strengths lie in three areas: innovative materials, fuel efficiency and resource saving. Accordingly, our efforts to create environment-friendly tire technologies are centered on three key product categories: fossil resource-free tires, fuel-efficient tires and runflat tires.

In addition to these initiatives, we are striving to achieve technological breakthroughs related to highly functional biomass materials obtained from natural sources as well as next-generation tire technologies that will enhance driving safety and promote resource and energy conservation. In short, we are actively developing products that will boast superior value by leveraging proprietary Sumitomo Rubber Industries technologies.



Fossil resource-free tire

100% Fossil Resource-Free Tires ENASAVE 100

Since 2001, the Group has been engaged in the development of fossil resource-free tires, in other words, products made using no oil, coal or other fossil resources. In 2013, the Group launched ENASAVE 100, the world's first* 100% fossil resource-free tire. The ENASAVE 100 was developed through the application of our R&D accomplishments in the area of naturally derived materials, reflecting improvements in the quality of raw materials and the creation of a totally new material. Composed of only naturally derived materials, it boasts enhanced fuel efficiency, wet grip performance and driving comfort as well as improvements in other basic performance requirements. In short, ENASAVE 100 is the embodiment of our efforts to reduce our environmental burden through the pursuit of innovative materials, fuel efficiency and resource-saving technologies.

* Since the use of synthetic rubber became the industry standard (based on Sumitomo Rubber Industries' own research).

Innovative materials
Use of biomass materials

Fuel efficiency
Ranked "AA" in Japan's official tire labeling system

Resource saving
A 19%* improvement in anti-wear performance
*Comparison with ENASAVE 97

Reducing the environmental burden in multiple ways



ENASAVE 100



Fuel-Efficient Tires

Enhancing Three, Often Contradictory, Performance Requirements

In 2015, the Sumitomo Rubber Group successfully completed the development of its proprietary ADVANCED 4D NANO DESIGN material development technology, which enables the precise control and simultaneous enhancement of the three, often contradictory, tire performance requirements—fuel efficiency, wet grip performance and wear resistance—through in-depth analysis and the seamless simulation of the structure of natural rubber on scales that range from the micron to the nanometer levels.

Drawing on this technology, we were able to develop and commercialize the ENASAVE NEXT II, which boasts a 51% improvement in anti-wear performance compared with the preceding ENASAVE NEXT and, like its predecessor, has been awarded the coveted "AAA-a" ranking—the highest possible—under Japan's tire labeling system. The new tire was released in November 2016 as a flagship fuel-efficient tire under the Dunlop brand. Furthermore, we released the LE MANS V, which boasts remarkably enhanced driving comfort and quietness in addition to a 27% improvement in resistance against uneven abrasion compared with the previous model LE MANS 4, under the Dunlop brand in February 2017.



エナセーブ NEXT II

ENASAVE NEXT II



LE MANS V



51 sizes



10 sizes



The ADVANCED 4D NANO DESIGN material development technology was granted the Tire Technology of the Year title at the Tire Technology Expo 2017 held in Europe. It was also chosen by the Minister of Education, Culture, Sports, Science and Technology to receive a Prize for Science and Technology under the 2017 Commendation for Science and Technology. These recognitions attest to the solid reputation that our technology enjoys in Japan and overseas.



Ensuring Driving Safety while Saving Resources and Energy

In general, runflat tires are designed to remain functional at a speed of up to 80km/hour for a distance of up to 80km even if they are rendered completely flat. Not only do runflat tires help improve driving safety by not blowing out violently, they eliminate the need for a vehicle to carry a spare tire, thereby contributing to resource and energy conservation. In line with our aim to promote resource-saving tire products, we are focusing on the NEO-T01, a proprietary, innovative tire manufacturing system that has enabled the creation of runflat tires that boast a competitive edge in multiple areas, including safety, comfort and weight. Among the system's tires are the SP SPORT MAXX 050 NEO sold in Japan under the Dunlop brand as well as the AZENIS FK453 RUNFLAT sold in Japan and Europe under the Falken brand.

Compared with tires produced using conventional manufacturing systems, tires produced using the NEO-T01 feature better high-speed uniformity, lighter weight and lower deformation during high-speed driving.



NEO-T01



DUNLOP
**SP SPORT
MAXX 050 NEO**



FALKEN
**AZENIS
FK453
RUNFLAT**

Highly Functional Biomass Materials

Promote the Use of
Naturally Derived
Materials

Developing New Natural Rubber Sources

Currently, Asian countries account for 90% of the world's 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. In response, the Group turned its attention to the Russian dandelion and initiated research on this plant, which can be cultivated in a range of regions throughout the world. The use of Russian dandelion as a source of natural rubber is expected to help the Group optimize its supply system and produce tires with superior performance and eco friendliness.

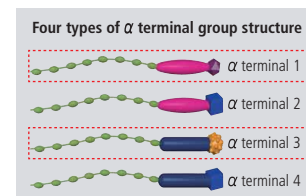


A Russian dandelion

Create Naturally
Derived Materials
with Greater
Functionality

Analysis of the Terminal Group of Natural Rubber Molecular

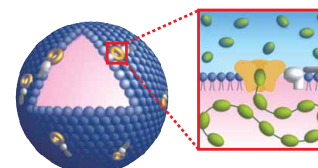
With regard to natural rubber extracted from Para rubber trees, we have successfully analyzed the structure of the molecule and its terminal group, to this end employing high-performance analyzers that support a proprietary Sumitomo Rubber Industries method. Having uncovered previously unknown details of such structure, our findings are expected to lead to the development of superior natural rubber materials that enhance tires' fuel efficiency and anti-wear performance and are easier to process.



Molecular-level analysis of the terminal group structure of natural rubber

Research on the Biosynthesis Mechanisms of Natural Rubber

We have identified three distinct proteins that play key roles in the biosynthesis of natural rubber in a Para rubber tree. Looking ahead, we will apply these research results in such areas as the selection of rubber tree species with greater yields and the search for non-plant sources of substances found in natural rubber.



Artist's rendering of natural rubber synthesis mechanism

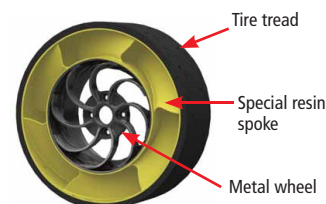
Eliminating the Need for Spare Tires



GYROBLADE

This technology produces a tire that meets basic performance requirements* but has no need to be filled with air. Because there is no need to maintain an optimal air pressure, such a tire is immune to flats. GYROBLADE thus greatly decreases the vehicle repair workload while reducing the environmental burden by eliminating the need to carry spare tires.

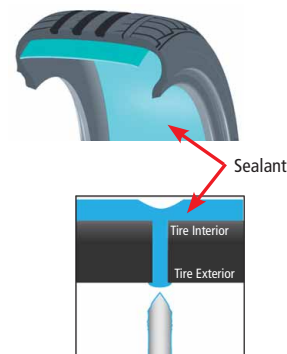
*(1) Supporting vehicle weight; (2) Transferring driving and braking power to the road; (3) Absorbing and dampening shock; and (4) Changing or maintaining vehicle direction



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. By immediately sealing the puncture, this technology helps tires retain sufficient air pressure even in circumstances where tires may otherwise go flat due to contact with stabbing objects.

*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 falls out



Prevents air leakage by immediately sealing a puncture when the stabbing object falls away from the tire