

Zeon Corporation – Mizushima Plant

Mizushima Plant Profile

Main Products

Isoprene rubbers, thermoplastic elastomers, petroleum resins, synthetic aromas, high-performance resins, RIM molded articles, isoprene monomers, butadiene monomers

Operations commenced in 1969. Mizushima Plant has facilities for extracting butadiene monomer from the C₄ stream* and for extracting isoprene monomer from the C₅ stream*, and produces various products using the C₅ stream.

*C₄ (GBP process), C₅ (GPI process): Hydrocarbon molecules containing four and five carbon atoms, respectively, produced as byproducts of thermal cracking of naphtha.



Aerial view of Mizushima Plant

Plant Policy by the Plant Manager

In line with the Zeon Group's 2030 Vision of becoming “a company that lives up to societal expectations and the aspirations of employees,” everyone at the Mizushima Plant is working together to realize the Plant's Enterprise Blueprint for 2030, which is for us to become a “core plant that refines and hands down the frontline capabilities and technical capabilities that have enabled us to produce world-leading products, while also continuing to make a positive contribution to the global environment and to society.”

This Enterprise Blueprint is based on the following approach: “The Mizushima Plant is a core factory for the Zeon Corporation that will continue to produce world-leading products through comprehensive utilization of the C₅ stream. We believe that, in the future, we can continue to be a plant characterized by safe, stable production by maintaining, refining and handing down to future generations the frontline capabilities and technical capabilities of which we are so proud, including the production skills and ability to respond to challenges displayed by our staff and operatives, who have to handle a wide range of products and a large number of production equipment for different distillation and polymerization processes, while also strengthening our environmental technologies and cost competitiveness, realizing plant management characterized by overall optimal efficiency, and continuing to make a positive contribution to the global environment and to society.”

We will continue working to make the Mizushima Plant a plant that is trusted by the local community and by society as a whole.



Corporate Officer and Mizushima Plant Manager

Makoto Watanabe

Safety Initiatives

Safety Policy

As a world-leading plant in the comprehensive use of C₅ in integrated production from raw materials to finished products, and with a commitment to contributing to society as provided for in Zeon's Sustainability Policy, and to preventing accidents and disasters as provided for in Zeon's Safety Philosophy, we define our safety policy involving production activities for petrochemical products as follows.

1. Safety takes precedence over all else; we implement safety measures, identifying the sources of risk and conducting activities to reduce the risks, and we conduct thorough safety education and training on an ongoing basis.
2. We establish a Safety Management System and are committed to accident and disaster prevention; the Safety Management System is regularly revised and improved to enhance its effectiveness.
3. We comply with safety-related laws and regulations, independently set targets for policy issues, and strive to improve the level of plant safety through activities that involve participation by all employees.
4. We pursue safe and reliable production through production innovations to create a workplace in which employees can work with peace of mind, and which earns the enduring trust of the local community.

Specific Initiatives

- Preventing past incidents and accidents from being forgotten

To keep alive the lessons learned from past incidents and accidents and prevent them from being forgotten, on the anniversary of the incident or accident, an e-mail is sent out that includes an overview of the incident or accident and details of the lessons learned from it

•Four-round risk assessment drills

We hold this training together with affiliate companies to improve employees' sensitivity to and promote higher self-awareness of dangers.

Environmental Impact Reductions

Environmental Policy

As a world-leading plant in the comprehensive use of C₅ in integrated production from raw materials to finished products, and with a commitment to contributing to society as provided for in Zeon's Sustainability Policy, and to preventing accidents and disasters as provided for in Zeon's Safety Philosophy, we define our environmental policy involving production activities for petrochemical products as follows.

1. Based on our company mission as a social institution, we build an Environmental Management System encompassing all of our business activities, and we are committed to conserving the environment both at the local level and on the global scale.
2. We aim to achieve zero emissions and innovative energy savings, including through improvements to manufacturing processes using proprietary technologies and taking proactive environmental measures in new product development.
3. We comply with environment-related laws and regulations, independently set targets for policy management issues, and strive to continuously improve the environment through activities that involve participation by all employees.
4. We pursue safe and reliable production through production innovations to be a plant that earns the enduring trust of the local community.

Scope of Environmental Management System

- (1) Name of registered organization : Mizushima Plant, Zeon Corporation
- (2) Address : 2767-1 Kojima Shionasu Aza Niihama, Kurashiki City, Okayama Prefecture
- (3) Scope of registered activities : Manufacturing of synthetic resins, specialty chemicals, chemicals and synthetic rubbers
- (4) Affiliated companies located in-plant : Okayama Butadiene Co., Ltd. Mizushima Plant
- Scope of activities: Manufacture of butadiene monomer
- (5) Staff : All people who work at or for the plant

Specific Initiatives

1. Reducing emissions of hazardous chemical substances

- We have achieved zero atmospheric emissions of butadiene since FY2002 and continue to take steps to reduce our emissions of volatile organic compounds.

2. Reducing industrial waste

- Final landfill disposal target: 5 tons or less
- We are reducing the amount of waste we generate, reusing beverage bottles, and recycling plastics as solid fuels.

3. Conserving resources and energy

- Reducing CO₂ emissions
- Process stabilization
- Inspecting steam traps throughout the plant
- Improving unsatisfactory areas
- Effective utilization of the energy from waste heat

4. Reducing impacts on water quality

- Strengthened management of treatment conditions (installed measurement devices in the wastewater treatment system)

5. Environmental data * "0" indicates less than 0.5 tons, and "0.0" indicates less than 0.05 tons

Mizushima Plant		FY2017	FY2018	FY2019	FY2020	FY2021
Hazardous substances	Butadiene consumption (tons)	106,970	122,217	93,100	126,197	66,957
	Butadiene emissions (tons)	0.0	0.0	0.0	0.0	0.0
Substances subject to the PRTR Act	Consumption (tons)	428,684	485,100	389,200	489,132	355,001
	Emissions (tons)	4.4	4.4	3.8	5.8	4.3
Industrial waste	Amount generated before compacting (tons)	45,177	56,927	51,569	66,920	56,929
	Amount generated after compacting (tons)	5,869	5,974	6,743	8,225	8,122
	Amount sent to landfills (tons)	1.9	0.0	3.2	0.0	3.1
Atmospheric emissions	CO ₂ emissions (tons) Standards on the promotion of energy-saving/global warming countermeasures	259,000	255,800	204,537	203,846	187,134
	CO ₂ emissions (tons) Scope 1	395,336	458,867	391,727	469,150	392,767
	CO ₂ emissions (tons) Scope 2	12,264	5,030	11,760	12,702	10,490
	CO ₂ emissions (tons) Scope 1+2	407,600	463,898	403,487	481,852	403,257
	SO _x emissions (tons)	0.1	0.4	3.8	0.0	1.2
	NO _x emissions (tons)	60	73	34	57	38
	Soot emissions (tons)	0.0	0.0	0.0	0.0	0.0
Water resource consumption (1,000 m ³) (industrial water + groundwater + waterworks)		2,250	2,629	2,461	2,706	2,502
Wastewater	Total wastewater discharge (1,000 m ³)	2,088	2,335	2,237	2,491	2,266
	COD emissions (tons)	13	12	13	14	13
	Total phosphorus discharge (tons)	0.5	0.5	0.6	0.6	0.5
	Total nitrogen discharge (tons)	12	9	8	8	11
Energy	Consumption (crude oil equivalent, kL)	96,576	95,830	102,181	107,404	95,562
	Unit consumption index (FY1990 = 100)	46%	39%	50%	43%	45%
Production equivalent (tons)		907,200	1,052,001	874,435	1,074,436	904,888

Relationship with Employees

Policy

Actively respond to each individual employee's willingness to "Let's try first," "Let's connect," and "Let's polish up," as well as their desire to take on challenges.

Specific Initiatives

•At the Mizushima Plant's Monozukuri Training Center, we implement the basic training (covering equipment operation, safety, quality, and the various different types of production equipment) needed so that low-level operatives can contribute to the stability and safety of the plant, as well as talent cultivation (including guidance on the attitude expected from a mature adult), for employees in their first to third years of employment.

- We are rolling out a human talent cultivation system that involves the appointment of several personnel as being responsible for the training and cultivation of younger employees. Besides providing guidance for younger employees, these personnel also achieve personal growth themselves from the experience of providing guidance.
- An education and training plan is formulated at the level of each individual workplace, and employees are assigned, in a systematic manner, to undergo internal level-specific training and attend external training seminars, etc.
- We provide support for growth, including opportunities for one-on-one dialogues between supervisors and subordinates, to help resolve challenges, offer consultation on career plans, and improve skills necessary for their futures.

Relationship with the Local Community

Thanks to the support of the local community, the Mizushima Plant marked 53 years of operations in July 2022.

The plant has collaborated with local communities and contributed to the development of society and the region, and will continue to do so in the future.

Specific Initiatives

1. Contributing to the community through volunteering

- Beautification activities in the area surrounding the plant (20 people total)



Cleanup volunteer activities

2. Interactions with the local community

- Walking for health: Around 170 family members of employees and local residents attended the Festival
- Autumn Festival: Around 350 family members of employees and local residents attended the festival
- Participate in community events including Bon dancing and making rice cakes
- Participate in Responsible Care Council community dialogue events
- Lecture at Kurashiki Technical High School



Autumn Festival

3. Plant tours

We give plant tours to introduce the plant's production activities and initiatives.

- Okayama Prefectural Kurashiki Technical High School
- Okayama Prefectural Mizushima Technical High School
- Okayama Prefectural Okayama Technical High School
- Okayama Prefectural Kurashiki Minami High School, etc.



Plant tours