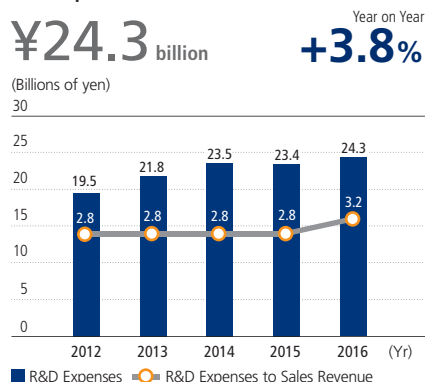


R&D Activities and Intellectual Property Strategies

Constantly targeting new value creation, the Sumitomo Rubber Group engages proactively in research and development (R&D). In addition to these efforts, the Group preserves the fruits of its research as intellectual property and has established structures to fully capitalize on its intellectual property rights.

R&D Expenses and R&D Expenses to Sales Revenue



R&D Activities

With the Sumitomo Rubber Industries' R&D organization and facilities as its core, the Sumitomo Rubber Group promotes R&D activities in wide-ranging fields—the Tire, Sports, Industrial and Other Product businesses—in close cooperation with its subsidiaries and affiliates around the world.

Total R&D expenses in the fiscal year under review amounted to ¥24.3 billion,

equivalent to 3.2% of consolidated sales revenue.

Tire Business

“What tire technology can do for the global environment”—Guided by this underlying concept, the Group's R&D efforts to create environment-friendly products focus on three things: innovative materials, fuel efficiency and resource conservation, with the Tyre Technical Center, located near the Kobe Head Office, serving as the core facility.

Our latest accomplishments in tire development included the November 2016 release of the ENASAVE NEXT II long-lasting, fuel-efficient tire under the Dunlop brand. The ENASAVE NEXT II is the first product to be created using ADVANCED 4D NANO DESIGN since the establishment of this new material development technology in 2015. In addition, ADVANCED 4D NANO DESIGN was chosen to receive the 28th Society of Rubber Science and Technology, Japan Award in May 2016 and was named Tire Technology of the Year* at the annual Tire Technology Expo held in Europe in February 2017. These recognitions attest to the solid reputation that our technology enjoys in Japan and overseas.

Meanwhile, in the development of biomass materials, we have pushed ahead with our efforts to enhance the functionalities of the naturally derived materials used in the ENASAVE 100, a series of 100% fossil resource-free tires. As a result, we successfully developed a highly functional biomass material that serves as a softener and enhances the resilience of natural rubber. Incorporating this material, we have created the WINTER MAXX 02, which boasts improved performance on icy roads and meets its initial performance parameters for a longer period of time, launching the new tire under the Dunlop brand in August 2016.

Moreover, basic research on aimed at improving the qualities of natural rubber continues. We have identified the mechanism by

which proteins participate in the biosynthesis of natural rubber in a Para rubber tree. We also conducted a successful in-depth analysis of the structure of natural rubber's molecular chain end. These findings are expected to facilitate the production of superior natural rubber that will help enhance the fuel efficiency and anti-wear performance of tires to be developed going forward.

In fiscal 2016, R&D expenses in the Tire business totaled ¥21.0 billion.

* Please see page 14

Sports Business

R&D sections are hard at work at both Dunlop Sports and Cleveland Golf Company Inc. Dunlop Sports pursues the development, evaluation and verification of new technologies and products, employing cutting-edge computer simulations.

For example, we have upgraded our proprietary “Digital Impact” simulation technology, which enables the precise analysis—in increments of a 100 millionth of a second—of what transpires at the moment of the impact when a golf club hits a ball. The upgraded “Digital Impact II” extends this capability to cover the timeframes before and after impact while tapping into the field of human dynamics to reflect such factors as unique way each player addresses the ball. This technology is helping to significantly accelerate the development of new golf balls and clubs.

In golf clubs, we developed and released the NEW XXIO PRIME under the XXIO brand. This club incorporates a “stretch fill” material in its shaft, enhancing the flexibility and strength of club's fore-end and the portion near the grip. With a shaft that is even easier to control and swing, the NEW XXIO PRIME helps players drive balls farther with less effort.

In golf balls, we introduced the SRIXON Z-STAR series under the SRIXON brand. With



Tyre Technical Center

Equipped with state-of-the-art testing and measuring machines, the Tyre Technical Center is the Group's main tire R&D facility.

Coordinated Utilization of Cutting-Edge Research Facilities 「ADVANCED 4D NANO DESIGN」



Our accomplishments in the development of cutting-edge tire products are largely thanks to this proprietary material development technology created through the combined utilization of the three world-class facilities: SPring-8, a large-scale synchrotron radiation facility; the Japan Proton Accelerator Research Complex (J-PARC), which boasts high-intensity proton accelerator facilities; and the K computer.

a core structure optimized for driving shots and incorporating the 338 Speed Dimple Pattern for a powerful-trajectory, the SRIXON Z-STAR enables players to hit longer distances. Moreover, this series boasts superior spin performance even after surface damage from wedge shots is incurred thanks to a high-durability, ultra-thin, super-soft 0.5 mm urethane cover as well as a NEW Spin Skin coating.

In fiscal 2016, R&D expenses in the Sports business totaled ¥1.4 billion.

Industrial and Other Products business

We are actively developing new products aimed at accommodating consumer needs in such fields as vibration control units using high damping rubber, medical rubber parts and precision rubber parts for printers and photocopiers.

In the field of vibration control units, we have been engaged in co-development with Central-NEXCO Technical Marketing Company Limited and Denka Company Limited, thereby commercializing a long-lasting rubber bearing for bridges* that boasts improved ozone resistance.

In fiscal 2016, R&D expenses in the Industrial and Other Products business totaled ¥1.8 billion.

* A rubber part placed between a bridge girder and support column to cancel out the effects of flexure, expansion and contraction on structural integrity

Intellectual Property Strategies Basic Policy

The Sumitomo Rubber Group proactively carries out intellectual property activities that support its businesses. The Group has set forth a basic policy with regard to such activities in accordance with VISION 2020, a long-term vision established in 2012.

Specifically, the Group undertakes intellectual property activities focusing on three

pillars, namely: 1) securing intellectual property rights with regard to such industrial properties as patents, utility models, designs and trademarks; 2) exercising such rights against the infringement of the Group's intellectual properties; and 3) eliminating risk by developing a structure to protect the Group's rights from violation by third parties.

Current Status of Basic Policy Implementation

The current status of the basic policy is as presented below. Thanks to the success of intellectual property training for employees and the introduction of a structure that connects technological development to patent application, Sumitomo Rubber Industries has successfully accumulated an even greater number of patents with significant business potential.

The Group seeks to effectively utilize the intellectual property rights that it has acquired, defending such rights against infringement worldwide. For example, in Europe the Group diligently files litigation against infringement while in Asia it is strengthening cooperation with national administrative bodies to ensure that products that infringe on the Group's rights, including imitations and copies, are seized by customs or, when possible, their production sites are identified and dealt with. To secure the competitive advantage of its products and earn greater trust, the Sumitomo Rubber Group will constantly reinforce the structure it has built to ensure the protection of its intellectual property rights against such infringement.

Responding to Globalization

In step with the rapid expansion of its overseas operations, the scope of the Sumitomo Rubber Group's intellectual property activities is growing worldwide, encompassing not only Japan but also the United States, Europe and such Asian countries as China as well as

Russia and countries in South America, the Middle East and Africa.

Reflecting this, efforts are now under way to nurture human resources and reinforce our structure for handling intellectual properties. In particular, the Group is providing training sessions not only for Intellectual Property department members but also for employees at every operational base with the aim of upgrading the competencies of the entire workforce. Such action is facilitating the development of a structure that ensures intellectual property activities are carried out smoothly and seamlessly on a Groupwide basis.

To reinforce the intellectual property structure, it is essential to cooperate with such external organizations as legal firms, patent offices, patent agents, research agencies and administrative bodies in Japan and overseas. With the aim of strengthening the connections between the Group and these organizations as well as across-the-board communication, the Sumitomo Rubber Group implements projects that involve internal and external collaborations.

Moreover, the Group renewed its in-house Intellectual Property Management System while reorganizing its relevant departments, with the aim of improving operational efficiencies and ensuring that information is shared globally. Through the renewal and reorganization, the Group established a network that connects all of its operational bases and agencies around the world. These actions also facilitated a switchover from paper-based to paperless operations that utilize a workflow system and database, significantly accelerating the Group's operations with regard to intellectual property rights and enhancing the system's security.

Focusing on the abovementioned three pillars, the Group will promote the more efficient implementation of intellectual property activities encompassing all regions worldwide.



A rolling resistance testing machine



Golf Science Center

With the ability to comprehensively measure, analyze and evaluate golf equipment, our Golf Science Centers boast a wealth of data covering wide-ranging subjects, including the relationships between the golf swing forms of various golfers and such equipment as clubs and balls.