

Ube Plant



Address	5253 Okiube, Ube City, Yamaguchi
Number of employees	547 (as of March 31, 2017)
Major items produced	Fluorine-related products, other chemicals
	Acquired ISO 9001 certification (December 1997) Acquired ISO 14001 certification (December 2000) Acquired OHSAS 18001 certification (April 2011)

Message from the General Manager

The Ube Plant started manufacturing soda ash and caustic soda in 1936, and expanded its operations into the manufacturing of chemical fertilizers and organic and inorganic chemical products. In May 2015, we discontinued production of soda ash and related products, which had been our main products since the founding of the company. We have launched new plant facilities for manufacturing products such as HFO-1233zd(E), a foaming agent with a low global warming potential, in addition to our business for fine chemicals including active pharmaceutical ingredients and high-purity fluoride gas. Going forward, we will continue providing environmentally friendly products.

The plant's green spaces have been furnished with rows of cherry trees, and in spring, local residents are able to enjoy the beautiful blossoms and the natural environment that exists in harmony with us. We will continue in our efforts to be a safe and open plant that offers local residents a feeling of security.



Nobuyuki Tokunaga
General Manager
Ube Plant

Regional Activities

- Cleanup activities for city and prefectural roads on our plant-wide 5S Day (once a month)
- Cleanup activities in Tokiwa Park (once a year)
- Cleanup activities in the Ube city area (once a year)
- Cleanup activities around Lake Ono (once a year)
- Protection and cultivation of grasslands at Akiyoshidai (once a year)
- Cleanup activities around Ube Higashi Port (once a year)
- Forest maintenance activities to protect water resources (once a year)
- Road cleaning using road sweepers (every day)

Preparing for Accidents and Disasters

The industrial complexes that dot Japan handle enormous volumes of high-pressure gases and dangerous substances. Ensuring security at these industrial complexes is therefore a very important element in ensuring the safety and security of the nation's citizens.

In recent years, numerous accidents have occurred at industrial complexes, and their incidence is expected to remain high. Considering this, we work regularly to increase our ability to maintain security and prepare for disasters, and to take preventive steps against trouble. On November 8, 2016, around 260 representatives of twelve organizations including the local government participated in drills in the Ube Plant tank yard as comprehensive disaster prevention training for petrochemical and other industrial complexes in Yamaguchi Prefecture.

The land-based portion of the training assumed the oc-

currence of an earthquake centered in the Nankai Trough, with an intensity of five on the Japanese scale in Ube City and damage to many facilities. On the water, in addition to oil recovery, the training assumed the occurrence of a tsunami resulting from the earthquake. Participants confirmed emergency procedures by practicing closing a seawall and evacuating to higher ground.

We will continue working to further strengthen our security management. Our employees and cooperating workplaces are united in their efforts to ensure security so that our plant is safe enough for neighboring residents to enjoy complete peace of mind.



Earthquake disaster-prevention training

PRTR

(Unit: kg/year)

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
33	Asbestos	0	0	0	→	18,000
41	3'-Isopropoxy-2-trifluoromethylbenzaniide(also known as Flutolanil)	0	0	0	→	0
53	Ethylbenzene	2,600	0	0	↔	0
71	Ferric chloride	0	0	0	→	0
80	Xylene	1,500	0	0	↔	2.2
81	Quinoline	0	0	0	→	0
94	Chloroethylene (also known as vinyl chloride)	0	0	0	→	0
149	Carbon tetrachloride	810	0	0	↔	17
213	N,N-Dimethylacetamide	0	0	0	→	7,900
232	N,N-Dimethylformamide	19	0	0	→	3,800
243	Dioxins (Unit: mg-TEQ/year)	0.0001	0.92	0	↔	0
281	Trichloroethylene	5,500	0	0	↔	0
296	1,2,4-Trimethylbenzene	80	0	0	↔	0
349	Phenol	100	180	0	↔	0
374	Hydrogen fluoride and its water-soluble salts	670	0	0	↔	4,100
400	Benzene	76	0	0	↔	1,500
411	Formaldehyde	0	0	0	→	0
438	Methylnaphthalene	48	0	0	↔	0

Quantities emitted, discharged, or transferred are listed for those materials handled in amounts exceeding 1,000 kg in 2016 (except for dioxins)

Kawasaki Plant



Address	10-2 Ukishima-cho, Kawasaki-ku, Kawasaki City, Kanagawa
Number of employees	202 (as of March 31, 2017)
Major items produced	Inorganic chemicals, organic chemicals
	Acquired ISO 14001 certification (May 2007) Acquired ISO 9001 certification (July 2001)

Message from the General Manager

Having transitioned from its electrolytic soda business to the fine chemicals business, the Kawasaki Plant is now equipped to offer a stable supply of a wide range of products. The main products of the plant currently include HFC-245fa (an alternative to CFCs), pharmaceutical intermediates, cleaning gases for semiconductors, and photoresist materials.



Yukinari Hashimoto
General Manager
Kawasaki Plant

We are actively working to manufacture new products that meet customer needs. We have launched mass production of Pattern Keeper™, a water-repelling drying agent that addresses circuit-pattern collapse in semiconductors.

As environmentally friendly products, we are producing HFO-1233zd(E), a foaming agent with a low global warming potential and superior heat-insulating properties, HFO-1233zd(Z), a cleaning agent that also has a low GWP, and next-generation electrolytes for lithium-ion batteries.

Our efforts in conducting environmental activities over many years have been recognized by Kawasaki City. The Kawasaki Plant has been certified as a workplace taking environmental action, as defined in the city's bylaws. Our entire team is united in its efforts to ensure perfect scores for the environment and commitment to safe operations.

Regional Activities

- Roku-Cho-Kai (Regular social gatherings with residents of neighboring areas including Tono Town and the Daishi District)
- Regular cleanups of the roads around the plant
- Regular exchanges of information concerning the environment and safety with employees of neighboring plants in the Kawasaki Industrial Complex
- Participation in joint disaster drills with neighboring businesses in the Ukishima District
- Participation in street-level traffic safety guidance(organized by the Kawasaki Rinko Traffic Safety Association)
- Participation in Tokyo Bay General Survey for Water Environment (Analysis of and report on water quality in Tokyo Bay near plant)
- Activities related to environmental safety conducted to improve the local environment through the Research Society for Environmental Safety Technology in the Kawasaki Industrial Complex

Initiatives for Security and Disaster Prevention

Since the Kawasaki Plant is located in an area where industrial complexes are clustered, as defined in the Act for the Prevention of Disasters at Petrochemical Complexes, etc., we are required to maintain a system for the maintenance of security and prevention of disasters at all times. We boost awareness of security and disaster prevention and keep systems for response to emergencies in place even under normal conditions by conducting plant-wide earthquake disaster-prevention training that assumes the occurrence of earthquake-related leaks and fires, training in evacuation from the plant utilizing the time between operations, and education for members of our plant disaster prevention organization several times a year.

We have also joined the Ukishima Joint Disaster Prevention Association, made up of companies located near Kawasaki's Ukishima district. The association conducts monthly disaster prevention drills in members' facilities, and has a mutual aid system in place in case a member company experiences an emergency as a result of an accident or a natural disaster such as an earthquake, typhoon, etc. Members also regularly exchange information on security and disaster prevention.



Earthquake disaster-prevention training

PRTR

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
81	Quinoline	0	0	0	→	0
94	Chloroethylene (also known as vinyl chloride)	3,000	0.3	0	↘	0
149	Carbon tetrachloride	260	1.1	0	↘	11,000
213	N,N-Dimethylformamide	11	0	0	↘	71,000
243	Dioxins (Unit: mg-TEQ/year)	0.050	0.12	0	↘	0
280	1,1,2-Trichloroethane	0	0.6	0	↘	1,700
300	Toluene	23	0	0	↘	2,200
374	Hydrogen fluoride and its water-soluble salts	0	0	0	↔	8,300
392	n-hexane	0.2	0	0	↘	10,000

Quantities emitted, discharged, or transferred are listed for those materials handled in amounts exceeding 1,000 kg in 2016 (except for dioxins)

The Kawasaki Plant is continuing groundwater purification treatment as a result of contamination by a leak of 1,2-dichloroethane in 1982.

Matsusaka Plant



Address	1521-2 Okuchi-cho, Matsusaka City, Mie
Number of employees	Plant :199 (as of March 31, 2017)
Major items produced	Safety glass for automobiles, architectural and industrial flat glass, fabricated glass, functional glass for electronic equipment
	Acquired ISO 14001 certification (April 2000) Acquired ISO 9001 certification (November 2003) Acquired ISO/TS 16949 certification (June 2004)

Message from the General Manager

The Matsusaka Plant manufactures polished plate glass using the world's only duplex equipment capable of employing a consecutive double-sided polishing method. We also manufacture flat glass such as high-permeability cover glass for photovoltaic cells and processed glass for automotive and industrial applications.

Because the plant consumes a huge amount of energy and resources, we continually work to rigorously implement environmental conservation activities.

In order to conserve energy and power and reduce CO₂ emissions, we are working to reduce loss, introducing equipment that conserves energy in conjunction with large-scale renovations, and pushing ahead with improvements to our operational technologies.

Since 2004, we have maintained zero emissions, but we are working to derive value from our waste (i.e. convert it into products) in order to achieve further reductions.

Each of our employees is continually working to achieve growth and improvement, based on our motto, "The Matsusaka Plant: Everything for the sake of people and the global environment - Looking at the future through glass." We will continue to contribute to our region and work to make our plant safe and happy, never forgetting our sense of gratitude.



Denzo Tokushima
General Manager
Matsusaka Plant

Regional Activities

- Participation in Mie Prefecture Kids' ISO 14000 Program activities
- Participation in cleanup of waste drifting ashore at Toshijima Island, Toba City, organized by the Mie Prefecture Industrial Waste Countermeasures Promotion Council
- Exhibition of Eco-Glass at the Matsusaka Environmental Fair held by the Matsusaka City Environmental Partnership Committee
- Participation in the Matsusaka Street Cleanup organized by Matsusaka City
- Opening of plant grounds to youth sports associations and other organizations free of charge
- Provision of company-owned land to neighboring municipalities as temporary parking areas free of charge
- Inviting local residents to plant's summer festival
- Participation in the Aqua Social Festival in Matsunase, organized by Mie University's Mie Global Environment Center for Education & Research (beach cleanup)
- Participation in voluntary cleanup activities at Matsunase Beach organized by the Matsusaka Taki District Workers' Welfare Council
- Participation in Ecocap (bottle cap collection) activities

Safety Initiative: Danger Simulation Dojo

The Matsusaka Plant carries out danger simulation workshops with the aim of raising the danger sensitivity and safety awareness of each and every employee.

In March of 2015, we opened a "Danger Simulation Dojo" equipped with original devices designed jointly by veteran and junior employees of the Engineering & Technical Section, including a falling glass weight simulation device and a glass cut simulation device. The dojo is used for a variety of educational programs, such as job rotation training and training of new hires including employees of cooperating companies.

In FY2016, we installed an electrical leak simulation device.

This device simulates the current produced during an electrical leak, and gives users firsthand awareness of the safety provided by correct grounding, and the risk of electrocution when grounding is neglected.



Dojo entrance



Electrical leak simulation device

PRTR

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
31	Antimony and its compounds	0	0	0	→	0
132	Cobalt and its compounds	0	0	0	→	0
242	Selenium and its compounds	86	0	0	↘	0
412	Manganese and its compounds	62	0	0	↘	0
438	Methylnaphthalene	22	0	0	↘	0

(Unit: kg/year)

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In 2002, the Matsusaka Plant discovered groundwater containing arsenic and lead attributable to a past production method. It is currently continuing groundwater purification treatment.

Sakai Manufacturing Site Matsusaka Plant



Address	6 Chikko-minamimachi, Sakai-ku, Sakai City, Osaka
Number of employees	Plant : 45 (as of March 31, 2017)
Major items produced	Architectural and residential flat glass, flat glass for electronic equipment, architectural frosted glass
	Acquired ISO 14001 certification (December 1999) Acquired ISO 9001 certification (February 1999)

Message from the General Manager

The Sakai Manufacturing Site is located in the center of the Coastal Industrial Zone in Sakai City, Osaka, and it has been manufacturing flat glass continuously since 1959 as the birthplace of the Central Glass Flat Glass Division. In 1982, we adopted the float process as our manufacturing method and started manufacturing high-grade flat glass.

In 2007, we completed our second round of cold repair work (repairs of the entire manufacturing lines starting from melting furnaces). As part of this process, we conducted improvement work that reduced our CO₂ emissions by 3%, and restarted production in April 2008. In August 2009, we conducted work to improve our float baths, and began manufacturing thin flat glass for use in electronic devices such as smartphones and other mobile terminals.

In May 2012, we completed our installation of spattering equipment that deposits thin metallic membranes on glass surfaces and began manufacturing Eco-Glass, a product that can reduce the cost of cooling and heating buildings.

We are currently improving heat retention and adjusting operating conditions for our glass-melting furnace in order to reduce our fuel consumption.



Keiichi Kon
General Manager
Sakai Manufacturing Site
Matsusaka Plant

Regional Activities

- Participation in the Osaka Bay Cleanup Project
- Participation in comprehensive disaster drills in the Sakai/Senboku coastal area
- Support for a flea market and donation of proceeds to social welfare activities
- Activities to inform the public about fires and first aid at the Sakai Fureai Festival as a member of the Sakai City Disaster Response Committee
- Provision of support for a project conducted by the Osaka Prefectural Seikoukai in Sakai Senboku Port to ensure the safety of ships navigating through the port and protect the environment
- Blood donation drive at the Sakai Manufacturing Site
- Acquisition of proficiency in cardiopulmonary resuscitation technique through emergency lifesaving course offered by Sakai Fire Department (6 employees)

Participation in FY2016 Osaka Bay Cleanup Project

Every year, Central Glass (including Central Glass Plant Services Co., Ltd.) takes part in beautification activities conducted along the Osaka Bay sea walls as part of a campaign organized by Osaka Prefecture to remove trash and ensure the cleanliness of the water in Osaka Bay.

This beautification activity was hosted by the Port and Harbor Bureau of the Osaka Prefectural Government, and co-hosted by Sakai City and the Sakai City Federation of Fisheries Cooperative Joint Associations. In 2016, eleven employees from the Sakai Manufacturing Site took part, with almost 200 participants in total collecting trash from the sea walls.

Looking over the sea walls before starting the cleanup, it seemed that there was less trash than in the past several years. However, once we started cleaning up, it became apparent that there were just as many discarded PET bottles as usual. We realized that our task of picking up a variety of trash was just as vital as ever.

The PET bottles that are so convenient to us in our daily

lives do not just return to nature when discarded. Our participation in this cleanup reminded us of the importance of collecting and recycling them.

The Sakai Manufacturing Site will continue to participate actively in these kinds of activities, with the aim of minimizing the amount of trash littering Osaka Bay.



Cleaning up

PRTR

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	(Unit: kg/year)	
		Atmosphere	Water	Soil		Quantity transferred	
80	Xylene	62	0	0	↔	0	
296	1,2,4-Trimethylbenzene	71	0	0	↔	0	

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