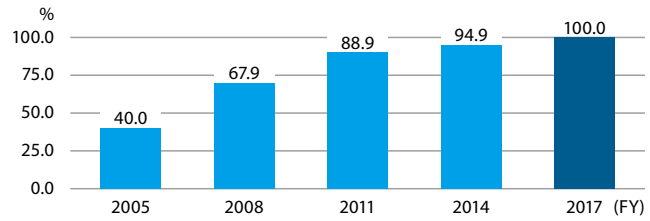
Products

Deliver fun and peace of mind: Environmentally-friendly products

Turning all our products into environmentally-friendly ones

As of the end of fiscal 2017, we achieved our target of increasing the percentage of our products that feature environmentally-friendly technologies to 100%. We worked under our Action Guidelines to turn all of Yokohama Rubber's products into environmentally-friendly product in an aim to reduce our environmental impact from fiscal 2006, which we achieved in fiscal 2017.

[Proportion of environmentally-friendly products among all products]



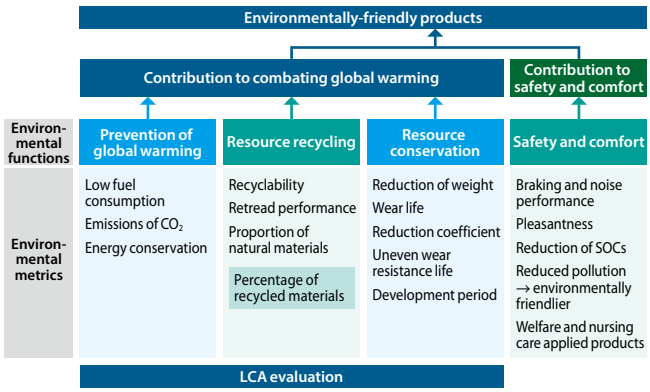
Four criteria for assessing environmental friendliness

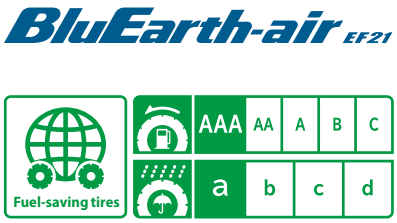
We assess products in reference to our own four environmental criteria from the procurement of raw materials to disposal and recycling: prevention of global warming, resource recycling, resource conservation, and safety and comfort. Our guidelines mandate that all new products achieve an aggregate improvement of at least 5% over existing products and that they at least match existing products in regard to all four criteria. In addition, we have a mechanism that does not allow commercialization if these criteria are not fulfilled.

Development work on new product candidates includes establishing targets, and each candidate undergoes a design review where we determine whether it has attained the targets. No product proceeds to commercialization unless it clears the design review.

An environmental assessment check is incorporated in the review, and product development is only possible if the Environmentally-Friendly Products Regulations are cleared. Safeguarding the environment will remain a core emphasis in product development at Yokohama, and that will include broadening our measures for preventing adverse environmental impact.

[Four environmental functions and environmental metrics]





Development of BluEarth-air EF21: Our Latest Advance in Light-Weight, Fuel-Saving Tires

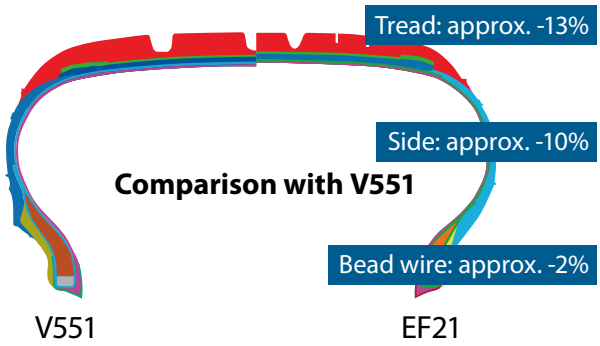
The BluEarth-air EF21 offers new advances in reducing environmental impact. We have achieved those advances by supplementing what was our most fuel-efficient tire with the latest Light-Weight design technology. The BluEarth-air EF21 was a limited-run offering (and has reached the target sales volume).

Reducing tire weight contributes to Fuel-Saving by reducing overall vehicle weight, and it also means a reduction in material consumption, which contributes to reduction in the environmental impact. We achieved a weight reduction of 25% in the BluEarth-air EF21 with design breakthroughs that engender a thinner, more-rigid structure.*1 *2

The BluEarth-air EF21 has earned the highest ratings under Japan's tire-labeling system for Rolling resistance (AAA) and for Wet Grip (a), and it combines Fuel-Saving performance with superior safety.

*1 The reduction in mass is in comparison with the ADVAN dB V551, a Yokohama benchmark for tire mass.
*2 We have submitted data for the tire specifications and performance to Japan's Tire Fair Trade Council.

[Weight-Reducing Tire Concept]



We continue to respond to changing needs by providing safe and high-quality products and services

[Results of initiatives]
Proportion of environmentally-friendly products among all products
100% (FY2017, consolidated)

MEGA Yokohama Floating Pneumatic Rubber Fender

Contributing to safer cargo loading through the development of MEGA Yokohama Floating Pneumatic Rubber Fender

A fender is a cushioning product that fulfills the role of preventing damage to the hull and the quay wall during ship-to-ship operations or when ships are moored.

Yokohama's floating pneumatic fenders are fenders using the power of air as the first fenders in the world developed using rubber materials technologies. These fenders have many benefits including little degradation in performance after repeated use or changes in performance from the impact from crashing or changes in the temperature, and these fenders are widely used as materials for ship-to-ship operations or mooring in a wide variety of fields including oil, mining, fisheries, and offshore drilling. By using the world's largest with a diameter of 6m that was developed by the company in December 2017 for LNG-FPSO (floating production, storage and offloading system) where demand is expected to increase as demand for LNG* rises, it has become possible to maintain a greater distance apart than that with previously existing fenders to increase the safety of offloading operations.

If an accident were to occur on the sea, it could cause immense damage to the environment and marine life. If fenders that do not fulfill quality standards become accidentally damaged, it could also result in damage the hull or the death or injury of a crew member.

These can be folded down to a small size for delivery to the site, as a product that can reduce transportation costs and energy consumption at the same time.

* Liquefied natural gas

Offloading operations between two ships

VOICE Developer of MEGA Yokohama Floating Pneumatic Rubber Fender

Kouko Suzuki
Industrial Products Technical Dept. Group No. 3

This project was started in response to the needs for MEGA Yokohama Floating Pneumatic Rubber Fender along with increase in ultra-large ships so as those used for LNG transport around the world. It was extremely difficult to achieve a good balance when trying to increase the diameter to 6m because pressure resistance tends to worsen if size is prioritized. We were able to clear these challenges by introducing materials and manufacturing methods differing from conventional ones through a process of trial and error. With the cooperation of people from many different departments, we were able to complete fenders that are top-class in terms of size, quality, and performance for the first time in the world.

VOICE Developer of BluEarth-air EF21

Masatoshi Kuriyama
Tire Designing Dept. No.1 Group No.1

The BluEarth-air EF21 is a breakthrough product that has achieved a significant weight reduction while maintaining the highest levels for Wet performance, Rolling resistance, and Wear resistance that are inherently conflicting features. Dedicated compounds and the latest rubber mixing technologies have been adopted through engagement between structural design personnel and materials design personnel to achieve something that has not been possible as an extension of tire development up until now. We will leverage the concept of lightness going forward as we continue to aim for low-price tire products that are high quality, long life, and environmentally-friendly.

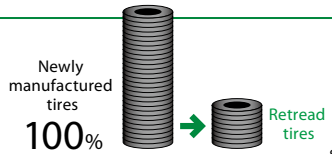
Products

Deliver fun and peace of mind: 3R promotion initiatives

Retread
Retread Tire for TRUCK & BUS

Retread tires

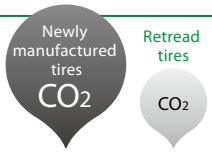
Manufacturing with only 32% of oil resources used in newly manufactured tires is possible.



68% savings

Source: Japan Retreaders' Association

A reduction in CO_2 emissions by approximately 60% during tire manufacturing and disposal can be achieved compared to newly manufactured tires.



Approximately 60% savings

Source: Calculated based on "Life Cycle Inventory Analysis for Tire" released by the Japan Rubber Manufacturers Association

3R promotion: Retread tires initiatives

Yokohama Tire Retread (YTR) is engaged in the manufacturing and sales of retread tires. Retread tires are tires that have been reused through replacement of tread rubber that has worn out to restore function as a tire. People have a high level of recognition and understanding of retread tires in Western countries, and the ratio of retread tire sales to the total sales of tires including new tires is at least 40%. However, in Japan, this ratio is currently less than 20%. They are mainly used as tires for trucks, buses, trailers, and dump trucks. YTR will strengthen cooperation with the related companies in the Yokohama Rubber Group and aim for the further spread of retread tires.

In light of the characteristics to the left, these retread tires offer strong environmental conservation effects from the perspective of the 3Rs (reduce, reuse, and recycle).

In terms of the production method, so-called "Remold method" is used in which a tire with unvulcanized* ribbon shape rubbers wrapped to a tire casing is vulcanized in a mold. Feature of this method is high quality of appearance and suitable for mass production.

Another benefit is possible to apply tread design similar to new products. From year 2018, we also release wide-based tires (two tires replace to one of wide tire) for trailers and tanker trucks, and this has resulted in further contributions to the reduction of environmental impact.

* Vulcanization: Process in rubber raw materials are heated after sulfur or other materials in order to strongly bond the rubber molecules and improve the properties of the rubber in terms of elasticity and strength.

Characteristics of retread tires

Low environmental impact: The environmental impact is lower because of approximately 32% of the petroleum resources (mass ratio, calculated by National Council on Retread Tires) required for production and approximately 40% of the CO_2 emissions during manufacturing compared to new tires.
Excellent economic efficiency: Because new truck and bus tires are basically designed while consideration to durability including retread usage, retread leads to total cost reductions.
Ensures sufficient quality, performance, and service: YTR is subject to regular quality inspections and quality evaluations by Yokohama Rubber, and after-sales service equivalent to that for new products is provided.

Vehicle wearing wide-based tires Size: 385/65R22.5 Yokohama MY507A

We preserve limited resources for the future

[Results of initiatives]
Ratio of recycled materials in products

2.3% (FY2017, consolidated)

Achievement rate of total zero-emissions for wastes

100% (FY2017, consolidated)

VOICE

Retread tire production sites that are also addressing resource issues through quality oriented manufacturing

Yokohama Tire Retread (YTR)
Right: Osamu Takahashi, Senior Managing Officer and Head of Saitama Office (at the time)
Left: Ryu Takahashi, Manufacturing Section Manager

Osamu Takahashi: We believe that demand will continue to grow for wide-based retread tires. Because the voice to develop this tire is getting larger. So we have prepared several new equipment for manufacturing this size. The entire YTR Saitama is working to manufacture this product to comply customers' requests.

Ryu Takahashi: Because the Saitama Office became the first of YTR's four offices in Hokkaido, Saitama, Nagoya, and Onomichi to manufacture wide-based tires, I feel both very honored along with a feeling of responsibility. We intend to make high-quality retread tires and contribute to resource issues.

Wide-based size retread tires subject to rigorous evaluation by Yokohama Rubber after the prototype was made at the Saitama Office

TOPIC

Received Award for Resources Recirculation Technologies and Systems for reduction activities in the manufacturing process

The Ibaraki Plant received the FY2017 Award for Resources Recirculation Technologies and Systems* for effort to reduce rubber mold materials in the hose manufacturing process. Rubber mold materials cover the outer surface rubber when a hose is manufactured, and they can be used repeatedly for about 30 times by peeling off from a vulcanized hose, grinding, melting, and molding. However, an issue faced is that the amount of materials recovered decreases as the recycling process is repeated. We have made significant improvements to this process through two initiatives.

a) We have suppressed the occurrence of fine powder by making the screen mesh of the grinder larger and making the holding time in machinery shorter
b) By using a conveyor belt instead of air transport, fine powder can be used as materials for the next mold without falling in the dust collector

	Grinder screen mesh	Effect from a) Pellet → Reuse	Effect from b) Fine powder	
				
			Reuse	Dust collector, etc.
Before improvement	Ø12	70%	0%	30%
After improvement	Ø20	85%	5%	10%

Ø (phi): represents the diameter

As a result of these efforts, we have improved the materials recovery rate after use 30 times from 70% to 90%, and reduced the annual usage amount of rubber mold materials by 3.6 tons.

* Awards provided to promote excellent business and initiatives that contribute to the suppression of the occurrence of waste, reuse, and recycling. (Sponsored by: Japan Environmental Management Association for Industry)

Products

Deliver fun and peace of mind: Initiatives to improve quality and reliability


Work examination


Written examination

Service Skills Contest National Championship

The Yokohama Tire Sales Group including Yokohama Tire Japan holds a Service Skills Contest for personnel at commercial tire directly-managed stores once a year for the purpose of ensuring that the same high-level of tire service is offered at all locations throughout Japan.

For the third such contest in fiscal 2017, the written examination was held at a hotel in Yokohama, Kanagawa Prefecture in September. On the day following the written examination, a skills test was held at the Honmoku Branch of Yokohama Tire Network Service Shutoken.

The qualifying round was participated in by one representative from 150 commercial tire directly-managed stores in eight different blocks for all of Japan. 13 participants who were able to survive the intense competition in the qualifying rounds then advanced to the final round.

The contest was judged based on safety, accuracy, and efficiency for the three items of a written examination, work, and customer service. The written examination consists of 30 questions relating to knowledge on standard work and major products to be answered within 50 minutes. There are two types of skills tests, one in which the front tires for a truck or bus have to be changed in 25 minutes and one consisting of customer service including a tire inspection to be completed in 15 minutes. The participants competed based on the knowledge, skills, and services that had been developed through day-to-day work.

This contest also served as an opportunity for announcements aimed at rolling out these efforts throughout the entire Yokohama Rubber Group, and Yokohama Club Network contract owner stores in the network of retail stores that mainly consisting of Yokohama Tire participated as judges. In addition to safe and secure work that had been a theme of the first two contests, efficiency was added as an important judgment point by setting a time limit for skills this time to see how fast participants could work while doing other tasks. In the customer service examination, we focused on how participants properly communicated with customers on the details of the check through means such as putting a scar on a tire brought in by a customer and politely telling the customer how the tire could no longer be used or purposely setting a trap that could lead to a tire falling off by loosening a nut or space tire to check whether a thorough safety check is conducted as a professional.

As a result of rigorous screening by the judges, the top three participants were decided on as winners. The winners will serve as instructors for service training, etc. in the regional area they are responsible for.

These efforts are used to communicate advanced skills to all of Yokohama Rubber's commercial tire service personnel to encourage safe, accurate, and efficient work. We would like to expand participation to contract owner stores in the future.

Contest participants

We have established a quality assurance system through all product processes

[Results of initiatives]
Number of newly certified tire service engineers
Domestic: 6 employees, overseas: 28 employees

Number of tire complaint judgment delegates
Domestic: 27 employees, overseas: 1 employee

(Number of product safety employees with qualifications FY2017, consolidated)

VOICE **Winner of the contest**

Osamu Mikami
Receiving award certificate from Member of the Board and Managing Officer, President of Tire Business and Head of Japan Replacement Tire Sales & Marketing Division (at the time)

Takafumi Omoda
Yokohama Tire Network Service Chugoku Tire Center Kure Branch (left)

Normally, I am mostly involved in removing and refitting tires for passenger vehicles and tires for trucks and buses.

In preparation for participation in the contest, I basically used the standard work manual for replacing tires for large trucks as a reference point for constant repeated practice for book study and thinking about the response when a customer comes to the branch, the work procedure, and how to allocate time while receiving instructions from my seniors in-house. Although I felt quite nervous, I approached the contest with the intent of adhering to the basics. I think I was able to come in first place thanks to this approach.

When seeing the certificate and plaque displayed in our branch since I won the contest, customers now tell me that they feel reassured with letting us do their tire replacement work, and I think that customers feel even more reassured towards our work than up until now.

Although I had not been able to see how people did this work in other regions up until now, by looking at the DVD that was recorded during the contest, I have been able to learn about unique work tool innovations or efficient approaches used by some branches.

Our branch will try to innovate while incorporating the good points from other branches as we encourage each other through friendly competition.

TOPIC

Learning about Sustainable Development Goals (SDGs) (Workshops for business partners)

We purchase wide variety of raw materials to make various kind of products and materials that are used in our plants. These materials are provided by various business partners. We have seven plants throughout Japan, and each of these plants has developed in cooperation with companies engaged in business in the respective region.

We hold workshops together with business partners aiming to sustainable procurement of raw materials and other materials to ensure stable production. In these workshops, we learned about compliance and harmony with nature (biodiversity) in fiscal 2016 and SDGs, resource recycling, and health and safety in fiscal 2017. In addition to getting better understanding CSR, we believe that we can minimize management risks through supply chain and create win-win relationships that are mutually beneficial. At the workshop, we ask some requirements to our suppliers related to CSR and cultivate a common understanding regarding CSR.

364 people from 330 companies have participated to the workshop in fiscal 2017, and we heard from our suppliers that they thought they have enriched their understanding of CSR by hearing topics and information that they had seldom heard, and they have brought back them to their companies.

Workshop being held