

## RESOURCE CIRCULATION

Mazda promotes initiatives for resource recycling based on the three Rs (reduce, reuse, and recycle) and the circular economy concept over a vehicle's entire life cycle. The Company implements thorough recycling and waste-reduction initiatives in order to ensure that limited resources are used effectively.

### Efforts Regarding Product and Technology Development

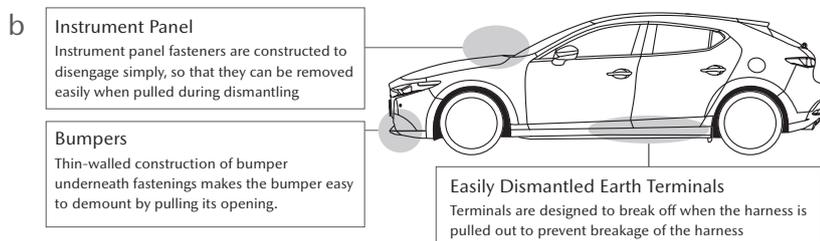
#### Product Development and Design with Consideration for Recycling Needs a b

Many limited resources are used to manufacture vehicles, such as steel, aluminum, plastics and rare metals.

Mazda is incorporating three Rs design into all vehicles currently under development to increase the recyclability of its new vehicles.

<Specific Initiatives>

1. Research into vehicle design and dismantling technologies that simplify dismantling and separation, to make recyclable parts and materials easier to remove
2. Use of easily recyclable plastics, which constitute the majority of ASR\*<sup>1</sup> by weight



#### Expanded Adoption of Biomaterials c d

Mazda has been proactively developing plant-derived biomaterials which have the potential to help reduce environmental impact by curbing the use of fossil fuels and CO<sub>2</sub> emissions. In 2006, the Company became the first in the automotive sector to develop high heat-resistant, high-strength bioplastic for vehicle interior parts. In 2007, Mazda succeeded in the development of the world's first biofabric made with completely plant-derived fibers for vehicle seat covers. In 2014, bio-based engineering plastic,<sup>\*2</sup> suitable also for use in vehicle exterior parts, was developed by the Company, which is currently expanding the adoption of this material.

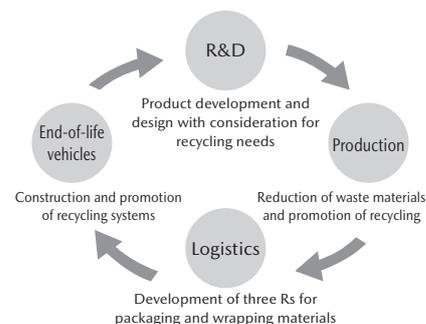
##### Adoption of Bio-based Engineering Plastic

2014: Mazda developed bio-based engineering plastic featuring a high-quality finish without painting. By developing paint-less technology for interior and exterior parts taking advantage of the characteristics of this material, the Company not only secured the excellent environmental performance of the material but also achieved a high-quality finish that could not be achieved with conventional paint, and contributed to environmental protection and production cost reduction by eliminating the painting process.

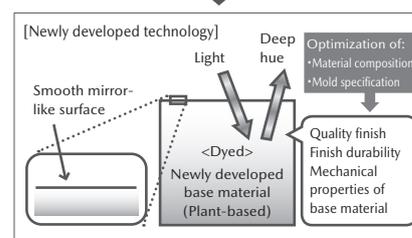
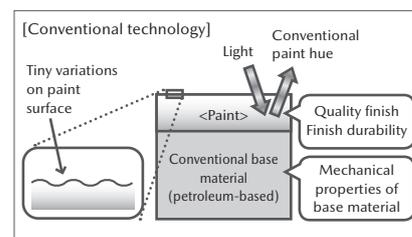
2017: Mazda developed materials suitable for making large, intricately shaped exterior parts, such as front grilles, and optimized the die specifications in order to substantially enhance the formability of these parts. In 2020, the Company received the Award for Science and Technology (Development Category) of the 2020 Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology for the development of the above-mentioned bio-based engineering plastic.

2018: Mazda developed a new technology for two-layer molding of pattern designed bio-based engineering plastic, which enables the molding of a transparent surface layer and a base layer with a pattern-engraved surface, both of which are made of environmentally friendly bio-based engineering plastic. The new technology reduces environmental impact while making it possible to provide elaborated, shaded patterns of deep color, which was previously impossible with conventional technology. In 2021, the Company received the Aoki Katashi Innovation Award from the Japan Society of Polymer Processing for the development of the above-mentioned new technology for two-layer molding of pattern designed bio-based engineering plastic.

#### a Resource recycling based on 3Rs

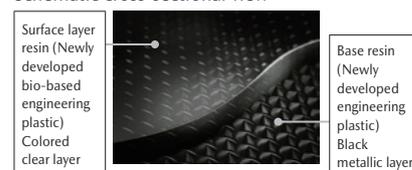


#### c 2014: Development of paint-less technology for interior and exterior parts taking advantage of this material



#### d 2018: New technology for two-layer molding of pattern designed bio-based engineering plastic

Schematic cross-sectional view



\*1 Automobile Shredder Residue  
It refers to the residue remaining after the crushing/shredding of what is left of the vehicle body following the removal of batteries, tires, fluids, and other parts requiring appropriate processing; the removal of engines, bumpers, and other valuable parts; and the separation and recovery of metals.

\*2 Bio-based engineering plastic was developed by Mazda Motor Corporation in collaboration with Mitsubishi Chemical Corporation.

## Efforts Regarding Manufacturing and Logistics

### Manufacturing Materials: Maintaining the Status of Zero Landfill Waste and Promoting the Reduction of Waste

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To reduce landfill waste at its four principal domestic sites\*<sup>1</sup> to zero, Mazda is promoting reductions in the volume of manufacturing by-products and waste, more rigorous sorting of waste, and recycling. As a result, the Company has achieved zero landfill waste, and has maintained this status from FY March 2009 to FY March 2021. The Company has also achieved material recycling, to ensure that packaging materials used in the vehicle assembly process can be reused as raw materials, by more strictly sorting these packaging materials by ingredient and quality. The amount of waste in FY March 2021 was reduced by 86% compared with FY March 1991 levels.

Mazda has been proactively using recycled materials for the plastic pallets used to transport parts overseas. Currently, the Company is planning to use plastic waste generated at its plants as a recycled material for the production of plastic pallets, working to further reduce the amount of waste generated.

### Logistic Materials: Reducing Volume of Packaging and Wrapping Materials

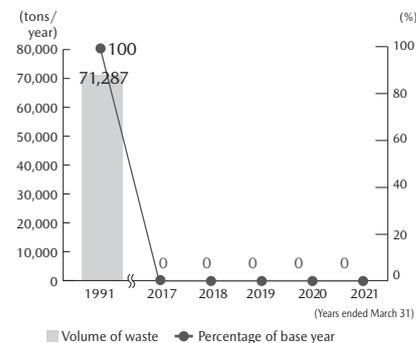
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Mazda is moving forward with efforts centering on the “three Rs of Mazda logistics” to cut down on resources used for packaging and wrapping. The target for packaging and wrapping materials was a reduction in volume of 50.0% or more from FY March 1991 levels; in FY March 2021, a 71%\*<sup>2</sup> reduction was achieved.

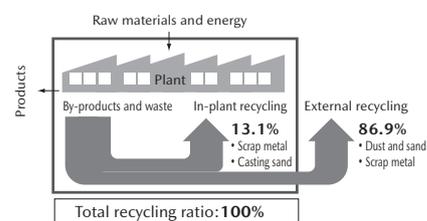
In FY March 2017, departments in the five areas—development, production, procurement (purchasing), logistics and quality—closely worked together to achieve the optimization of parts procurement and vehicle manufacturing, from the stage of product development, and to establish strong cooperation with the supply chain. These efforts resulted in reduced volumes of packaging and wrapping materials, and an increased packaging filling rate. In FY March 2021 as well, these departments worked in close collaboration to improve the packaging filling rate for some parts, and to reduce the volumes of their packaging and wrapping materials. Mazda will continue promoting and expanding these activities that involve efforts in different areas, so as to reduce the consumption of materials. In the area of repair parts for overseas, the Company continues to expand the application of large-size returnable containers, aiming at increasing the container filling rate. By utilizing these containers, Mazda succeeded in reducing the use of packaging and wrapping materials by about 2,200 tons in FY March 2020 and by about 1,900 tons in FY March 2021.

As for parts to be exported to overseas assembly plants, in 2015 the Company started to use the same returnable containers to transport parts from the supplier to the transmission plant in Thailand, where these parts are assembled, so as to eliminate the need for repackaging these parts into cardboard boxes at a distribution center. This method enabled Mazda to cut down around 850 tons of packaging and wrapping materials in FY March 2021. The Company is considering introducing this method at the North America plant in the future. It is expected that this will produce a significant effect in reducing the use of packaging and wrapping materials since the number of parts to be delivered to this U.S. complete vehicle assembly plant will be much larger than that to the transmission plant.

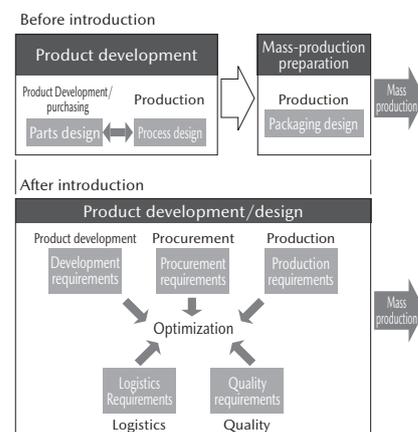
e Changes in the Amount of Landfill Waste



f FY March 2021 Recycling of Manufacturing By-products and Waste in the Manufacturing Areas



g Activities Image



\*1 Head office (Hiroshima); Miyoshi Plant; Hofu Plant, Nishinoura District; Hofu Plant, Nakanoseki District (including non-manufacturing areas such as product development)

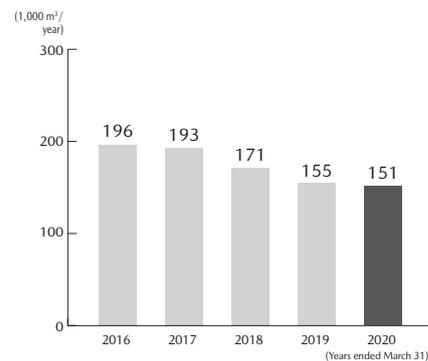
\*2 Forecasted reduction rate compared with measures similar to those performed in FY March 1991.

## Water Resources: Initiatives to Reduce Clean Water Consumption h i

With the exception of its Miyoshi Plant, nearly all the water Mazda uses in production processes at the plants and offices in Japan is water for industrial use. The Company does not use subsurface water, as this may cause ground subsidence. Mazda also makes effective use of water by collecting and storing rainwater for use in the Miyoshi Plant. In FY March 2021, the volume of water used at the Company's four principal domestic sites\*<sup>1</sup> was reduced by 63.7% compared with FY March 2014 levels.

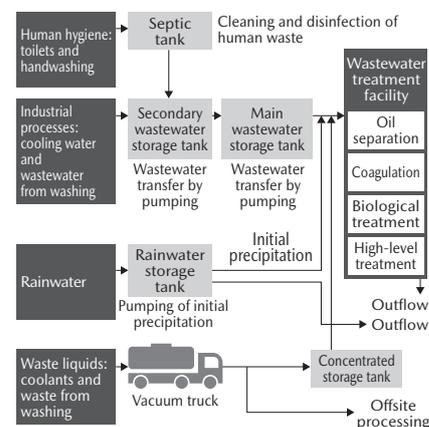
Furthermore, the Company is committed to saving clean water consumption at plants and offices. In FY March 2021, Mazda reduced wasteful water consumption by such means as installing water-saving devices on the faucets in the company cafeteria. The Company also ensures wastewater cleanliness by properly treating water used for industrial processes, human hygiene, and other purposes.

### h Clean Water Consumption at Four Principal Domestic Sites



\* The figures of the amount of clean water consumption at four principal domestic sites in FY March 2021 have been verified by a third party (see p. 134).

### i Overview of Wastewater Treatment System (Hiroshima Plant)



\*<sup>1</sup> Head office (Hiroshima); Miyoshi Plant; Hofu Plant, Nishinoura District; Hofu Plant, Nakanoseki District (including non-manufacturing areas such as product development) However, Mazda Hospital, dormitories and catering facilities are excluded.

## Initiatives for Collection and Recycling of End-of-Life Vehicles (ELVs) and Used Parts

Around 80% of a vehicle can be recycled. Implementing thorough recycling and waste reduction initiatives to ensure that limited resources are used effectively, Mazda promotes efforts to establish a recycling-oriented society.

### Measures in Response to End-of-Life Vehicle Recycling Law in Japan j k l

Mazda properly processes and recycles three designated items (fluorocarbons, airbags, and automobile shredder residue [ASR]<sup>1</sup>) pursuant to the End-of-Life Vehicle Recycling Law in Japan. In addition, the Company is creating unique technologies and measures to move this recycling program forward. In the case of ASR, Mazda is working through ART<sup>2</sup>, a consortium of 13 key companies including Mazda, Nissan Motor Co., Ltd., and Mitsubishi Motors Corporation, to comply with the law and achieve progress in the reuse of resources.

The Company appropriately executes recycling at dealerships. Dealerships collect vehicle recycling fees at the time of sale and receive the ELVs from their final owners in order to transfer them to the disposal processing companies. As for recycling fees, the Company reviewed its fee calculation standard in sequence for new models launched in 2012. The new fee standard is applicable to the Company's new models released after that. While forecasting a future recycling situation, the Company will continue to push forward with its recycling business in such a way to ensure a balance between revenue and expenditures in the medium and long term.

The End-of-Life Vehicle Recycling Law was revised in February 2012, and newly designated lithium-ion batteries and nickel-metal hydride batteries as items for advance collection before dismantling of end-of-life vehicles. Mazda is committed to collecting lithium-ion batteries installed in vehicles launched in and after October 2012 through the LiB Joint Collection System of Japan Auto Recycling Partnership, Ltd. The Company also independently collects nickel-metal hydride batteries installed in the Axela (Mazda3 overseas) Hybrid (launched in November 2013).

Moreover, Mazda promotes the appropriate disposal of capacitors for i-ELOOP, a brake energy regeneration system, in order to ensure safety during recycling by related contractors, even though capacitors are not designated for advance collection. Measures to ensure appropriate disposal include attaching a caution label inside the engine room of the vehicle, and providing a disposal manual on the Company's website.

Reference website (Japanese only) for Mazda's efforts with regard to the End-of-Life Vehicle Recycling Law <https://www.mazda.com/ja/sustainability/legal/recycle/>

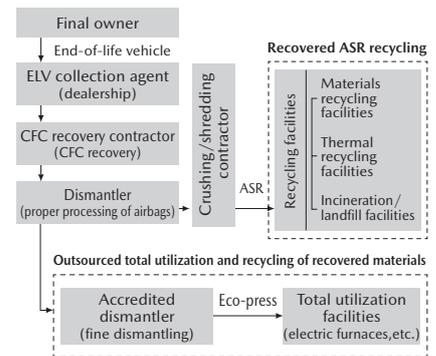
### ASR and the End-of-Life Vehicle Recycling Law in Japan

Disposed vehicles consist of about 80% useful metal and about 20% automotive shredder residue (ASR) that includes resin.

Useful metal is recycled in cooperation with metal recycling-related companies such as dismantlers, crushing/shredding contractors, and steel manufacturers. With regard to ASR, which used to be disposed by landfill, is now subject to the End-of-Life Vehicle Recycling Law, which was enforced in January 2005. This is due to the rise in the risk of illegal dumping of end-of-life vehicles on the back of a surge in disposal costs due to overstrained final landfill sites and weakness in iron scrap prices.

After the enforcement of this law, car manufacturers are required to recycle ASR, chlorofluorocarbons—which lead to global warming and ozone depletion—and airbags—which require specialist knowledge for disposal—under their responsibility, using recycling fees deposited by final owners of the ELVs.

### j End-of-Life Vehicle Recycling Process



### k Resource Recycling Results in FY March 2021

Number of vehicles from which fluorocarbon is collected		127,292 units
Number of vehicles from which airbags are collected		125,020 units
Number of vehicles from which ASR is collected		137,818 units
Recycling ratio	Airbags	95.0%
	ASR	96.4%
Recycling ratio for ELVs*		More than 99%
Total contracting deposits received		1,647,855,677 yen
Total expenses for recycling		1,559,056,285 yen

(Includes separate cost required at Mazda)

\* Recycling ratio for ELVs is the recycling ratio in dismantling/shredder processes of 83% (cited from the May 2003 joint council data), plus the remaining ASR ratio of 17% multiplied by the ASR recycling rate of 96.4%

### Caution labels for capacitors for i-ELOOP

[For the Roadster (MX-5)]



[For models other than the Roadster (MX-5)]



<sup>1</sup> ASR: Automobile Shredder Residue

<sup>2</sup> ART: Automobile shredder residue Recycling promotion Team

## Promoting Recycling of End-of-Life Vehicles Overseas

Mazda is committed to the recycling of end-of-life vehicles overseas in accordance with the laws in each country and region, under the initiative of the local distributors. As for countries in which recycling-related laws are planned to be established, Mazda is preparing to respond in cooperation with the distributors in such countries. To ensure the appropriate disposal of capacitor-equipped vehicles in countries where i-ELOOP equipped new models are introduced, Mazda provides related contractors with information on appropriate disposal by attaching a caution label in vehicles and providing a capacitor disposal manual in nine languages on its website, as in the case of cars sold in Japan.

### Europe

Based on the EU Directive, Mazda Motor Europe provides a dismantling manual to recycling contractors when introducing a new model and has established a network to collect used vehicles from their final owners free of charge, in cooperation with the distributors in each country.

### China

A law was enforced in January 2015, in accordance with which local manufacturers are managing substances with environmental impact and developing dismantling manuals.

#### Capacitor disposal manual reference website

<https://www.mazda.com/en/sustainability/legal/recycle/capacitor>

## Promoting the Collection and Recycling of Used Parts in Japan

Mazda is continuously engaged in the recycling of damaged bumpers replaced for repairs as plastic materials for new vehicle bumpers, etc.

- Recycling of damaged bumpers: Mazda collects bumpers removed for repairs at dealerships throughout Japan, and recycles them for reuse as plastic parts (new vehicle bumpers, undercovers, etc.).

In FY March 2021, the Company collected 46,515 bumpers, which were utilized as recycled materials.

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m Capacitor Disposal Manual

