



## Sustainability Report 2022

**Shin-Etsu Chemical Co., Ltd.**

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## Top Message



Our mission is to contribute to sustainable development of the world through our corporate activities. By contributing to solving the issues faced by the irreplaceable earth and humankind, we can achieve sustainable growth of our businesses. We are engaged in wide-ranging sustainability operations around the world. Shin-Etsu Chemical directors, corporate officers and heads of divisions constitute the Sustainability Committee, which plays a central role in launching activities to bring a sustainable society with guidance from outside directors. In FY 2021, the Shin-Etsu Group again achieved record-high profit and successfully took a major step forward in its sustainability activities.

### — Carbon neutrality initiatives

In every economy, it is imperative to maximize efficiency in this day and age, when human beings pursue sustainable growth and prosperity while reducing the burden on the environment. We can play a key role to that end. Established in 1992 at Shin-Etsu Chemical, the G Committee has achieved significant results each year, actively working on streamlining the manufacturing processes, improving productivity, and innovating technologies. Maximizing efficient use of raw materials and energy needed for production, such as electricity, will not only reduce environmental impact but improve our products' international competitiveness. Thus the G Committee has been a significant force underpinning the sustainable growth of our businesses.

Achieving carbon neutrality has already become an irreversible tide worldwide, as a task that does not allow us to go backward. Many of our business is aligned to helping reduce greenhouse gas emissions. In our consolidated sales for FY 2021, 70% were from sales of products in 14 areas designated by the Japanese government as areas in which initiatives are indispensable to achieve carbon neutrality by 2050. We will devise and announce our plans for carbon neutrality, actively exploring and evaluating new technologies along with the activities outlined in this report.

### — Management that always respects human rights

In recent years, corporate initiatives for respecting human rights have become ever more important. In conducting our business, we have not only adhered to the international codes of conduct<sup>1</sup> but also respected human rights at our sites around the world. As part of this approach, we have been promoting human rights due diligence<sup>2</sup> since 2019, by surveying sustainability efforts at all our group companies globally, including the respect for human rights. Since FY 2021, we have been conducting similar surveys focussing on suppliers in our Group as well.

We aim to deepen our human rights approach by linking these survey results to specific actions.

## — Approaches to fair corporate activities, environment and safety

Since 2010, the Group has been a member of the “UN Global Compact” and has carried out initiatives to put into practice its 10 principles that cover four main areas: human rights, labor standards, environment and anti-corruption. In February 2018, we signed on as the first company to do so, to the “Tokyo Principles for Strengthening Anti-Corruption Practices” established by the Global Compact Network Japan<sup>3</sup>. In FY 2021, we checked all our worldwide group companies’ anti-corruption initiatives and completed setting in place necessary measures such as instituting the Anti-Bribery Regulations. Further, in accordance with the Responsible Care<sup>®4</sup> Global Charter, the Group is committed to environmental protection, security and disaster prevention, and occupational safety and health. In FY 2021, a total of 24 business sites, in Japan, conducted their business activities in compliance with the Charter through such means as carrying out audits of environmental and safety management.

## — To achieve SDGs goals

Every single goal of the SDGs<sup>5</sup> is a task that we, living in the 21st century, have a responsibility to address. We believe we can play a significant role in achieving these goals. We have been working on diverse themes, such as connectivity<sup>6</sup>, resource efficiency, improving productivity, smart infrastructures, and promoting health, focusing on new product development, technological innovations, and stable supply of wide-ranging products that will play a part in achieving SDGs goals. Endorsing the Japan for UNHCR (The UN High Commission for Refugees) activities to help refugees, the Group has been extending support every year since 2006 through employee donations. The Group has also been conducting awareness-raising activities to help all Shin-Etsu Group employees deepen their understanding of SDGs.

The mission of the Group lies in providing products that are appreciated for their contribution to the improvement of the quality of life and to the solution of social issues. Our goal is “Shin-Etsu Everywhere.” The Group believes that its role as a vital supplier to support the lives and industries of people around the world is to realize sustainable society through increased use of our products. By ensuring that our products play a role in every place, in every industry and in every end product, we will strive, along with society, to achieve sustainable growth. We would greatly appreciate your continued understanding and support as we move ahead.

I would appreciate it if you could refer to this report for the description of our group’s individual sustainability programs.

June 2022  
President Yasuhiko Saitoh

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<sup>1</sup> International codes of conduct

These include the Universal Declaration of Human Rights, the ILO international labor standards, the UN Guiding Principles on Business and Human Rights, as well as the Ten Principles of the United Nations Global Compact.

<sup>2</sup> Human rights due diligence

Measures to be implemented by companies to identify, prevent and correct the adverse impact on human rights. They include formulating policies on human rights, assessing the impact of corporate activities on human rights, tracking performance and disclosing information.

<sup>3</sup> Global Compact Network Japan (GCNJ)

Global Compact Network Japan (GCNJ) is the local Global Compact network branch that has been set up to actively work as a CSR platform in Japan. It aims to disseminate the United Nations Global Compact's mission and various key principles to management levels within companies and organizations through such means as CSR education designed for people in management, organizing study groups with different themes as well as holding various symposia. As of the end of May 2022, more than 480 Japanese companies / groups are participating in GCNJ.

<sup>4</sup> Responsible Care®

Activities whereby each company that handles chemical materials on a voluntary basis commits itself to improving "health, safety and environmental" performance in all the life-cycle processes from the development of chemical materials through manufacture, distribution, usage, final consumption and disposal up to recycling, and then making public the results of its activities and continuously engaging in dialogue with the local community and the public, while striving to maintain good communication with society. The Group signed and put into practice the "Responsible Care®<sup>3</sup> Global Charter" of the International Council of Chemical Associations (ICCA) in 2006. Furthermore, in 2014, we also signed the revised Responsible Care® Global Charter issued by the ICCA.

<sup>5</sup> SDGs (Sustainable Development Goals)

International Goals for a Sustainable and Better World by 2030, as described in the "2030 Agenda for Sustainable Development" adopted at the UN Summit in September 2015. It consists of 17 goals and 169 targets.

<sup>6</sup> Connectivity

Connectivity means the ease of effortlessly connecting to and using networks.

### Editorial Policy

The Shin-Etsu Group started issuing the "Environmental Report" in 2000. In 2004, the report was renamed the "Environmental and Social Report" after expanding its contents to include corporate social responsibility in general, and in 2016, the report was retitled the "CSR Report" and has been issued without interruption. Furthermore, the Group has renamed "CSR Report" to "Sustainability Report" starting in 2019 since we have begun integrating SDGs into business management, expanding the scope of our business activities to realize a sustainable society.

The Report also serves as a report on our Responsible Care programs<sup>1</sup>.

### Referenced Guidelines

GRI Standards

Ministry of the Environment "Environmental Reporting Guidelines 2018"

Ministry of the Environment "Environmental Accounting Guidelines 2005 Edition"

Global Compact Ten Principles

UN International Bill of Rights (UDHR)

UN Guiding Principles on Business and Human Rights

[> GRI Standards Content Index](#) 

### Period Covered by the Report (indicated where otherwise)

Japan: April 1, 2021 to March 31, 2022

Overseas: January 1, 2021 to December 31, 2021

### Issue information

Issued: June 2022 (Previous issue: June 2021)

Next issue: scheduled for June 2023

### Organizations Covered by the Report

The scope of the reporting organization was changed from Shin-Etsu Chemical and its group companies, including non-consolidated companies, to Shin-Etsu Chemical and 97 consolidated companies, retroactive to fiscal 2018. The range of entities from which data were collected is in principles as stated below. Where otherwise, this is indicated in a separate note.

① Environmental Activity Report

Shin-Etsu Chemical and consolidated companies (domestic:24, overseas:73)

② Environmental Accounting

Shin-Etsu Chemical

③ Other

Shin-Etsu Chemical and consolidated companies, except for the Shin-Etsu Polymer Group<sup>2</sup>

④ A collection of Sustainability data

Shin-Etsu Chemical and consolidated companies

### Cover Photo

The photo on the top page was taken by our employee.

## — Membership

Keidanren (Japan Business Federation)  
Japan Chemical Industry Association  
Vinyl Environmental Council  
Plastic Waste Management Institute  
The International Friendship Exchange Council  
The Japan Committee for UNICEF  
Global Compact Network Japan  
SDGs Promise Japan, etc.

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<sup>1</sup> Responsible Care programs

A campaign encouraging enterprises that handle chemical substances to voluntarily ensure protection of the environment, health and safety in all processes, from the development of chemical substances through manufacture, distribution and utilization to final consumption, disposal or recycling, to publish the results of their activity, and to engage in dialogue and communication with society.

<sup>2</sup> For a report on the Shin-Etsu Polymer Group, see "Shin-Etsu Polymer Sustainability Report 2022" (to be published at the end of September 2022).



# Achieving a Sustainable Society

## Solving social issues through the products

Solving social issues through the products

Reduction of environmental impact in plants

Eco-friendly cars and Shin-Etsu

With the environment

Comfortable living

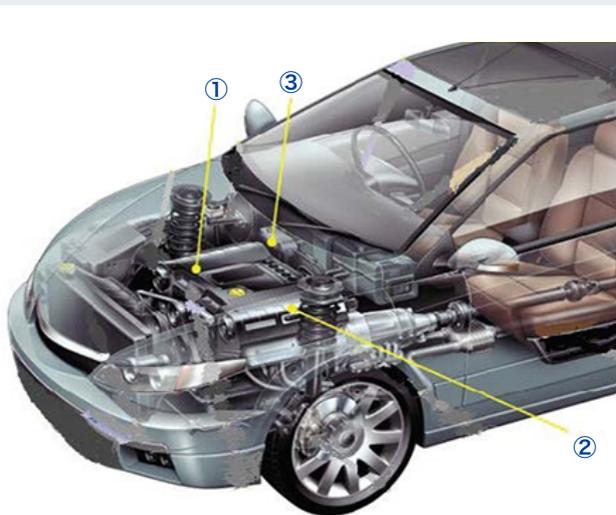


Rare earth magnets, which are characterized by their "strong magnetic force even in small sizes," are used in the Eco-friendly cars such as electric vehicles. Silicon wafers are also an indispensable material for electric vehicles and autonomous driving. The various products of the Shin-Etsu Group support the evolution of mobility.



### Better Mobility - Better means of transportation

#### Shin-Etsu Group's products support Eco-friendly cars



- (1) Drive motors and generators (Neodymium magnets)
  - Smaller and lighter
  - Heat-resistant
  - Reduced overcurrent
- (2) Starters and generators (Neodymium magnets)
  - High-powered
  - Heat-resistant
- (3) Power control units (Silicon wafers, encapsulant materials, and thermal interface materials)
  - Smaller and lighter
  - High sealing performance
  - Heat-dissipating properties

The Company's neodymium magnets<sup>1</sup> are used in drive motors and generators, which are the most important core unit of eco-friendly electric vehicles (EVs) and hybrid vehicles (HVs). The Company's silicon wafers, sealing materials, and heat dissipation materials are also used in power control units for system control.

Compared to gasoline cars, HVs can reduce carbon dioxide emissions by about 40%, while EVs can reduce emissions by 100%.\* In addition, the location of the factory incorporates a carbon-neutral perspective. Our manufacturing bases for neodymium magnets are located in Fukui Prefecture of Japan and Vietnam, and at the plant in Fukui prefecture, 32% of the purchased electricity is renewable energy, and at the plant in Vietnam, 36% is renewable energy. Both of which far exceed the average ratio in Japan. The Company is promoting the stable supply of various products used in eco-friendly cars and the development of new products, and the shipment volume of such products is increasing year by year. The Company's products are making a significant contribution to reducing CO<sub>2</sub> emissions.

<sup>1</sup> Neodymium magnet

A type of rare earth magnet with very strong magnetic force, composed mainly of neodymium, iron, and boron. It contributes to the miniaturization and reduction of energy consumption of motors and other devices with its strong magnetic force.

\* Source: "Contributing to Lower Emissions through the Global Value Chain" by Keidanren (Japan Business Federation)

### ■ Contributions of the Company's neodymium magnet to reducing CO<sub>2</sub> emissions due to its use in eco-friendly car

According to the results of our calculations, the use of our neodymium magnets in eco-friendly cars reduced CO<sub>2</sub> emissions by approximately 1.9 million tons in 2020. Assuming that cars are used for 10 years, this means that we can reduce CO<sub>2</sub> emissions by approximately 19 million tons over the next 10 years. As a result of global carbon neutrality policies, the percentage of eco-friendly cars has risen rapidly, and the penetration rate of EVs worldwide is expected to reach 100% by 2050.<sup>2</sup> Demand for neodymium magnets for eco-friendly cars are expected to continue to grow. The Company will steadily respond to growing demand.

<sup>2</sup> Source: "Energy Technology Perspective 2017" by IEA

### ■ Future issues and challenges

- Neodymium magnets: Promote a stable supply system by expanding production facilities and recycling technologies, and improve the performance of magnets while reducing their size and weight
- Silicon wafers: Stable supply of high-quality silicon wafers that support miniaturization and other requirements
- Encapsulant materials: High sealing performance and insulation properties
- Heat dissipation materials: High heat dissipation properties

## — Our company's initiative

[Shin-Etsu Group and Climate Change](#)



[Shin-Etsu Group and SDGs](#)



# Achieving a Sustainable Society

## Solving social issues through the products

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With the environment

Comfortable living

Shin-Etsu Group's products contribute to the reduction of greenhouse gas emissions in various situations. We will continue to develop products that contribute to carbon neutrality.



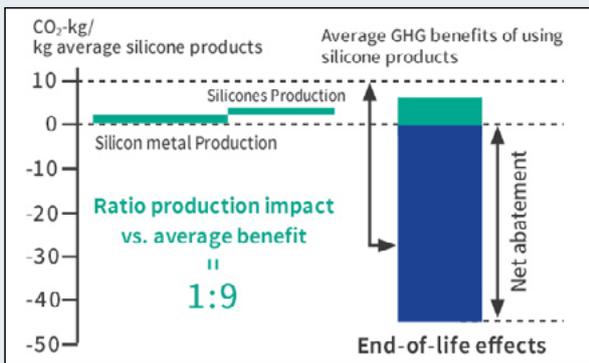
### Better Environment - More eco-friendly products

#### Shin-Etsu Group Products and Technologies that Contribute to Environmental Conservation

Various products of the Shin-Etsu Group contribute to reduction of greenhouse gas emissions, energy saving, and resource saving at the stage of use.

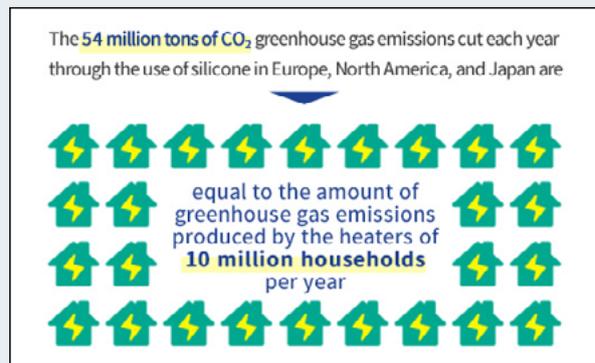
The Group produces over 5,000 silicone products, such as household products, automobiles, construction, and solar cells. While being put to each of their uses, these products are contributing to reductions in greenhouse gas emissions. We, together with other members of the global silicone industry, carried out a study of the entire silicone market, examining silicone greenhouse gas emissions at the phase of production and how much greenhouse gas emissions are curbed by the use of silicone, in comparison to silicone substitutes and alternative methods. The study found that the silicone used as a product has the effect of reducing emissions<sup>1</sup> by 9 times that of greenhouse gases emitted during the manufacturing and disposal of silicones. This is equivalent to a reduction of 54 million CO<sub>2</sub>-tons of greenhouse gases<sup>2</sup> annually. Silicone used in automobiles, construction, and solar cells account for the greatest share of overall silicone greenhouse gas emissions reductions. Silicone is contributing significantly to the improvement of sustainability.

**1 Greenhouse Gas Emission Reduction Effects**

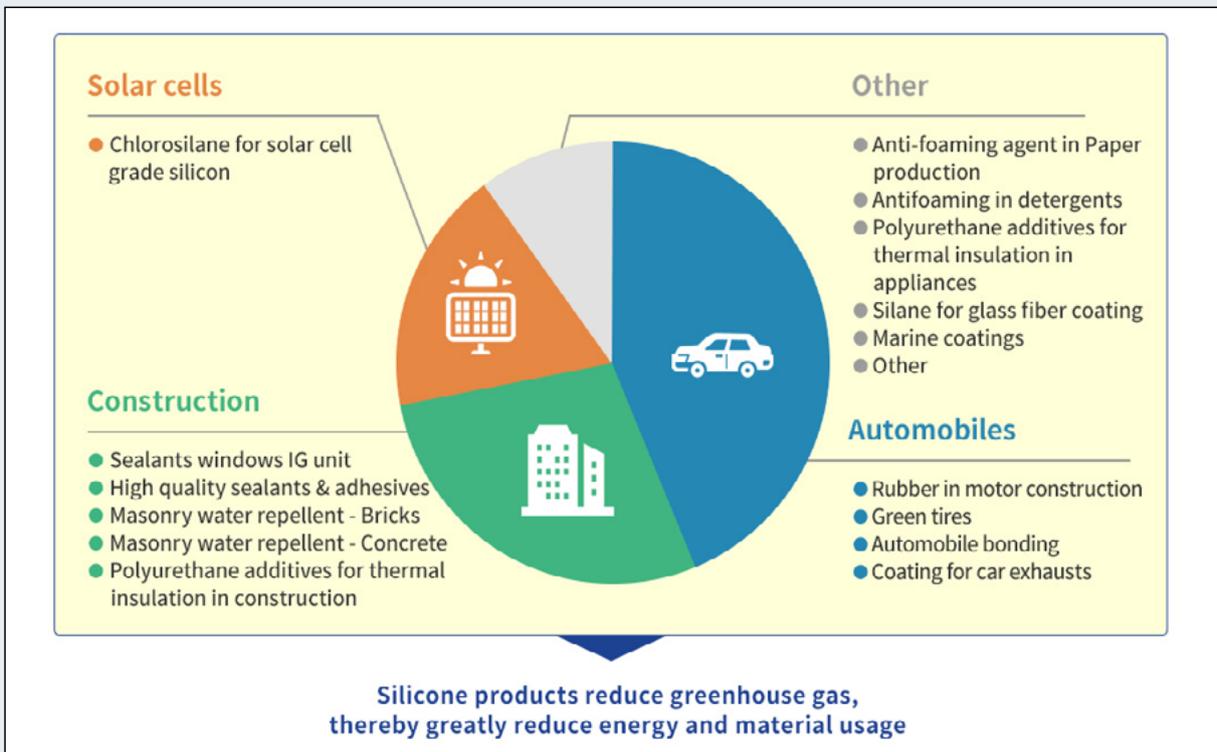


※2012 survey results

**2 Examples of Greenhouse Gas Emission Reductions**



**Fields in Which Silicone Use is Reducing Greenhouse Gas Emissions, and Major Silicone Uses**



Source: Silicone Industry Association of Japan "Silicone-Chemistry Carbon Balance"

> [Global Silicones Council](#)

> [Silicone Industry Association of Japan](#)

## Polyvinyl Chloride

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Approximately 60% of the raw materials used in PVC are salts, which are abundant throughout the world. Compared to other general-purpose resins, the benefits of PVC include a low dependence on petroleum resources, placing a relatively small burden on the environment. The process of manufacturing PVC from raw materials uses around 60% of the energy required to make other general-purpose resins. Highly durable and easy to recycle, PVC is used for a wide range of social infrastructure materials, including vinyl windows, water and sewerage pipes, public works and other construction.

PVC windows have superior insulation properties, and are resistant to fogging, making them mainstays in Europe and North America. Their use is also accelerating in China. In Japan, as well, they are popular in mainly cold regions. Compared to ductile cast-iron pipes<sup>1</sup>, PVC pipes have lower total carbon-dioxide emissions<sup>2</sup> over their lifecycles, contributing to the prevention of global warming.

<sup>1</sup> Ductile cast-iron pipe

Tubes produced by spheroidal graphite cast iron, in which the precipitated graphite shape in the cast iron structure was changed from flaky to spheroidal. Has more than twice the strength and high toughness of the flaky graphite cast iron.

<sup>2</sup> Lifecycle carbon-dioxide emissions

Total carbon dioxide emissions for a product, from the gathering of raw materials, through the production, use, disposal, and recycling stages.

Source : Japan Chemical Industry Association "Lifecycle Analysis of Chemical Products in Japan and around the World", third edition Vinyl Environmental Council website "Living with PVC Windows"

Japan Chemical Industry Association

Vinyl Environmental Council

[> Japan Chemical Industry Association](#)

[> Vinyl Environmental Council](#)

## Rare Earth Magnets

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Rare-earth magnets are roughly 10 times as strong as conventional ferrite magnets, offering a great deal of magnetic force despite their compact size. These properties allow them to contribute to making motors for hybrid and electric vehicles, energy saving air conditioning compressor motors, and the like more compact, lightweight, and high powered.

For example, using rare-earth magnets in air conditioning compressors can improve energy efficiency by 5 to 10%. This cuts overall power usage, helping to reduce carbon-dioxide emissions. Rare-earth magnets are also used in wind power generation motors, contributing to the spread of renewable energy.

[> Shin-Etsu rare-earth magnets](#)

### — Our company's initiative

[Shin-Etsu Group and Climate Change](#)



[Shin-Etsu Group and SDGs](#)



# Achieving a Sustainable Society

## Solving social issues through the products

Solving social issues through the products

Reduction of environmental impact in plants

Eco-friendly cars and Shin-Etsu

With the environment

Comfortable living

Shin-Etsu Chemical Group products such as cellulose derivatives used in pharmaceuticals and food products and synthetic pheromones used to control insect pests contribute to a healthy and secure life.



Many of our products contribute to the realization of a healthy and secure aging society in which all people actively participate. We will continue to play a role as a material manufacturer for a sustainable world by developing, manufacturing, and offering products that meet the needs of society. The following are examples of our products that contribute to a healthy and secure society.

## — Materials that contribute to healthy and secure living

### Polyvinyl chloride resin (PVC)



PVC window frames can reduce the amount of heat lost through the windows compared to aluminum windows.

### Caustic soda



It is used as a raw material for superabsorbent polymers, which is essential as a water absorbent in paper diapers.

### Silicon wafers / Magnet



It is used in automatic braking of automobiles and contributes to accident prevention.

It is used as a motor for various medical equipment such as nursing care support robots, electric wheelchairs, CT, MRI and other inspection equipment, and supports people's health.

### Silicone



It is used as a material for various medical supplies and contributes to the maintenance of people's health.

It is used as a material for various nursing care products and daily necessities, and supports people's comfortable lives.

### Cellulose derivatives

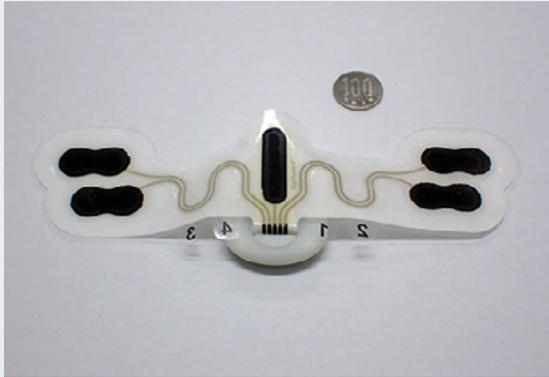


It is used as a binding agent and texture improver for alternative meats and supports a healthy diet.

It is used in supplement tablets to maintain and improve health and in additives for the treatment of adult diseases such as diabetes, hyperlipidemia, hypertension.

## Better Life - More comfortable living

### Electrophysiological Dry Electrodes / High-Stretchable Wiring Material



Shin-Etsu Chemical's newly developed innovative materials are being used for this wearable "health patch." (The black-colored parts are the electrophysiological dry electrodes and the gold-colored lines connecting them are the high-stretchable wiring.)

As the awareness of the need for better health management and the necessity for home medical treatments are rising, the opportunities to measure a person's electrical bio signals by means of these advanced wearable devices\* are increasing. Particularly, in the case of the use of smart "health patches," because people wear them directly on their skin for more than 24 hours while the device is obtaining bio signal data, a degree of stress is created because it can become uncomfortable for the wearer. Moreover, when the measurement period takes a long time, perhaps extending to one week, it is possible that the process of obtaining of the bio signal data could become unstable. By using our company's Electrophysiological Dry Electrodes and High-Stretchable Wiring Material, a wearable device's function, fit and ease-of-use is dramatically improved. This makes it possible to offer a higher quality of life to users who wear the devices.

By offering materials that contribute to the advancement of wearable devices\*, Shin-Etsu Chemical is working together with its customers to reduce the anxiety level of people who are dealing with health concerns and to make medical care more efficient, and we will endeavor to contribute to the realization of a society where people can enjoy healthier and longer lives.

\* Wearable devices Devices enable remote measurement and transmission of a person's electrical bio signals, including such vital signs as heart rate and electrocardiogram (ECG) waveform, while a person is wearing the device on their body.

#### ◆Electrophysiological Dry Electrodes

We developed the materials for electrophysiological dry electrodes to get bio signal data for a wearable device. The health patch that uses the electrophysiological dry electrodes that make possible the acquiring of stable bio signal data, even when a person is continuously wearing the device extending for a week. The electrode based on silicone is superior in biocompatibility, and its characteristics are as follows:

- ① Better Wearing Feel : Shin-Etsu's silicone material adapts itself to the skin and makes it very unlikely for the skin to become irritated, and at the same time, by making the thickness about as thin as a human hair, it becomes soft and flexible to the extent that you do not feel that you are wearing the device.
- ② Signal acquiring performance : By optimizing the silicone's adhesiveness, the electrophysiological dry electrodes will allow the device to track and follow the movement of the wearer and realize the acquiring of stable electrocardiogram signals.
- ③ Water repellent property : Because of the silicone's original water repellent property, while wearing the device, taking a bath is made possible, which was not possible when using an existing gel-type electrode.

#### ◆High-Stretchable Wiring Material

This is a material for wiring to transmit the acquired bio signal data to the signal processing device. For the wiring of the health patch, stretchability that follows the movement of the wearer is required. Even after repeated stretchability testing, it maintained conductivity, and this is the most appropriate health patch material that has the needed strength to endure long hours of wearing.

## Better Life - More comfortable living

### Binder for plant-based meat alternatives "Metolose MCE-100TS"



Meat alternatives made from protein-rich soybeans and peas have come into practical use. It is attracting attention of not only for people who are vegan and health conscious and actively eating vegetable foods, but also as a food that contributes to solving food shortages and environmental problems due to population growth.

The Company has developed "Metolose MCE 100TS", which is one of the products of cellulose derivatives, with a view of using it as a binder for plant based meat alternatives. This makes it possible to create a similar texture to real meat, which cannot be achieved with soy or other raw materials alone. Our binder has already been adopted by a major hamburger chain. The global market for plant-based meat is expected to grow at a double-digit rate annually, and further market expansion is expected.

## Interview with the staff in charge in the Metolose MCE-100TS

### 1. Please tell us about your job.

Mr. KH and Ms. CA : We are in charge of the domestic sales of cellulose products in the food field. We also handle cellulose used in the fields of construction materials, ceramics, cosmetics, and chemical industry.

Mr. HH: I am in charge of the overseas sales of cellulose for food applications, including sales for SE Tylose, a subsidiary that produces and sells cellulose derivatives in Germany.



Mr. HH

### 2. Please tell us what inspired you to develop Metolose MCE-100TS.

Mr. HH : We received inquiries from overseas customers about product functionality, and our technical sales representatives and laboratory personnel collaborated and developed this product.

An aqueous solution of Metolose will turn into gel when heated to a certain temperature, and revert back to solution when cooled. We thought that if we could lower the temperature at which the gel turns into solution and maintain its gelatinous state at room temperature, we might be able to expand its use in food as a substitute for egg whites, which is used as a binder.

**3. Were there any difficulties or anything that you put extra effort into in developing Metolose MCE-100TS?**

Mr. KH : Europe and North America have taken the lead in the technology for plant-based meat. In order to spread plant-based meat in Japan, it is necessary to provide foods that Japanese people like, which suits the dietary habits of Japanese people. We are working to create a new Japanese food culture, so even food manufacturers are still groping to develop such products.

We need to solve various problems, in order to propose a new product like Metolose MCE-100TS to such food manufacturers. We had a hard time to reach the quality that our customers demanded, because we had to take into consideration various factors: the food must taste good; we must be adjust a production line to fit for it, and the food must be sold at a fair market price.



Mr. KH

It was a new product development, so there were times when customers were cautious about taking the plunge. We work with our customers to find out how they can utilize their existing equipment without making major improvements in order to commercialize the products.

Mr. HH : In overseas markets, we have explained our products features to each customer to make them understand. Starting with the functional evaluation of the product at the customer's research laboratory, we carry out prototyping, actual equipment testing, and stability evaluation in sequence, so we need to work closely with customers. At each stage of evaluation, we need to provide observations and technical advice as appropriate to meet the quality requirements of the customer.



Ms. CA

**4. What did you think of the actual taste of the plant-based meat added with Metolose MCE-100TS?**

Ms. CA : It was very delicious. I think it is good that it has low calories compared to real meat, so it is healthy. With such a remarkable improvement in quality, I see a great potential for future demand for plant-based meat. This product can satisfy the various preferences of consumers because its texture and flavor vary greatly depending on the ingredients used and how they are formulated.

**5. Please let us know if there is anything else you would like to add to promote the product.**

Mr. HH, Mr. KH, Ms. CA : Metolose is a material that makes it possible to do what was previously considered impossible in the food industry. We will continue to strive to expand sales worldwide, with the catchphrase "a material that makes your wish come true."

**– Our company's initiative**

[Shin-Etsu Group and Climate Change](#)



[Shin-Etsu Group and SDGs](#)



# Achieving a Sustainable Society

## Reduction of environmental impact in plants

Solving social issues  
through the products

Reduction of environmental  
impact in plants

### — Efforts to reduce the environmental impact at Shin-Etsu Chemical Gunma Complex

Shin-Etsu Chemical Gunma Complex is located in Annaka City, which is located in the western part of Gunma Prefecture and is surrounded by an environment rich in nature. It is continuously developing as a research and production base for state-of-the-art silicon chemistry and plays a role as the main production hub for the products of Shin-Etsu Silicone.

In 1996, Gunma Complex was the first among major domestic chemical companies to acquire International Standard ISO 14001 certification concerning the environmental management system. Since then, it has positively approached sustainability activities and has steadily obtained good results.

### — Promotion of Energy Efficiency and Reduction of Greenhouse Gas Emissions

Gunma Complex uses electricity and natural gas with low emissions of greenhouse gases as energy sources. Although energy consumption in this Complex rises as the production of silicone products increases, it approaches the promotion of energy savings (reduction of average annual rate of 1% in original units) and the reduction of greenhouse gas emissions (reduction of 45% in comparison with 1990 by 2025 in original units) by introducing a cogeneration system and renewable energy and by implementing measures to save energy in the manufacturing processes.

#### Examples of Approaches in Gunma Complex

##### Introduction of Cogeneration System\*

Both electric power and steam are generated from the cogeneration system using natural gas as fuel to supply the plants. The electric power is used for motors and lighting, and the steam is used as the heating sources for manufacturing facilities. In addition, power is generated by steam turbines using the pressure difference of steam. The energy utilization efficiency of the system is higher than that of commercial power supply and steam supply from boilers and thus greatly contributes to energy savings and the reduction of greenhouse gas emissions.

\* Cogeneration (heat and power supply) system System where electric power is generated by engines, turbines, and fuel cells using natural gas and petroleum as fuel, and the heat generated at that time is collected as steam and warm water simultaneously. Energy consumption efficiency is higher than that of a power company.



##### Point of Cogeneration

Electric power is supplied from a power company and cogeneration system to the plant in parallel. The system was constructed so that, even if a problem occurred at the power company, the cogeneration system could supply power independently by disconnecting the line to the power company and is useful for emergency measures and continuous production.

### Collection of Waste Heat



The reactive heat generated in the production processes are collected and effectively used as steam generation and product heating. In addition, part of the steam generated in the cogeneration system produces cold water using absorption type refrigerators, and the cold water is used as the cooling source for the manufacturing facility and the air conditioners in the clean rooms.

### Energy Saving Measures in Manufacturing Processes in Each Plant



Operation aimed at saving energy is promoted in each manufacturing process.

### Introduction of Solar Panels



Solar panels with a power generation capacity of approx.148 kW were installed at the Goubara plant, and operation started in February 2021. They cover part of the power used at the plant, and the reduction of CO<sub>2</sub> emissions of approx.71.5 tons per year is expected from annual power generation of approx.162 MWh.\*

\*Trial calculation from sunlight irradiation in Gunma Prefecture

## TOPICS

### Approaches Contributing to Carbon Neutrality Enhanced by the Silicone Business

By focusing on contribution to carbon neutrality as an important task of management, our company invests a total of 20 billion yen in Gunma Complex as the major production hub of the silicone business to further enhance the approaches to the reduction of greenhouse gas emissions from both sides through our products and manufacturing processes. Please refer to our [press release](#) for details.

## — Approaches to the preservation of water resources by Gunma Complex

Gunma Complex is surrounded by an environment rich in nature and takes in almost all amounts of the water necessary for the production of silicones from peripheral rivers. Since the manufacturing of chemical products requires a large amount of water, this Complex recirculates the water taken in and reutilizes it for production facilities and cooling water as much as possible in order to minimize the amount of water taken in from rivers. In addition, we perform the purification treatment before discharging water to rivers to control the water quality thoroughly.

### Examples of Approaches in Gunma Complex

#### Various facilities for preservation of water resources in Gunma Complex



#### Water intake facility

The Isobe and Matsuida plants take in water from the Yanagise River flowing in the plant and a waterway divided from the Usui River in the vicinity of the plant, respectively, to use it as water sources of industrial water for producing silicones. In addition, city water is also partly used.



#### Purification facility for river water

River water taken in is subjected to purification treatment similar to that of waterworks to remove turbidity for use as industrial water to produce silicones.



#### Rainwater pit

Rainwater is stored to be effectively utilized for miscellaneous application.



#### Installation of detectors (TOC (total organic carbon) meter and oil film detector)

A TOC meter is installed at the end of the discharge port of the plant so that when the leakage of chemical substances to drain ditches for rainwater occurs, it can be detected as early as possible. In addition, continuous monitoring is performed using pH meters. Furthermore, oil film detectors are installed at many places in the plant so that when the leakage of silicone fluid occurs, it can also be detected as early as possible.



#### Cooling tower

This is a cooling facility for removing the reaction heat generated during silicone production and the condensing heat generated in the distillation process. Pumps supply water to the production facilities and the water warmed in the cooling process returns to the cooling tower. It is cooled by the tower and supplied again to the production facilities. The tower removes the heat efficiently by using circulating water only by replenishing water that evaporates during heat dissipation.



#### Emergency pit

When the TOC meter or the oil film detector operates and an automatic gate shuts off the water in the rainwater ditch, the drainage is temporarily stored in the emergency pit. The stored water is transferred to a wastewater treatment facility and discharged into the rivers after purification.

## — Approaches to Reducing Waste Materials and Preventing Air Pollution

Efforts are underway at the Gunma Complex to achieve the Shin-Etsu Group's goal of zero waste emissions (a 1% or less ratio of final landfill disposal volume to waste generation volume). These efforts also include promoting waste generation reduction in terms of emission intensity. Besides, emissions reduction targets have been set to prevent air pollution. Measures to reduce emissions have been implemented, such as switching to fuels with a lower environmental load.

### Examples of Approaches in Gunma Complex

#### Incineration Facility

Industrial waste materials from each plant are collected for incineration and disposal at the incineration facility at the Isohe plant. To reduce dioxin emissions from this incineration facility, the Isohe plant is working on operation management optimization through around-the-clock operation and stable incineration at high temperatures. Its efforts also extend to utilizing the heat generated at the incineration facility to produce steam for each plant.



#### Switching to Natural Gas for Air Pollution Prevention

The Gunma Complex positively uses natural gas as an environment-friendly energy source along with electricity. Natural gas is an ideal energy source: it does not produce much nitrogen oxide (NOx) emissions, which are deemed responsible for acid rain and air pollution, and produces no sulfur oxide (SOx) emissions (see the figure above). Accordingly, the Gunma Complex stays well below the emission standard for NOx, and its SOx emissions remain below the measurable lower limit.



### TOPICS

#### Cleaning activities for roads around the office

Every year, the Gunma Complex cleans the roads around the plant as part of its environmental beautification campaign. We spend about two hours each time collecting empty cans, PET bottles, and paper scraps that have been thrown away along the road. In addition to contributing to the local community, this activity is also useful for raising employees' environmental awareness and enlightening their manners.

## — Our company's initiative

[Shin-Etsu Group and Climate Change](#)



[Shin-Etsu Group and SDGs](#)



**The Shin-Etsu Group is working to reduce greenhouse gas emissions in the course of its business activities in order to contribute to the globally targeted goal of "2050 Carbon Neutral."**

### – Shin-Etsu Group Products and Technologies Contributing to the Realization of a Carbon Neutral Society

#### 1) Shin-Etsu Group products that contribute to the reduction of greenhouse gas emissions

The group supports the foundations of people's lives and industries by supplying a variety of end products and products that are vital to the production process. Many of those products also contribute to reducing greenhouse gas emissions, helping to curb environmental impact and realize a sustainable society.

PVC-framed windows, which are becoming increasingly popular for use in homes and buildings, are highly effective in insulating and contributing to reduction of energy consumption. PVC pipes used for water and sewage systems have lower CO<sub>2</sub> emissions throughout their life cycle (raw materials, production, transportation and disposal) than pipes made from other materials and have a longer service life. Rare earth magnets are a crucial material for environmentally friendly vehicles such as electric and hybrid cars, as well as for energy-saving home appliances such as air conditioners.

Semiconductor-related products such as silicon wafers, photoresists, photomask blanks, pellicles, synthetic quartz and high-purity silane, as well as optical fiber preforms, are basic materials that support the advanced information society, contributing significantly to power and energy conservation, as well as to higher performance and smaller and lighter electronic devices.

Silicones are widely used in the automotive field (sealing materials, heat-dissipating materials, fuel-efficient tires, building field (sealants, water repellents, etc.), solar power generation field (chlorosilane, etc.), and other fields (ship-bottom paints, antifoam agents, etc.).

In addition, plant-based meat alternatives have recently been attracting attention as a product that contributes to the reduction of CO<sub>2</sub> emissions as well as health concerns. Livestock farming requires deforestation, and the production of feed, slaughter and transportation also emit CO<sub>2</sub>. The cellulose derivatives of our group are used as binding agents for plant-based meat alternatives to replace the meat from these livestock. The global market for plant-based meat is expected to grow at a double-digit rate annually, and further market expansion is expected.

In addition, our group possesses a wide range of technologies that lead to the reduction of greenhouse gases. For example, solar power generation, which is expected to be a renewable energy source, has the issues of initial and age-related deterioration in power generation efficiency, but the technology we have developed prevents the initial deterioration (1-2% decrease in efficiency) and achieves higher power generation efficiency than conventional technologies. This technology has been adopted by major solar panel manufacturers.

[> Sustainability > Achieving a Sustainable Society > Comfortable living](#)

[> Sustainability > Shin-Etsu Group and Climate Change > Strategies for addressing climate change >](#)

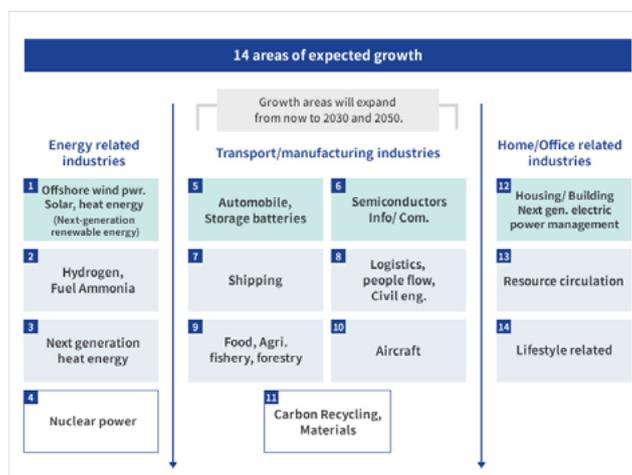
[2\) Business opportunities arising from climate change](#)

## 2) Green Growth Strategy Through Achieving Carbon Neutrality in 2050 and Shin-Etsu Group Products

In June 2021, the Japanese government announced its Green Growth Strategy Through Achieving Carbon Neutrality in 2050. In the strategy, the Japanese government has identified the following 14 areas that are expected to grow as industries in the future and that are also vital from the perspective of reducing greenhouse gas emissions in order to achieve carbon neutrality in 2050. The group will continue to focus on developing, manufacturing and supplying products that contribute to realizing a carbon neutral society in 2050, while accurately ascertaining the needs of our customers and society.

In FY 2021, sales of our group's products in these 14 fields accounted for approximately 70% of consolidated net sales.

### 14 areas of expected growth



Source: Green Growth Strategy Through Achieving Carbon Neutrality in 2050 (announced by the Japanese government in June 2021)  
<https://www.meti.go.jp/press/2021/06/20210618005/20210618005-3.pdf>

## Shin-Etsu Chemical Group Products and Technologies Contributing to the Realization of a Carbon Neutral Society

14 areas of expected growth <sup>1</sup>		Products and technologies listed in the Green Growth Strategy	Shin-Etsu Chemical Group products and technologies that contribute to green growth strategies <sup>2</sup>
	(1) Offshore wind, solar and geothermal industries (Next-generation renewable energy)	<ul style="list-style-type: none"> <li>Offshore wind power generation</li> <li>Photovoltaic power generation (next-generation technologies such as perovskite, next-generation inverter and grid control system technologies)</li> <li>Geothermal power generation</li> </ul>	<ul style="list-style-type: none"> <li>PVC (wire coating)</li> <li>Semiconductor materials<sup>3</sup></li> <li>Rare earth magnet</li> <li>Silicone</li> <li>Photocatalyst Coatings</li> <li>Low Friction Compound (Wire coating)</li> <li>Photovoltaic power generation related technology (initial deterioration prevention technology)</li> </ul>
	(2) Hydrogen and fuel ammonia industry	<ul style="list-style-type: none"> <li>Hydrogen power generation</li> <li>Hydrogen vehicles (fuel cell vehicles)</li> <li>Fuel cells for household use</li> <li>Hydrogen transportation and storage (e.g., liquefied hydrogen carriers,)</li> <li>Hydrogen production (e.g., water electrolyzers)</li> <li>Burners for power generation, such as ammonia co-firing burners</li> <li>Ammonia production plants</li> </ul>	<ul style="list-style-type: none"> <li>PVC (wire coating)</li> <li>Semiconductor materials<sup>3</sup></li> <li>Rare earth magnet</li> <li>Silicone</li> <li>Cellulose derivative (fuel cell parts)</li> <li>Liquid Fluoroelastomers</li> <li>Low Friction Compound (Wire coating)</li> <li>Hydrogen associated with soda industry, etc.</li> </ul>

	<p>(3) Next-generation heat energy industry</p>	<ul style="list-style-type: none"> <li>• Gas decarbonization (e.g., directly using of synthetic methane and hydrogen, introducing LNG with carbon offsets, using CO<sub>2</sub> separation, recovery and utilization technologies, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Semiconductor materials<sup>3</sup></li> </ul>
	<p>(4) Nuclear power industry</p>	<ul style="list-style-type: none"> <li>• Fast reactors</li> <li>• Small modular reactors</li> <li>• High-temperature gas reactors</li> <li>• Nuclear fusion</li> </ul>	<ul style="list-style-type: none"> <li>• Semiconductor materials<sup>3</sup></li> </ul>
	<p>(5) Automotive and storage battery industry</p>	<ul style="list-style-type: none"> <li>• Electric vehicles, fuel cell vehicles, plug-in hybrids and hybrids</li> <li>• Various infrastructures for autonomous driving, etc.</li> <li>• Storage batteries</li> </ul>	<ul style="list-style-type: none"> <li>• PVC (wire coating)</li> <li>• Semiconductor materials<sup>3</sup></li> <li>• Rare earth magnet</li> <li>• Silicone</li> <li>• Cellulose derivative (battery part)</li> <li>• Anode material for storage batteries</li> <li>• Liquid Fluoroelastomers</li> <li>• Fluorinated Anti-smudge Coating</li> <li>• Viewing angle, optical path control film</li> <li>• Input device Touch switch</li> <li>• Wafer vacuum superposition device</li> <li>• FPD panel vacuum superposition device</li> </ul>
	<p>(6) Semiconductor and information and communication industry</p>	<ul style="list-style-type: none"> <li>• Semiconductors such as power semiconductors and memory</li> <li>• Optoelectronics</li> <li>• Data centers</li> <li>• Information and telecommunications infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• PVC (wire coating)</li> <li>• Semiconductor materials (silicon wafers, photoresists, mask blanks, sealing materials, pellicles, synthetic quartz, high-purity silane, etc.)</li> <li>• Rare earth magnet</li> <li>• Rare earth (Spray coating of semiconductor manufacturing equipment)</li> <li>• Preform for optical fiber</li> <li>• Silicone</li> <li>• Wafer Cases</li> <li>• Input device Touch switch</li> <li>• Electronic component transport tape</li> <li>• Wafer vacuum superposition device</li> <li>• FPD panel vacuum superposition device</li> <li>• Micro LED Process Equipment</li> </ul>
	<p>(7) Shipbuilding industry</p>	<ul style="list-style-type: none"> <li>• Ships with hydrogen and ammonia engines</li> <li>• Highly efficient LNG-fueled vessels</li> <li>• Introducing energy-efficient vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Semiconductor materials<sup>3</sup></li> <li>• Silicone (Ship bottom paint)</li> <li>• Room temperature curing type silicone rubber tape (Maintenance of piping inside the ship)</li> </ul>
	<p>(8) Logistics, people flow and civil engineering infrastructure industry</p>	<ul style="list-style-type: none"> <li>• Smart transportation (e.g., autonomous driving)</li> <li>• Green logistics (e.g., introducing fuel cell railroads)</li> <li>• Saving energy in sewage systems and promoting waste heat utilization</li> <li>• Utilizing ICT in construction work</li> <li>• Drone logistics (e.g., cargo transport using drones)</li> <li>• LED road lighting</li> </ul>	<ul style="list-style-type: none"> <li>• PVC (wire coating)</li> <li>• Semiconductor materials<sup>3</sup></li> <li>• LED encapsulant</li> <li>• Silicone</li> <li>• Cellulose derivative (fuel cell parts)</li> <li>• Room temperature curing type silicone rubber tape (Maintenance of transportation infrastructure)</li> </ul>

	<p>(9) Food industry, agriculture, forestry and fisheries</p>	<ul style="list-style-type: none"> <li>• Reducing chemical pesticides and fertilizers, curtailing fossil fuel use</li> <li>• CO<sub>2</sub> absorption and fixation</li> <li>• Blue carbon (carbon storage by marine ecosystems)</li> <li>• Promoting use of new materials such as modified lignin and cellulose nanofiber (CNF)</li> <li>• Reducing methane and other emissions from agricultural and livestock industry</li> <li>• Developing and promoting new materials derived from woody biomass Utilizing unused wood as energy Developing new food production technologies using plant proteins</li> </ul>	<ul style="list-style-type: none"> <li>• PVC (agricultural film)</li> <li>• Semiconductor materials<sup>3</sup></li> <li>• Cellulose derivative (plant-based meat binder)</li> <li>• Synthetic pheromones (Pest control agent)</li> <li>• Biodegradable runner clips (Crop fixing material)</li> <li>• Biodegradable pest control sheet</li> </ul>
	<p>(10) Aircraft industry</p>	<ul style="list-style-type: none"> <li>• Hydrogen Aircraft</li> <li>• Reducing weight and improving efficiency of airframes and engines</li> <li>• Bio-jet fuel, synthetic fuel</li> </ul>	<ul style="list-style-type: none"> <li>• Semiconductor materials<sup>3</sup></li> <li>• Rare earth magnet</li> <li>• Silicone</li> <li>• Cellulose derivative (fuel cell parts)</li> <li>• Viewing angle, optical path control film</li> </ul>
	<p>(11) Carbon recycling and materials industry</p>	<ul style="list-style-type: none"> <li>• CO<sub>2</sub>-absorbing concrete</li> <li>• Carbon-recycled fuels (synthetic fuels)</li> <li>• Synthetic methane</li> <li>• Green LNG</li> <li>• Plastic raw materials by artificial photosynthesis</li> <li>• Plastic raw materials such as waste plastic, waste rubber and direct CO<sub>2</sub> synthesis</li> <li>• Technology to separate and recover CO<sub>2</sub> in exhaust gas</li> <li>• Developing and supplying zero-carbon steel using carbon-free electricity and carbon-free hydrogen</li> <li>• Expanding resource recycling and extending service life</li> <li>• Decarbonizing heat sources and petrochemical complexes</li> </ul>	<ul style="list-style-type: none"> <li>• PVC recycling</li> <li>• Semiconductor materials<sup>3</sup></li> </ul>
	<p>(12) Housing, building industry, and next-generation electric power management industry</p>	<ul style="list-style-type: none"> <li>• ZEH and ZEB (zero energy homes and buildings)</li> <li>• Energy management using AI, IoT and electric vehicles</li> <li>• Improving energy efficiency of houses (expanded use of building materials such as heat-insulating sashes and equipment such as high-efficiency air conditioners)</li> <li>• Reducing cost and expanding use of stationary storage batteries</li> <li>• Promoting local production for local consumption of electricity and heat energy</li> </ul>	<ul style="list-style-type: none"> <li>• PVC (resin window, PVC pipe, wire coating)</li> <li>• Semiconductor materials<sup>3</sup></li> <li>• Rare earth magnet</li> <li>• Silicone</li> <li>• Anode material for storage batteries</li> <li>• Photocatalyst Coatings</li> <li>• Room temperature curing type silicone rubber tape (Infrastructure maintenance)</li> </ul>
	<p>(13) Resource circulation industry</p>	<ul style="list-style-type: none"> <li>• CCU (Carbon Capture and Utilization) plants at waste incineration facilities</li> <li>• Technology to generate methane and ethanol from exhaust gases</li> </ul>	<ul style="list-style-type: none"> <li>• PVC recycling</li> <li>• Rare earth magnet recycling</li> <li>• Semiconductor materials<sup>3</sup></li> </ul>

	<p>(14) Lifestyle-related industries</p>	<ul style="list-style-type: none"> <li>• Total management of housing and transportation (combination and optimization of ZEH, ZEB, demand-side equipment, local renewable energy, electric vehicles and fuel cell vehicles, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• PVC (resin window, PVC pipe, wire coating)</li> <li>• Semiconductor materials<sup>3</sup></li> <li>• Rare earth magnet</li> <li>• Silicone</li> <li>• Anode material for storage batteries</li> <li>• Photocatalyst Coatings</li> <li>• Low Friction Compound (Wire coating)</li> </ul>
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<sup>1</sup> Source: "Green Growth Strategy Through Achieving Carbon Neutrality in 2050" (announced by the Japanese government in June 2021) [https://www.meti.go.jp/policy/energy\\_environment/global\\_warming/ggs/index.html](https://www.meti.go.jp/policy/energy_environment/global_warming/ggs/index.html)

<sup>2</sup> Future products are included. The colors of the letters of products and technologies indicate business segments.

**[Business segments]** Infrastructure Materials Electronics Materials Functional Materials Processing, Trading & Specialized Services

<sup>3</sup> Semiconductor materials refer to silicon wafers, photoresists, mask blanks, sealing materials, pellicles, synthetic quartz, high-purity silane, etc. Semiconductor materials fall under the semiconductor industry in field (6), but semiconductors manufactured using semiconductor materials contribute to control systems and other applications in a variety of fields, so they are also listed in fields other than (6).

**> Sustainability > Shin-Etsu Group and Climate Change > Strategies for addressing climate change > 2) Business opportunities arising from climate change**

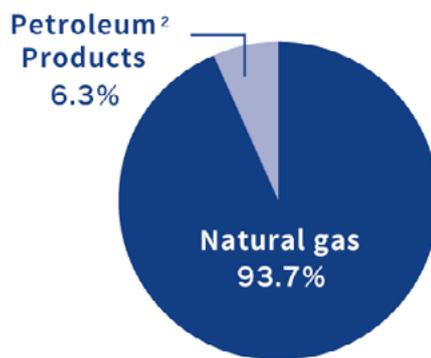
**3) Manufacturing that thoroughly pursues energy conservation**

The Group has been thoroughly addressing the challenges of energy conservation, and has significantly reduced energy consumption intensity (52.9% for Shin-Etsu Chemical on a non-consolidated basis and 46.3% for the entire Group in comparison to the 1990 level). This reduction far exceeds the target of a 1% annual reduction in energy use intensity under the Japan's Act on the Rational Use of Energy (Energy Saving Act). We will continue to promote thorough energy conservation to achieve our goal of make greenhouse gas emissions intensity to 45% of the 1990 level by 2025.

In addition, 93.7% of the Group's scope 1's energy sources are natural gas, and we do not use coal, which has high greenhouse gas emissions. The rest of the energy is derived from petroleum, with liquefied petroleum gas accounting for 4.2% and heavy oil, diesel oil, and gasoline accounting for 2.1% in total. Furthermore, Shintech Inc. in the U.S., which has the world's largest PVC production capacity, produces a part of ethylene, the main raw material for PVC, on its own. The ethylene produced by Shintech is made from ethane, which is derived from natural gas with low greenhouse gas emissions.

**> Sustainability > Key Sustainability Issues > Energy-saving, resource-saving, and reduction of environmental impacts > Response to Climate Change**

**Ratio of scope 1's energy sources in the Group<sup>1</sup>**



<sup>1</sup> : Comparison of each energy source on a crude oil equivalent basis

<sup>2</sup> : The breakdown of petroleum products is as follows: liquefied petroleum gas 4.2%, kerosene, light oil and gasoline 1.2%, heavy oil A and C 0.9%

#### 4) Low-carbon products and highly recyclable products

Compared to petrochemical products<sup>3</sup>, our main products are characterized by their low carbon content (e.g., the carbon content of PVC is approximately 40%, and the carbon content of siloxane, which forms the backbone of silicone products, is approximately 30%). Therefore, when the product is incinerated and disposed of after use, it emits less greenhouse gases than other petrochemical products.

In addition, the material recycling ratio of PVC in Japan is over 30%, achieving a high level among plastics. Furthermore, the Group is also engaged in the recycling of rare earth, the raw material for rare earth magnets. As such, the Group is committed to the effective use and recycling of valuable resources.

[> Sustainability > Key Sustainability Issues > Energy-saving, resource-saving, and reduction of environmental impacts > Conserving Resources](#)

<sup>3</sup> Carbon content of typical petrochemical products: Ethylene, propylene, butylene 86% each, benzene 92%, toluene, xylene 91% each

### — Structure of Initiatives

The Sustainability Committee is working with each of the Group's business divisions to address climate change. The Sustainability Committee is one of the committees for each material management task in the Group's corporate governance system. Chaired by the president, the committee consists of about 50 members, including directors, corporate officers and divisional managers of Shin-Etsu Chemical, as well as persons in charge of sustainability at Group companies, and develop initiatives that integrate business and sustainability initiatives.

[> Sustainability > Management > Structure of Sustainability Initiatives](#)

The Sustainability Committee held subcommittee meetings on climate change 43 times in FY2021. In addition, the Managing Directors' Meeting, which is responsible for reviewing and passing resolutions on business execution, reported on the Group's climate change initiatives, which were approved after discussion.

### — Strategies

The Group aims to realize the sustainable development of human society and the improvement of its quality while reducing the environmental burden. Maximizing efficiency leads to the effective use of limited resources. Specific initiatives are as follows.

Initiatives
1) Reduction of greenhouse gas emissions through thorough improvements in production efficiency
2) Through development, production and supply of environment-contributing products, contributing to the efficiency of customers' production processes, expecting to spread throughout society
3) Utilization of renewable energy
4) Reduction of greenhouse gas emissions in logistics
5) Measures and implementation to reduce the greenhouse gas emissions

#### 1) Reduction of greenhouse gas emissions through thorough improvements in production efficiency

##### ① Promotion of efficient production activities

The G Committee, one of the committees for each material management task, is working to significantly improve productivity through innovation in production technology. Its activities enable us to save energy and reduce greenhouse gas emissions. The Committee holds 12 meetings a year and reports on the results of its activities and specific initiatives twice a year to the Managing Directors' Meeting. The Group is continuously improving and innovating its production technologies to reduce greenhouse gas emissions. The activities of the Committee are not limited to rationalization, but also challenge technological innovation and the practical application of new production technologies.

## Examples of the G Committee Initiatives

Planning and implementation to:

1. Reduce energy and raw material use
2. Reduce greenhouse gas emissions
3. Enhance productivity
4. Reduction of greenhouse gases through capital investment

## 2) Through development, production and supply of environment-contributing products, contributing to the efficiency of customers' production processes, expecting to spread throughout society

The R&D, manufacturing, and sales divisions work together to develop, produce, and supply products that contribute to the environment.

The Group has a wide range of products that contribute to the reduction of greenhouse gas emissions. Each research center promptly develops new products that meet the needs of customers, and this is one of the driving forces behind the expansion of the Group's businesses.

### Products contributing to the reduction of greenhouse gas emissions

Product	Applications
PVC resins	<ul style="list-style-type: none"> <li>•PVC pipes that can be used for a long period of time with high durability</li> <li>•PVC window frames that contribute to energy conservation with high heat insulation</li> </ul>
Silicones	<ul style="list-style-type: none"> <li>•Encapsulant materials for solar cell modules</li> <li>•Green-tire materials that contribute to higher fuel efficiency in vehicles</li> <li>•Paint additives for ship bottoms to reduce resistance from water and improve fuel efficiency</li> </ul>
Semiconductor silicon	<ul style="list-style-type: none"> <li>•Semiconductor devices installed in end products contribute to the efficient use of energy.</li> <li>•Inverters and other electronic devices that enable substantial power savings</li> </ul>
Rare earth magnets	<ul style="list-style-type: none"> <li>•Various types of motors, including drive motors for hybrid vehicles, electric vehicles, and fuel cell vehicles, that contribute to the electrification and energy conservation of vehicles as well as improvements in safety</li> <li>•Compressor motors for energy-saving air conditioners and high-efficiency motors for wind power generators</li> </ul>
LED Encapsulant materials	<ul style="list-style-type: none"> <li>•Major components of the optical modules of energy-saving, long-life LEDs</li> </ul>

## > Sustainability > Shin-Etsu Group and SDGs

### 3) Utilization of renewable energy

As a measure to reduce greenhouse gas emissions, we have introduced cogeneration systems and solar panels. That also increases the rate of self-sufficiency in electricity. These efforts are contributing to the reduction of scope 2 emissions.

### Examples of Renewable Energy Utilization

Enhancement of cogeneration system	Shin-Etsu Chemical, Expansion of gas turbines in Gunma area (scheduled for completion in December 2022) After the completion, the amount of purchased electricity will be zero, and CO <sub>2</sub> emissions in the entire Gunma area of Shin-Etsu Chemical will be reduced by 14.2%.
Installation of solar panels	Shin-Etsu Handotai's Shirakawa plant plans to install on the rooftop of a building Shin-Etsu Chemical's Gunma complex installed on the rooftop of the building

#### 4) Reduction of greenhouse gas emissions in logistics

We are working to reduce greenhouse gas emissions during product transportation. This initiative will contribute to the reduction of scope 3 greenhouse gas emissions.

Reduction in logistics	
Examples	Scope 3 emissions categories contributing to reductions
Modal shift* in methanol transport (switched from tank truck to railcar)	Category 4: "Emissions from product transport"
Modal shift in silicon wafer transport (switched from aircraft to ocean vessel)	Category 4: "Emissions from product transport"
Promoting the reuse of wafer cases	Category 5 "Waste disposal-related emissions"

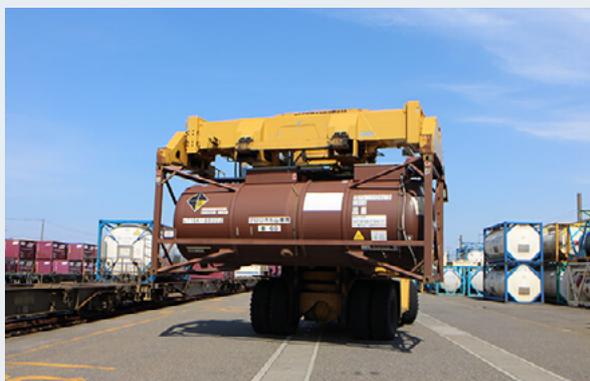
\*Modal shift

Shifting from trucks and other freight transports to railways or ships with less environmental impact.

#### Shin-Etsu Chemical Naoetsu Plant Certified as Eco-Rail Mark Company

In March 2022, Shin-Etsu Chemical Naoetsu Plant was certified by the Ministry of Land, Infrastructure, Transport and Tourism as an Eco-Rail Mark company.

Compared to other modes of transportation, rail cargo transportation is an environmentally friendly means of transportation that emits much less CO<sub>2</sub>. The Eco-Rail Mark is a system that certifies companies that are actively switching to rail cargo transportation as eco-friendly companies. We have been promoting a modal shift in the transportation of products from Naoetsu Plant and have now been certified as an Eco-Rail company because our annual rail usage volume meets the requirements for certification under the Eco-Rail Mark system.



Products being loaded onto freight cars at the freight terminal of JR Freight Kuroi Station.



Products are transported from Naoetsu Plant in tank containers on trucks.

#### 5) Measures and implementation to reduce the greenhouse gas emissions

Around the world, research is underway on various measures to reduce the absolute amount of greenhouse gas emissions.

Our group is also working to reduce absolute emissions toward carbon neutrality by 2050.

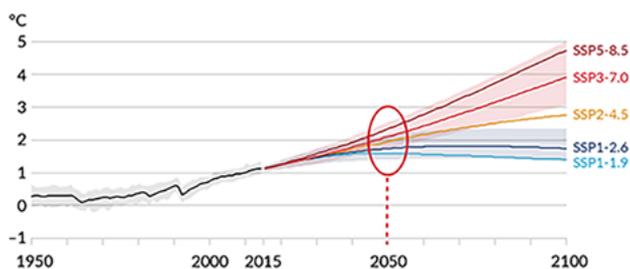
## – Senario analysis

In FY2021, we conducted a scenario analysis of some of our businesses to identify the risks and opportunities that climate change poses to our business activities.

### 1) Assumed scenarios

Considering the impact of climate change, we have assumed scenarios for a 1.5°C rise and a 4°C rise for the year 2050.

#### Difference from the average between 1986 to 2005



#### A scenario for a 4°C rise :

If no measures are taken to prevent global warming beyond the current level, the temperature will rise by 3.2 to 5.4°C in 2100 compared to the Industrial Revolution period.

#### A scenario for a 1.5°C rise:

If more stringent measures are taken, the increase will be limited to 1.5°C by 2100, compared to the Industrial Revolution.

Source: Sixth Assessment Report, Intergovernmental Panel on Climate Change (IPCC)

Event	1.5°C scenario	4°C scenario
Extreme high temperatures on land areas	The frequency of extreme high temperatures (+1.9°C compared to 1850–1900) on a once-in-a-decade scale will increase 4.1 times in 2081–2100.	The frequency of extreme high temperatures (+5.1°C compared to 1850–1900) on a once-in-a-decade scale will increase 9.4 times in 2081–2100.
Heavy rainfall on land	The frequency of extreme wetting (+10.5% compared to 1850–1900) on a once-in-a-decade scale will increase 1.5 times in 2081–2100.	The frequency of extreme wetting (+30.2% compared to 1850–1900) on a once-in-a-decade scale will increase 2.7 times in 2081–2100.
Global mean sea level	Compared to the 1995–2014 average, global mean sea level will increase by 28 cm to 55 cm by 2100.	Compared to the 1995–2014 average, global mean sea level will increase by 63 cm to 101 cm by 2100.
Percentage of renewable energy in power supply composition	Renewable energy ratio will account for 90% of total electricity generation in 2050.	
Financial impact	Economic slowdown due to the introduction of the carbon tax and the impact of higher electricity prices on corporate profits.	Economic stagnation and increased insurance premiums due to severe wind and flood damage.

Source :

Sixth Assessment Report, Intergovernmental Panel on Climate Change (IPCC)

International Energy Agency (IEA) "Net Zero by 2050"

Mitsubishi Research Institute "Climate Change Response / Environmental Disclosure (TCFD)"

## 2) Business opportunities arising from climate change : A scenario for a 1.5°C rise

Applications	Details	Revenue Impact
Resin windows	<ul style="list-style-type: none"> <li>• Polyvinyl chloride resin is used for resin windows because of its excellent heat insulation properties. Demand for resin windows is expected to increase along with the spread of energy-saving homes.</li> </ul>	Large
Electric vehicles, hybrid vehicles, fuel cell vehicles	<ul style="list-style-type: none"> <li>• Semiconductor silicon is used in power semiconductor devices such as inverters to control the number of rotations of motors, logic semiconductor devices for automatic driving system and AI. High-performance and compact rare-earth magnets can reduce the overall weight of a vehicle and improve its fuel efficiency, which will expand their use in the drive motors of electric, hybrid, and fuel cell vehicles, as well as in a variety of other motors in vehicles.</li> </ul> <p><b>&gt; Sustainability - Achieving a Sustainable Society Eco - friendly car and Shin-Etsu</b></p>	Large
Wind power generators	<ul style="list-style-type: none"> <li>• Demand for rare earth magnets is expected to grow as they contribute to higher efficiency in offshore wind turbines and lower maintenance costs for generators.</li> <li>• Demand for vinyl chloride used for wire sheathing is also expected to increase due to the development and expansion of the power grid.</li> </ul>	Large
Air conditioners	<ul style="list-style-type: none"> <li>• Demand for semiconductor silicon is expanding as it is used in inverter control devices for compressor motors and contributes to power saving by adjusting the rotation speed of the motor to an appropriate level.</li> <li>• Demand for rare earth magnets is expected to grow as they improve the energy efficiency of air conditioner compressor motors and reduce energy consumption.</li> </ul>	Medium
Aircrafts	<ul style="list-style-type: none"> <li>• Rare earth magnets are indispensable for the electrification and hybridization of small aircraft and for the electrification of hydraulic drive units in large aircraft. Demand for rare earth magnets is expected to increase as their small size and high power will help reduce the weight of the aircraft and improve fuel efficiency.</li> </ul>	Medium
Motors for industrial use	<ul style="list-style-type: none"> <li>• Demand for rare earth magnets is expected to grow as they increase the efficiency of industrial motors and reduce the amount of electricity consumed.</li> </ul>	Medium
Robots for services	<ul style="list-style-type: none"> <li>• Semiconductor silicon is increasingly being used in semiconductors for energy-saving robot control motors for manufacturing, logistics, agriculture, and other applications, as well as in medical and disaster response robots.</li> </ul>	Medium
Binder for plant-based meat alternatives	<ul style="list-style-type: none"> <li>• A diet centered on plant-based foods may reduce CO<sub>2</sub> emissions by 1.6 gigatons per year *. " Metolose MCE-100TS", one of the products of cellulose derivatives, is used as a binder for alternative meats derived from plants. The global market for plant-based meat is expected to grow at a double-digit rate annually, and further market expansion is expected.</li> </ul> <p><b>&gt; Sustainability - Achieving a Sustainable Society - Comfortable living</b></p>	Medium

\* From "DRAWDOWN – The Most Comprehensive Plan Ever Proposed to Reverse Global Warming" edited by Paul Hawken

### 3) Business risks due to climate change and countermeasures : 1.5°C scenario (transition risk)

Events	Risks to the Company	Impact	Countermeasures
Introduction of carbon taxes and establishment of carbon emission quotas around the world	<ul style="list-style-type: none"> <li>• Payment of carbon tax</li> <li>• Incurring costs of purchasing emission credits to meet carbon emission quotas</li> <li>• Increased costs of measures to reduce greenhouse gas emissions</li> </ul>	Large	<ul style="list-style-type: none"> <li>• Reduce scope 1 emissions <ul style="list-style-type: none"> <li>▶ Further promotion of more efficient production processes and introduction of highly efficient equipment, etc.</li> <li>▶ Use of energy sources that do not emit carbon dioxide, such as hydrogen and ammonia</li> <li>▶ Use of CCUS</li> <li>▶ Use of carbon-neutral natural gas as a heat source</li> </ul> </li> <li>• Use of hydrogen-reduced iron materials</li> <li>• Establishment and achievement of reduction targets in the absolute amount of greenhouse gas emissions</li> <li>• Collection of information on environmental regulations such as carbon taxes in each country and implementation of countermeasures</li> </ul>
Widespread use of electricity derived from renewable energy sources and rising electricity prices resulting from tightening regulations on greenhouse gas emissions	<ul style="list-style-type: none"> <li>• Increase in electricity costs</li> </ul>	Large	<ul style="list-style-type: none"> <li>• Reduce scope 2 emissions <ul style="list-style-type: none"> <li>▶ Further promotion of production processes that use less electricity, introduction of high-efficiency equipment, etc.</li> <li>▶ Introduction of cogeneration systems using carbon-neutral natural gas (natural gas with emission credits)</li> </ul> </li> </ul>

### 4) Business risks due to climate change and countermeasures : 1.5°C scenario (Physical risk)

Events	Risks to the Company	Impact	Countermeasures
<p>Increase in the frequency of extreme weather events</p> <p>Increased frequency of flooding caused by changes in precipitation patterns, etc.</p>	<ul style="list-style-type: none"> <li>• Flooding of production sites</li> <li>• Disruption of the supply chain</li> </ul>	Large	<ul style="list-style-type: none"> <li>• Raising the ground level of production sites, installation of watertight walls around critical facilities, installation of instrument rooms in areas with low risk of flooding, installation of seawalls at production sites close to ports</li> <li>• Multiple production bases</li> <li>• Diversification of raw material procurement sources</li> <li>• Securing product inventory</li> <li>• Enrollment in damage insurance</li> </ul>
Introduction of carbon taxes and establishment of carbon emission quotas in some countries	<ul style="list-style-type: none"> <li>• Payment of carbon tax imposed on greenhouse gases emitted from production sites in the said countries</li> <li>• Costs of purchasing emission credits and payment of surcharges will be incurred if our greenhouse gas emissions do not meet the carbon emission targets established by the said countries.</li> </ul>	Small	<ul style="list-style-type: none"> <li>• Reduce scope 1 emissions <ul style="list-style-type: none"> <li>▶ Further promotion of more efficient production processes and introduction of highly efficient equipment, etc.</li> <li>▶ Use of energy sources that do not emit carbon dioxide, such as hydrogen and ammonia</li> <li>▶ Use of CCUS</li> <li>▶ Use of carbon-neutral natural gas as a heat source</li> </ul> </li> <li>• Use of hydrogen-reduced iron materials</li> <li>• Establishment and achievement of reduction targets in the absolute amount of greenhouse gas emissions</li> <li>• Collection of information on environmental regulations such as carbon taxes in each country and implementation of countermeasures</li> </ul>
Electricity price	<ul style="list-style-type: none"> <li>• According to the IEA scenario analysis (current measures scenario), electricity prices will not increase. Therefore, there is no risk to the Company.</li> </ul>	—	—

## — Risk management

The Risk Management Committee works to prepare for and eliminate the various risks surrounding our business, including risks posed by climate change. The Committee is chaired by a managing corporate officer and consists of approximately 20 members, including our directors, corporate officers, and department managers.

Our Group has established Risk Management Regulations to identify potential risks associated with our business activities and address these risks appropriately. The Risk Management Regulations clearly state specific risks, risk management systems, and responses to risks that materialize. The Risk Management Committee reports to the Board of Directors, Managing Directors' Meeting, Audit & Supervisory Board, and relevant parties in a timely manner on important risk management issues, and works to address them appropriately.

> [Sustainability > Management > Risk management](#)

## — Metrics and Targets

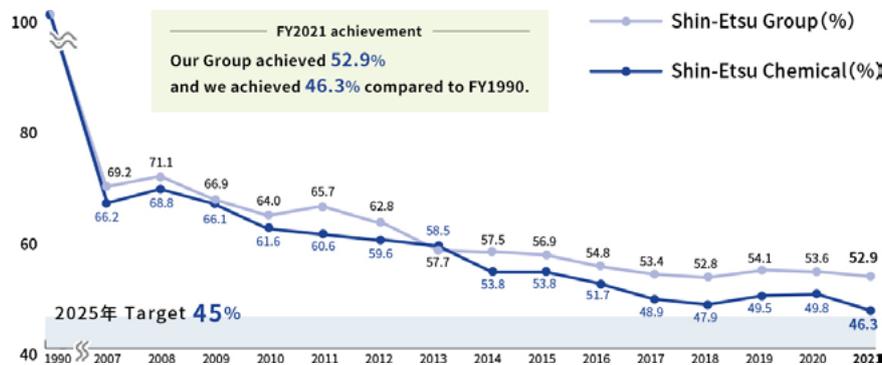
Starting from FY2010, the Group has implemented energy-saving strategies and installed a cogeneration system as well as innovative technologies, in order to achieve the mid-term goal of reducing greenhouse gas emissions in terms of production intensity to 50% of the FY1990 level by FY2015. Furthermore, in FY2016, we set a new mid-term target of reducing greenhouse gas emissions in terms of production intensity to 45% of the FY1990 level by FY2025, and we have been working towards that goal.

### Mid-term target

Reduce greenhouse gas emissions in terms of production intensity to 45% of the FY1990 level by FY2025.<sup>1</sup>

### Results in FY2021

Achieves reduction to 52.9% for the Shin-Etsu Group<sup>2</sup> and 46.3% for Shin-Etsu Chemical.



<sup>1</sup> For the calculation of emissions, CO<sub>2</sub> emission factors for electricity are averaged from 2000 to 2009 so that efforts to reduce electricity can be clarified.

<sup>2</sup> Includes non-consolidated group companies.

> [Sustainability > Key Sustainability Issues > Energy-saving, resource-saving, and reduction of environmental impacts > Response to Climate Change](#)

## — Our company's initiative

[Achieving a Sustainable Society](#) >

[Shin-Etsu Group and SDGs](#) >

Infrastructure Materials ▾

Electronics Materials ▾

Functional Materials ▾

Processing, Trading & Specialized Services ▾

## Contributing to the Achievement of SDGs Through Product

### Infrastructure Materials



#### Polyvinyl chloride (PVC) resin

Approximately 60% of the raw materials used in PVC are salts, which are abundant throughout the world. Compared to other general-purpose resins, the benefits of PVC include a low dependence on petroleum resources, placing a relatively small burden on the environment. The process of manufacturing PVC from raw materials uses around 60% of the energy required to make other general-purpose resins. Highly durable and easy to recycle, PVC is used for a wide range of social infrastructure materials, including vinyl windows, water and sewerage pipes, public works and other construction. PVC window frames have excellent heat insulation properties, which is effective for energy saving and contributes to the reduction of greenhouse gas emissions..



#### Sodium hypochlorite

Sodium hypochlorite, which is used as a water disinfectant, has received Japan Water Supply Association (JWWA) water chemistry certification due to low impurities and high quality. It contributes not only to safety but also to the provision of delicious water. In addition to tap water, it is also used for sterilizing food manufacturing water and industrial water, contributing to ensuring safe and hygienic water.

### Electronics Materials



#### Silicon Wafers

Silicon wafer is a material for the substrate that is widely used to manufacture smartphones, personal computers, digital home appliances and automobiles which are the essential products around us. We will continue to support the development of the semiconductor industry, which creates life with a dream such as self-driving cars and AI robots, and contribute to society.



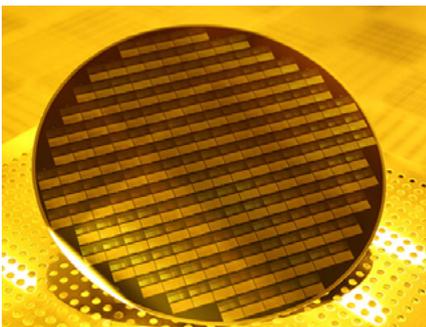
### Rare earth magnet

Rare earth magnet has about 10 times the magnetic force of conventional ferrite magnets and are used to reduce the weight of motors and increase electrical power regeneration. These magnets help reduce greenhouse gas emissions while increasing the power efficiency of a variety of products, including environmentally friendly vehicles and energy-saving air conditioners.



### High-purity transparent silicone / Epoxy material for LED device

Transparent silicone and epoxy material are encapsulation materials and sealing materials for LED devices that consumes less power than conventional lighting and fluorescent lamps. In particular, by using our materials, we can achieve a long life and improve high heat resistance, so it is also used in electric vehicles (EV vehicles) and contributes not only to energy saving but also to CO<sub>2</sub> reduction.



### Photoresist, Photomask blanks

Photoresist is the photosensitive resin that are used in the lithography process to transfer circuit patterns, such as those for semiconductors, on a silicone wafer. Photomask blanks are the base material of photomasks that are light-shielding thin films on a synthetic quartz substrate, are used as the patterning template of circuits to be transferred on a silicon wafer in the semiconductor lithography process. Both of them support the high integration, high speed, and high functionality of semiconductors that contribute to power saving and energy saving of automobiles and electronic devices.



### Synthetic quartz preform for optical fiber

It is a rod made of synthetic quartz of high purity, and is designed so precisely that any incident light passes through without attenuation. By being used in medical endoscopes, it contributes to reducing the burden on patients and making accurate diagnoses. It is also used as materials for optical fibers, which are essential for the information society.



## Silicone

Silicone primarily consists of silicon (Si), which is the second-most abundant element found in the outer layer of the earth's crust, behind oxygen. It is associated with a low dependence on petroleum resources and a low environmental footprint. In addition, taking advantage of its heat resistance, cold resistance, electrical properties, and water resistance it is used for environmentally friendly products such as electric vehicles, eco tires, LED lights, and solar power generation, thereby contributing to the achievement sustainable society.



## Anode material for lithium ion batteries

Shin-Etsu has succeeded in putting electrical conductivity on SiO particles by using our own proprietary method, and has put it to practical use as an anode material for high-capacity and high-output lithium-ion batteries. High-capacity batteries help reduce the weight and increase the mileage of electric vehicles, thereby contributing to the reduction of environmental impact.



## Cellulose derivatives

Cellulose derivatives made from natural polymer cellulose are environmentally friendly materials, and used in a wide range of fields such as pharmaceuticals, food, construction and civil engineering work. Industrial cellulose derivatives reduce the separation of concrete in water, enabling concrete to be poured without polluting water. This contributes to environmental preservation by preventing water pollution



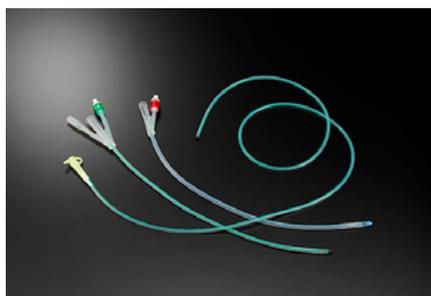
## Synthetic pheromones

Synthetic pheromones provide a new type of agricultural material that inhibits the mating of pests to reduce the next generation of them. By using synthetic pheromones, it aims only at eliminating agricultural pests, agricultural products can be cultivated while maintaining the ecosystem of many living creatures such as these pests' natural enemies. Also, it is possible to reduce the spread of agricultural chemicals that cause contamination of groundwater and rivers, thereby contributes to the conservation of water resources.



## Biodegradable runner clip

Biodegradable runner clip is an agricultural materials used to divide crops with runners (stems) that crawl on the ground, such as strawberries and melons. Made of biodegradable plastic, it gradually becomes brittle due to ultraviolet rays and hydrolysis after use, and is decomposed by microorganisms in the soil in 1 to 2 years. Since it is composed of the materials certified as biodegradable plastic and biomass plastic, it does not lead to an increase in CO<sub>2</sub>, and it also contributes to global warming countermeasures and reduction of plastic waste.



## Medical catheter

Medical catheter is a medical device that is inserted into the body of a patient whose physical function has deteriorated due to illness or surgery, and is mainly composed of silicone rubber, which is said to be less prone to allergic reactions. In modern medicine, it is used for various medical procedures such as blood collection, body fluid drainage, examination and treatment, and contributes to the provision of high-quality basic healthcare services.

## — Our company's initiative

[Achieving a Sustainable Society](#)



[Shin-Etsu Group and Climate Change](#)



# Management Structure of Sustainability Initiatives

Structure of Sustainability Initiatives

Corporate Governance

Risk Management

Shin-Etsu Group Business Principle / Basic Sustainability Policy	Structure of initiatives	List of executives in charge of Sustainability initiatives	Participant in UN Global Compact
Evaluation from Society	Utilization of Supply Chain CSR Management Systems		

## Shin-Etsu Group's Sustainability

What we strive for

Contribution to the Future of the Earth

Our Mission

To provide products that contribute to solving social issues

### Business Principle

The Group strictly complies with all laws and regulations, conducts fair business practices and creates unrivaled value for society and industry through the provision of key materials and technologies

## Basic Sustainability Policy

### Key Sustainability Issues

The foundation of all activities: legal compliance, fair corporate activities

Employees and contractors health and safety

Energy-saving, resource-saving, and reduction of the environmental impact

Product quality improvements and product safety control

Promoting CSR procurement and the diversification of supply sources

Respect for human rights, the development of human resources, and the promotion of diversity

Respect for and protection of intellectual property

Contribution to industry and social initiatives

Accurate and timely information disclosure and communication with stakeholders

## — Shin-Etsu Group Business Principle

The Group strictly complies with all laws and regulations, conducts fair business practices and creates unrivaled value for society and industry through the provision of key materials and technologies.

## — Basic Sustainability Policy

The Shin-Etsu Group will :

1. Do our best to increase the Group's corporate value through sustainable growth and make multifaceted contributions to society.
2. Carry out all our company activities while always placing the utmost priority on safety.
3. Expand those businesses that contribute to the reduction of greenhouse gas emissions.
4. Maximize the efficiency of product development and manufacturing, and contribute to higher efficiency of society by supplying our products thus produced.
5. Engage in business activities while taking biodiversity into account and seeking harmony with the global environment.
6. Strive to respect human rights, assure equality in employment opportunities, and support the self-fulfillment of our employees.
7. Appropriately disclose information in a timely manner.
8. Carry out healthy, trustworthy, transparent corporate activities based on the integrity of the Group's ethical values.

Revised December 2021

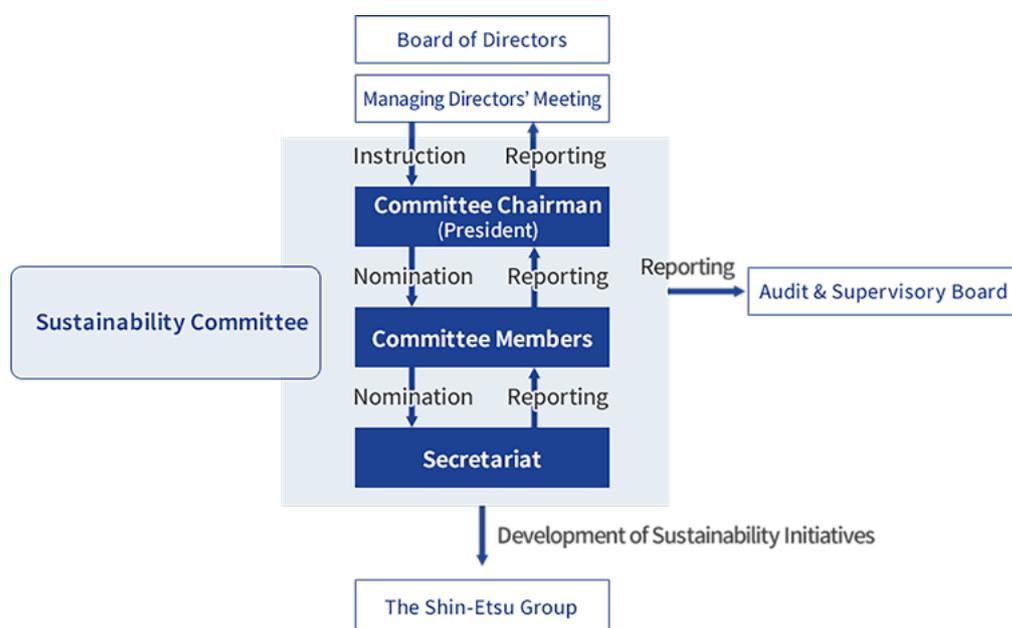
## – Structure of Initiatives

### Sustainability Initiatives

The Group believes that it is the social responsibility of the Group to contribute to all of our stakeholders, such as shareholders, investors, customers, suppliers, local communities, and employees. To achieve this, we formulated the "Basic Sustainability Policy" and internal regulations and carry out sustainability activities. In order to develop sustainability initiatives effectively and properly at a company-wide level in all aspects of corporate activities, we have set up the Sustainability Committee<sup>1</sup>, which is chaired by the President and comprises approximately 60 members, including Directors, Corporate Officers and department heads of Shin-Etsu Chemical and sustainability officers from group companies.

<sup>1</sup> In November 2021, the name was changed from ESG Promotion Committee to Sustainability Committee.

### Sustainability Organizational Chart



## Issues and Progress of Sustainability

The issues and achievements of sustainability in FY2021 and the activities scheduled for FY2022 are as follows.

Issues	Progress in FY2021	Schedule for FY2022
Human rights due diligence <sup>1</sup>	<ul style="list-style-type: none"> <li>Identified human rights risks to be prioritized from the results of human rights risk surveys</li> <li>Started human rights risk survey in supply chain</li> <li>Consider constructing a grievance system</li> </ul>	<ul style="list-style-type: none"> <li>Conduct supply chain human rights risk surveys (ongoing)</li> <li>Develop human rights awareness and educational programs.</li> </ul>
Response to TCFD <sup>2</sup>	<ul style="list-style-type: none"> <li>Conducted a Climate Change Scenario Analysis that targets some of our businesses</li> </ul>	<ul style="list-style-type: none"> <li>Discussed specific measures aimed at achieving carbon neutrality</li> </ul>
Integration of SDGs and management	<ul style="list-style-type: none"> <li>Set "Contributing to SDGs" as one of the management objectives for FY2021 and promoted it within the company.</li> <li>Publish a series of articles related to the SDGs in the company newsletter to deepen the Group's understanding of the topic</li> </ul> 	<ul style="list-style-type: none"> <li>Develop and supply products that contribute to SDGs.</li> </ul>

<sup>1</sup> Human rights due diligence

An activity whereby a company recognizes, prevents, and addresses adverse effects related to human rights both within and outside the company by repeating the PDCA cycle of (1) formulating and disclosing human rights policies, (2) assessing the impact of our business activities on human rights, (3) preventing and correcting negative impacts, and (4) tracking and disclosing performance data.

<sup>2</sup> Task Force on Climate-related Financial Disclosures (TCFD)

A special team focusing on disclosure of financial information concerning climate change, which was requested by G20 and established by the Financial Stability Board (FSB) in December 2015. In July 2017, the TCFD published a set of recommendations calling for corporations to analyze their risks and opportunities based on future scenarios and various mid to long-term predictions of climate change, and to disclose the impact on their finances to investors, etc.

## – List of Executives in Charge of Sustainability Initiatives

Position	Name	Current Positions (related to Sustainability)	Key Sustainability Issues
Vice Chairman	Fumio Akiya	In charge of Technologies	Key Issue : Product quality improvements and product safety control
President	Yasuhiko Saitoh	Chairman of Sustainability Committee	
Managing Corporate Officer	Toshiya Akimoto	Vice Chairman of Sustainability Committee In charge of Public Relations, Legal Affairs General Manager of Office for Digitization and Digitalization Chairman of Risk Management Committee	The foundation of all activities: legal compliance, fair corporate activities Key Issue : Respect for and protection of intellectual property Key Issue : Accurate and timely information disclosure and communication with stakeholders Risk Management
Managing Corporate Officer	Fumio Arai	In charge of Purchasing	Key Issue : Promoting CSR procurement and the diversification of supply sources
Managing Corporate Officer	Yukihiro Matsui	In charge of Patents	Key Issue : Respect for and protection of intellectual property
Managing Corporate Officer	Masaki Miyajima	In charge of Business Auditing	Corporate Governance
Corporate Officer	Toshiyuki Kasahara	General Manager of Finance & Accounting Dept. In charge of Office of the President	Corporate Governance (Fair tax payment, Operation of Group Companies)
Corporate Officer	Yoshimitsu Takahashi	In charge of General Affairs, Environmental Control & Safety, and Personnel & Labor Relations	Corporate Governance Key Issue : Employees and contractors health and safety Key Issue : Energy-Saving, Resource-Saving, and Reduction of the Environmental Impact Key Issue : Respect for human rights, the development of human resources, and the promotion of diversity

As of June 29, 2022

## – Participating in the UN Global Compact

In November 2010, the Group joined the UN Global Compact. Life in society has become more complex and diverse in recent years, and the social responsibilities of enterprises have grown.

The Group remains firmly committed to its business principle of complying with all laws and regulations, conducting fair business practices and creates unrivaled value for society and industry through the provision of key materials and technologies. At the same time we respond flexibly to changes in the social and economic environment.

The Group has also been participating in the Global Compact Network Japan (GCNJ) since November 2010. The Group joins subcommittees, such as the Environmental Management Subcommittee and ESG Subcommittee, to use the information gained on the latest development of sustainability to promote the Group's Sustainability.

The Group, as the first in Japan, signed a document to support GCNJ's Tokyo Principles for Strengthening Anti-Corruption Practices in February 2018. In September 2021, we participated in the Anti-Corruption Forum 2021 sponsored by the GCNJ Anti-Corruption Commission, where we discussed anti-corruption issues with lawyers and other specialists, as well as the personnel in charge of anti-corruption at other companies.



Anti-Corruption Forum 2021  
(September 2021)

## > Key Sustainability Issues - The Foundation of All Activities : Legal Compliance, Fair Corporate Activities

### Global Compact Ten Principles

Principle 1 : Businesses should support and respect the protection of internationally proclaimed human rights; and

Principle 2 : make sure that they are not complicit in human rights abuses.

Principle 3 : Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4 : the elimination of all forms of forced and compulsory labour;

Principle 5 : the effective abolition of child labour; and

Principle 6 : the elimination of discrimination in respect of employment and occupation.

Principle 7 : Businesses should support a precautionary approach to environmental challenges;

Principle 8 : undertake initiatives to promote greater environmental responsibility; and

Principle 9 : encourage the development and diffusion of environmentally friendly technologies.

Principle 10 : Businesses should work against corruption in all its forms, including extortion and bribery.



## – Evaluation from Outside the Company

The Company is incorporated in the following Sustainability index. (foot note of MSCI)



2022 CONSTITUENT MSCI JAPAN  
ESG SELECT LEADERS INDEX

2022 CONSTITUENT MSCI JAPAN  
EMPOWERING WOMEN INDEX (WIN)



\* MSCI : The inclusion of Shin-Etsu Chemical Co., Ltd. in any MSCI index, and the use of MSCI logos, trademarks, service marks or index names herein, do not constitute a sponsorship, endorsement or promotion of Shin-Etsu Chemical Co., Ltd. by MSCI or any of its affiliates. The MSCI indexes are the exclusive property of MSCI. MSCI and the MSCI index names and logos are trademarks or service marks of MSCI or its affiliates.

\* FTSE Russell : FTSE Russell hereby certifies that Shin-Etsu Chemical Co., Ltd. has met the requirements for inclusion in the FTSE Blossom Japan Sector Relative Index as a result of a third-party survey and has become a constituent of this index. The FTSE Blossom Japan Sector Relative Index is widely used to create and evaluate sustainable investment funds and other financial products. <https://www.ftserussell.com/products/indices/blossom-japan>

## – Utilization of Supply Chain CSR Management Systems

The Group utilizes supply chain CSR management systems, such as RBA Online,<sup>1</sup> Sedex,<sup>2</sup> and EcoVadis<sup>3</sup> to disclose CSR information. Shin-Etsu Silicones Europe, which participates in EcoVadis, received a gold rating in FY2020.

<sup>1</sup> RBA Online

An online database organized by NPO Responsible Business Alliance (former: Electronic Industry Citizenship Coalition) to manage labor, health and safety, environment, and ethics in the supply chain. Enterprises in the global electronic industry and others join the Responsible Business Alliance.

<sup>2</sup> Sedex

An online database organized by and named after NPO Sedex for storing and accessing data on ethical and responsible business practices. Enterprises from 150 countries in 28 industries, including food, automobile, cosmetics, and amenity, have joined Sedex.

<sup>3</sup> EcoVadis

The supply chain management system operated by the French CSR rating agency, EcoVadis, is used by multinational corporations in 150 countries in North America, Asia, and Europe.

## – Management

Structure of Sustainability Initiatives



Corporate Governance



Risk Management



# Management Corporate Governance

Structure of Sustainability Initiatives

Corporate Governance

Risk Management

Corporate Governance System	Outside Directors	Outside Audit & Supervisory Board Members	Officers' Remuneration Committee
Internal Control System and Operational Audit	Tax Policy	Operation of Group Companies	

The company considers corporate governance to be an important management task, and focuses on the following points:

- Developing an efficient organization and internal rules
- Ensuring management transparency
- Strengthening internal controls
- Disclosing information timely and accurately

## — Corporate Governance System

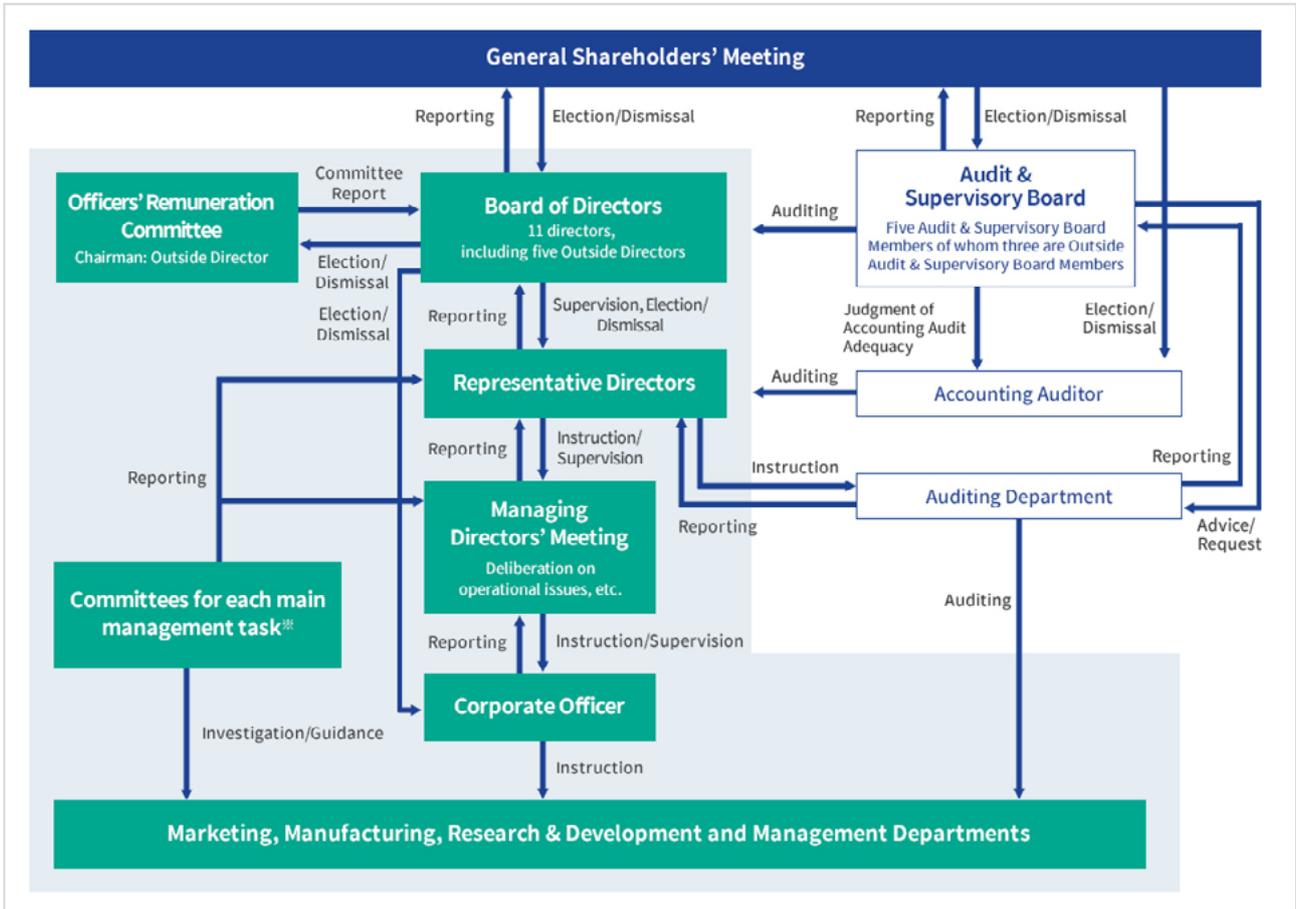
The Board of Directors consists of 11 members, of whom 5 are Outside Directors with a wealth of corporate management experience and exceptional insight.

The company discusses and decides the execution of operations at the Board of Directors' Meeting and the Managing Directors' Meeting, which are each held at least once a month. The Board of Directors deliberates and makes resolutions on important management matters, including decisions on basic principles of the company and matters requiring resolution by law and the Articles of Incorporation. The Managing Directors' Meeting deliberates and makes decisions on general business matters (excluding matters to be discussed at Board of Directors meetings) in order to ensure prompt and efficient execution of business operations. In addition, we listen to individual opinions from Outside Directors on the overall effectiveness of the Board of Directors on an annual basis, and the Outside Directors evaluate whether our Board of Directors has maintained its effectiveness. This also allows us to obtain valuable opinions on such issues as "further enhancement of discussions at board meetings" and "promotion of female directors" etc.

As stated above, the Board of Directors is functioning properly. In addition, the results of the self-evaluation and analysis of the Board of Directors show that the effectiveness of the Board has been maintained as a whole, and that it is fulfilling its functions sufficiently.

The company has adopted an Audit & Supervisory Board system. The Audit & Supervisory Board is composed of 5 members, including 3 Outside Audit & Supervisory Board Members. The Audit & Supervisory Board Members attend the Board of Directors' Meetings, Managing Directors' Meetings, and other important internal meetings. In addition, they audit the business execution of the directors through web conferencing audits and other investigations of business sites and subsidiaries, and reviewing the reports submitted by the directors and employees on the status of the execution of their duties. The Audit & Supervisory Board Members also receive reports and explanations on financial audits from the accounting auditors and exchange opinions with them on a quarterly basis. Furthermore, they regularly receive reports and explanations regarding the status of internal audits from the Auditing Department and exchange opinions. In addition, Shin-Etsu Chemical has an executive officer.

## Corporate Governance System at Shin-Etsu Chemical

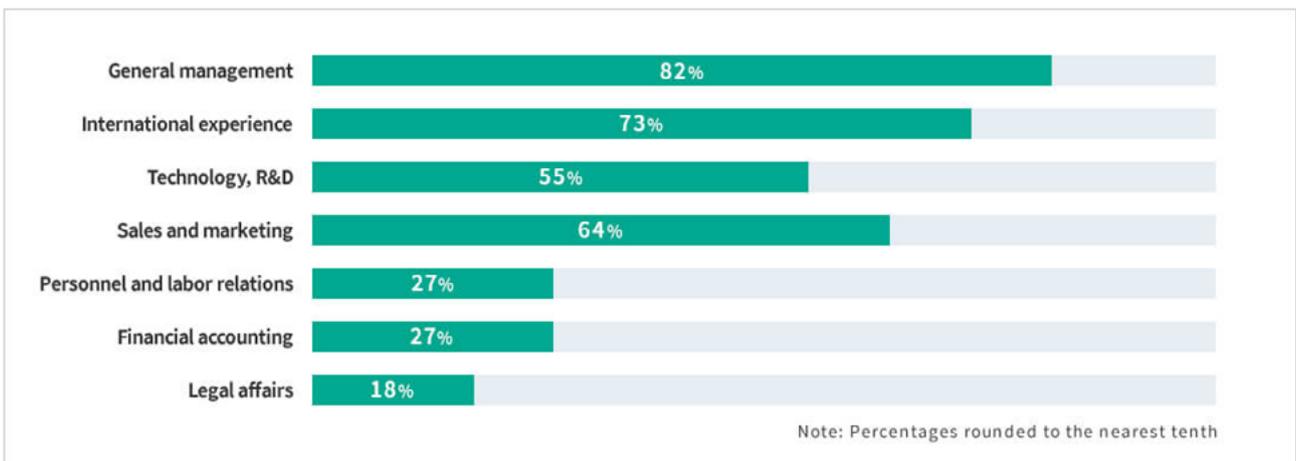


As of June 29, 2022

※Sustainability Committee, Risk Management Committee, G Committee, etc.

### > Board of Directors

#### Director Specialties



As of June 29, 2022

## – Outside Directors

The company welcomes five Outside Directors for the purpose of boosting the advisory and supervisory functions of management from an independent perspective. We have received advice on growth strategies and the enhancement of governance from Outside Directors. We believe these points are important for our continued sustainable growth.

### Outside Director List

As of June 29, 2022



Tsuyoshi Miyazaki  
Former Representative Director and President, Former Representative Director and Chairman, and current Advisor, Mitsubishi Logistics Corporation



Toshihiko Fukui  
Former Governor, the Bank of Japan; President, The Canon Institute for Global Studies ; Outside Director, Kikkoman Corporation



Hiroshi Komiyama  
Former President, The University of Tokyo; Chairman, Mitsubishi Research Institute, Inc.



Kuniharu Nakamura  
Chairman, Sumitomo Corporation ; Outside Director, NEC Corporation



Michael H. McGarry  
Chairman, CEO, PPG Industries, Inc.  
Outside Director, United States Steel Corporation

## – Outside Audit & Supervisory Board Members

The company appoints three Outside Audit & Supervisory Board Members for the purpose of boosting advisory and supervisory functions on management from an independent perspective. They audit the company's management as experts in their respective fields or from a broad point of view based on their corporate management experiences. Audits by the Outside Audit & Supervisory Board Members contribute to the company's compliance system.

### Outside Audit & Supervisory Board Member List

As of June 29, 2022



**Yoshihito Kosaka**  
Certified Public Accountant;  
Representative partner,  
HIYU Certified TAX  
Accountant's Corporation;  
Outside Audit &  
Supervisory Board  
Member, ASTMAY Co., Ltd.;  
Outside Audit &  
Supervisory Board  
Member, OXIDE  
Corporation



**Kiyoshi Nagano**  
Former Representative  
Director, Chairman, and  
President, former  
JASDAQ Securities  
Exchange, Inc.;  
Outside Director, LEC Inc.



**Mitsuko Kagami**  
Lawyer, Kagami Law  
Offices;  
Outside Director, Medipal  
Holdings Corporation;  
Outside Director, Sotetsu  
Holdings, Inc.

## — Officers' Remuneration Committee

The company established the Officers' Remuneration Committee to review and evaluate the transparency and validity in the process of determining Directors' remuneration, nominating candidates for Executives, Directors, and Audit & Supervisory Board Members, and others. The committee is chaired by outside director Toshihiko Fukui and consists of five directors, including three outside directors.

The committee is convened by regular meetings biannually and conference calls as required. The committee reviews and evaluates the remuneration of Directors, and deliberates on the nomination of candidates for Directors and Audit & Supervisory Board Members, and advises the Board of Directors.

Officers' Remuneration Committee Members

Chairman: Toshihiko Fukui

Member: Yasuhiko Saitoh, Representative Director-President

Member: Shunzo Mori, Director-Adviser

Member: Hiroshi Komiyama, Outside Director

Member: Michael H. McGarry, Outside Director

## — Internal Control System and Operational Audit

The company has formulated a "Basic Policy on Internal Controls" to help put in place "structures to ensure that the execution of duties by Directors is fully compliant with relevant legislations and the articles of incorporation, and structures to ensure the appropriateness of business operations within the corporate group, which consists of its subsidiaries, this corporation, and other corporate business," as stipulated by the Companies Act and an Ordinance of the Ministry of Justice. Our internal control system is structured and implemented in accordance with the above policy. We review it constantly and endeavor to make it more appropriate and efficient.

Internal operation audits and internal control assessments over financial reporting are handled by the Auditing Department from the viewpoint of legality and rationality of business activities. The results of these audits and assessments are reported to board members, including Outside Directors and Outside Audit & Supervisory Board Members.

## — Policy on tax payments and tax-related initiatives

In its business principle, the Group states that it strictly complies with all laws and regulations and conducts fair business practices. Each and every Group employee performs their daily work duties sincerely based on this.

We believe that it is our social responsibility and one of our contributions as a company to properly pay taxes for the profits in accordance with the laws and regulations of the countries and regions in which we operate. As part of our efforts to this end, we strive to instill and raise awareness of tax compliance and provide education, especially for employees involved in tax affairs, to improve their tax knowledge and practical skills. For important tax issues, we consider the appropriateness of tax treatment while receiving appropriate advice from experts, and strive to file appropriate tax returns based on the laws and regulations of each country. We also place importance on maintaining good relationships with the tax authorities in each country by dealing with them in good manner.

We do not engage in any business activities for the purpose of tax avoidance.

The total corporate income tax paid in FY2021 was 147.4 billion yen for consolidated companies. The breakdown by region is as follows: Japan 81.1 billion yen, the U.S. 58.1 billion yen, Europe 4.1 billion yen, and Asia-Oceania 4 billion yen.

## — Operation of Group Companies

The company aims to develop the whole Group by supporting and respecting the autonomy of the Group companies. Group companies are managed based on the "Shin-Etsu Chemical Group Company Operational Regulations." The 99 consolidated subsidiaries conduct prior consultation and report on the following projects.

### **(1) Prior consultation example**

Capital increase or decrease, mergers, dissolutions, and amendments to the articles of incorporation  
New business and capital investment plan  
Transfer or acquisition of business  
Appointment, dismissal, or transfer of officers and seconded executives

### **(2) Reporting example**

Operations review  
Financial results  
Risk information identified by Group companies

Important information such as deficiencies in internal control Furthermore, by holding meetings that are attended by the presidents of our main Group companies at least once a year, we actively promote the sharing and exchange of information among Group companies.

### Related Information

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[> Corporate Governance Report](#) 

[> Sustainability Data](#)

## — Management

[Structure of Sustainability Initiatives](#) 

[Corporate Governance](#) 

[Risk Management](#) 

# Management Risk Management

Structure of Sustainability Initiatives

Corporate Governance

Risk Management

## – Risk Management Regulations

The Company has established the Risk Management Regulations. Comprehensive risk considered in carrying out business activities in the Company and the Group are specifically defined in a long-term perspective in the regulations. In addition, risk handling methods and a risk management system has been established.

### Risks Defined in Risk Management Regulations



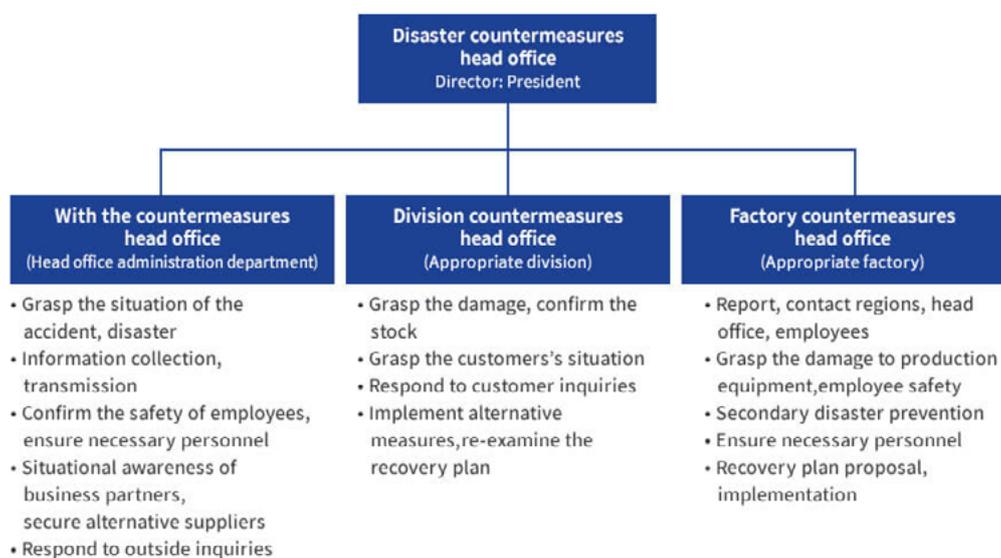
## – Risk Management Committee

The Company has a Risk Management Committee consisting of approximately 20 members, including our directors, corporate officers, and department managers. The Committee maintains risk management structures, establishes internal regulations, and works to identify the risks arising from the operations of the Company as well as preventing them from occurring. The Committee also promotes group-wide activities such as the development of business continuity planning, providing education and sharing information. The Committee reports directly to the Board of Directors, the Audit & Supervisory Board, and the Managing Directors' Meeting on major issues in risk management. In FY 2021, in addition to the 3 meetings held by the Committee, secretariat held the meetings every month. At the secretariat meeting, the members discussed risks about production, quality control, and natural disasters, and the discussions are shared with all Committee members to enhance risk response. In addition, the Committee members are being asked for their opinions and the Committee is formulating risk management issues that should be focused on in FY2022 and beyond.

## – Business Continuity Plan and handling in Emergencies

The Group offers a number of products with high market share not only in Japan but around the world or which used in special applications in state-of-the-art industries. For that reason, if these products cannot be supplied due to an accident or serious disaster such as a massive earthquake or fire, it will have an effect on society. In the Company, each division and each plant is preparing for a disaster and accident and formulates a business continuity plan on the basis of the Companywide Business Continuity Management Regulations. In addition, if a disaster or accident occurs, we will work using the structure shown below. Each of the countermeasures head office and organizations carry out emergency response and recovery support on the basis of pre-defined business standards.

## – System and major response operation in the occurrence of a disaster or accident



Conduct comprehensive disaster prevention drills  
(October 2021, Shin-Etsu Chemical Kashima)



Conduct comprehensive disaster prevention drills  
(October 2021, Shin-Etsu Chemical Naoetsu)

## – Management

Structure of Sustainability Initiatives [>](#)

Corporate Governance [>](#)

Risk Management [>](#)

# Shin-Etsu Group Key Sustainability Issues

Specifying Key Sustainability Issues

Risks and Opportunities

## – Shin-Etsu Group Key Sustainability Issues

The foundation of all activities: legal compliance, fair corporate activities	Employees and contractors health and safety	Energy-saving, resource-saving, and reduction of environmental impacts
Product Quality Improvements and Product Safety Control	Promoting CSR Procurement and the Diversification of Supply Sources	Respect for Human Rights, the Development of Human Resources, and the Promotion of Diversity
Respect for and protection of intellectual property	Contribution to industry and social initiatives	Accurate and timely information disclosure and communication with stakeholders

## – Specifying Shin-Etsu Group Key Sustainability Issues

We have been working on a wide variety of activities in order to practice our business principle, which states that "the Group strictly complies with all laws and regulations, conducts fair business practices and creates unrivaled value for society and industry through the provision of key materials and technologies."

The Sustainability Committee (former: ESG Promotion Committee) defined the matters as key sustainability issues (former: key ESG issues) through the following procedure in FY2015.

## – Process of Specifying Key Sustainability Issues

### 1. Clarifying key sustainability issues

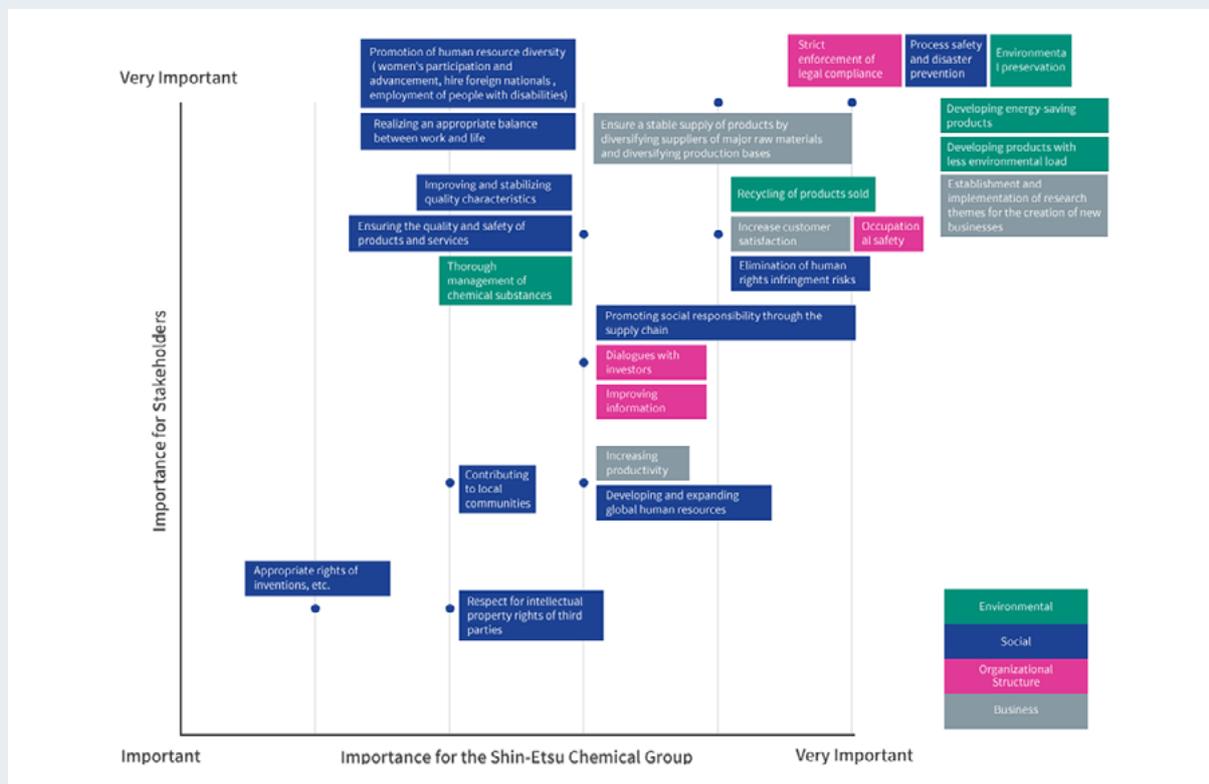
In December 2015, the committee conducted the following investigations for all of the company's departments and major domestic Group companies.

1. The stakeholders for each department and each company are reconfirmed.
2. In reference to ISO 26000 core topics, key sustainability issues are listed for each department and each company.
3. The level of importance of each key issue for the Group as well as for stakeholders is scored.

## 2. Creating a scatter plot of key sustainability issues and organizing them

In January 2016, the committee created a scatter plot based on the key issues and the scores submitted by each department and each company. The result showed that the majority of key issues were very important.

The committee organized the listed key issues and created a draft of key sustainability issues that reflects the scatter plot.



## 3. Interviews with Outside Directors

In January 2016, individual interviews were conducted with all Outside Directors based on the prepared proposal. The followings are the suggestions and opinions from the interviews:

1. Compliance with laws and regulations is related to all issues.
2. All listed key sustainability issues are equally important to the Group, and it is difficult to prioritize them.
3. The Group should clarify its goals while specifying key sustainability issues.

## 4. Re-examination in the committee and approved by the management

In February 2016, the committee has re-examined the key issues based on the suggestions and opinions of the Outside Directors. The Managing Directors' Meeting, in which all Directors and Audit & Supervisory Board Members are involved in making decisions, also examined the key issues and has declared the items in the figure above to be key sustainability issues of the Group in 2015.

In December 2018, the Sustainability Committee discussed the key issues and their importance, which had been reviewed by all departments of the company and major Group companies in Japan, and decided to continue addressing the key issues identified in 2015.

The Group will work equally on all of these key sustainability issues in no particular order.

# Shin-Etsu Group Key Sustainability Issues

Specifying Key Sustainability Issues

Risks and Opportunities

The Shin-Etsu Group recognizes the challenges, risks, and opportunities of all key Sustainability issues and addresses them accordingly.

Key Sustainability Issues	Major Risks and Opportunities		Awareness of Issues
<b>The foundation of all activities: legal compliance, fair corporate activities</b>	Risks	<ul style="list-style-type: none"> <li>• Impact of legal violations and improprieties on corporate management.</li> <li>• Damage to corporate value due to loss of trust from society.</li> </ul>	<ul style="list-style-type: none"> <li>• Demand thorough compliance awareness among officers and employees through training, etc.</li> <li>• No provision of unfair benefits or demands thoroughly with the aim of preventing corruption</li> <li>• Regarding the prevention of bribery, ensure No provision of unfair benefits or demands thoroughly, and establish internal rules at each overseas group company</li> <li>• Cutting ties with anti-social forces</li> <li>• Compliance with sound business practices with suppliers and service providers</li> <li>• Support for the "Declaration of Partnership Building"</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>• Ensuring thorough legal compliance and fair corporate activities leads to:               <ol style="list-style-type: none"> <li>(1) Formation of the foundation of corporate value</li> <li>(2) Elimination of risks</li> <li>(3) Building of customer trust and expansion of business opportunities</li> <li>(4) Hiring and retaining of excellent human resources</li> </ol> </li> </ul>	
<b>Employees and contractors health and safety</b>	Risks	<ul style="list-style-type: none"> <li>• Impact of accidents and environmental problems on local communities and employees.</li> <li>• Damage to equipment caused by typhoons, earthquakes, or other natural disasters.</li> <li>• Impact of an infectious disease outbreak on operations.</li> </ul>	<ul style="list-style-type: none"> <li>• Safety education for employees through disaster prevention drills and workshops</li> <li>• Environmental control and safety audits</li> <li>• Improvement of the workplace environment and promotion of employees' health</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>• Implementing measures to prevent accidents and developing new production processes enable the creation of a safe working environment and the improvement of stable production and higher productivity</li> <li>• Hiring and retaining excellent human resources</li> <li>• Continuing operations, shutting down operations, and resuming operations safely by designing the plant in anticipation of a natural disaster and taking measures against risks</li> <li>• Promoting employee health, achieving a work-life balance, and cultivating a sense of motivation and fulfillment in work</li> </ul>	

Energy-saving, resource-saving, and reduction of environmental impacts	Risks	<ul style="list-style-type: none"> <li>• Additional costs of stricter regulations related to greenhouse gas emissions</li> <li>• Price increases and difficulty in procuring raw materials for the quantity needed</li> <li>• Increased water risks, such as water depletion and flooding</li> </ul>	<ul style="list-style-type: none"> <li>• Promoting the reduction of environmental impact</li> <li>• Waste reduction</li> <li>• Pollutant countermeasures</li> <li>• Response to climate change</li> <li>• Resource recycling</li> <li>• Water resource conservation and water pollutant elimination</li> <li>• Conservation of biodiversity initiatives</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>• The constant challenge of technological innovation leads to the enhancement of "manufacturing ability".</li> <li>• Increasing competitiveness by conserving energy and resources, reducing environmental loads, and improving productivity</li> <li>• Increasing the demand for products that contribute to the environment</li> <li>• Developing technologies that recycle water, thus contributing to business continuity</li> </ul>	
Product quality improvements and product safety control	Risks	<ul style="list-style-type: none"> <li>• Loss of trust due to product quality issues</li> <li>• Direct or indirect impacts on product safety</li> </ul>	<ul style="list-style-type: none"> <li>• Quality control</li> <li>• Quality audits and support</li> <li>• Product safety control</li> <li>• Promote automation of quality inspections and assurance (reduce personnel involvement)</li> <li>• Verification of the statistical validity of inspection variations and standard ranges</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>• The track record of continuing to deliver products of the promised quality on time will lead to increased customer trust.</li> <li>• Sincere efforts to ensure product safety and accumulation of achievements will lead to the trust of customers and society.</li> </ul>	
Promoting CSR procurement and the diversification of supply sources	Risks	<ul style="list-style-type: none"> <li>• Impact from not being able to procure raw materials, such as discontinuation of manufacture and shipment delay to customers</li> <li>• Problems arising in the supply chain</li> </ul>	<ul style="list-style-type: none"> <li>• Create "Shin-Etsu Group CSR Procurement Guidelines" and revise them as appropriate</li> <li>• Ensuring compliance with subcontracting laws by attending seminars and conducting internal audits</li> <li>• Implementing initiatives to eliminate the use of conflict minerals</li> <li>• Implementing the supplier CSR procurement survey</li> <li>• Participation in RSPO "Roundtable on Sustainable Palm Oil"</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>• Diversifying suppliers enable stable procurement, purchasing at optimal prices, and procurement of raw materials through fair transactions</li> <li>• Thorough CSR procurement will lead to the trust of customers and society</li> </ul>	
Respect for human rights, the development of human resources, and the promotion of diversity	Risks	<ul style="list-style-type: none"> <li>• Occurrence of human rights infringements in the Group's business activities and supply chain</li> <li>• Inconsistent effectiveness of human resource development through on-the-job training depending on the department</li> <li>• Negative impact of performance-based operations, which are closely related to human resource diversity</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting employee growth through a training system</li> <li>• Increasing employee motivation through a performance-based personnel evaluation system and equal opportunities</li> <li>• Promoting diversity</li> <li>• Enhancing the work-life balance system</li> <li>• Implementing human rights due diligence</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>• Recruitment and stable employment of talented people through business activities based on respect for human rights</li> <li>• Training employees with excellent practical skills through on-the-job training</li> <li>• Providing vitality with a corporate culture in which employees set their own goals and take on the challenge of achieving them</li> <li>• Providing equal opportunities and creating a performance-based evaluation system, thus enabling the recruitment, development, and selection of capable personnel, which leads to business growth and the cultivation of new businesses</li> </ul>	

Respect for and protection of intellectual property	Risks	<ul style="list-style-type: none"> <li>•The adverse effect on product sales due to infringement of our intellectual property</li> <li>•Restrictions on our product sales and business due to the patents of other entities</li> <li>•Impact of cyber-attacks on production, sales, and R&amp;D activities</li> <li>•Loss of trust in the company due to information leakage</li> </ul>	<ul style="list-style-type: none"> <li>•Intellectual property management</li> <li>•Initiatives for information asset management</li> <li>•Protection of personal information</li> <li>•Initiatives for cyber security</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>•Promoting product development and unique manufacturing methods by protecting and utilizing our intellectual property</li> <li>•Contributing to the development of industry and the society by publishing inventions</li> <li>•Implementing technology innovation and operational reforms by utilizing digital technologies while thoroughly protecting and managing information assets and taking measures against cyber attacks</li> </ul>	
Contribution to industry and social initiatives	Risks	<ul style="list-style-type: none"> <li>•Loss of trust from local communities due to social contribution activities not meeting local needs</li> <li>•Impact on the world development due to the delay in achieving a sustainable world that the SDGs aim to achieve</li> </ul>	<ul style="list-style-type: none"> <li>•Contribution to SDGs goals and targets</li> <li>•Fundraising for the U.N. World Refugee Day</li> <li>•Summer school for elementary school students</li> <li>•Traffic safety activities</li> <li>•Donation of protective clothing and antiseptic solution to local medical institutions</li> <li>•Social contribution activities at overseas Group companies</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>•Creation of employment opportunities, stable employment and tax payment due to business stability</li> <li>•Building relationships of trust with the local community through dialogue and continuous activities</li> <li>•Contributing to a better world by addressing SDGs issues through business operations</li> </ul>	
Accurate and timely information disclosure and communication with stakeholders	Risks	<ul style="list-style-type: none"> <li>•Impairment of corporate value through the non-disclosure and inadequate disclosure of information</li> <li>•Loss of trust from stakeholders and the society due to failure to fulfill accountability</li> </ul>	<ul style="list-style-type: none"> <li>•Appropriate and timely disclosure of company information</li> <li>•Communication with stakeholders</li> <li>•Dialogue with mass media including conference calls with analysts and investors after the announcement of financial results</li> <li>•Holding an online exhibition to prevent infection with the COVID-19</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>•Creating a fair market evaluation and improving corporate value</li> <li>•Earning the trust of stakeholders and the society</li> </ul>	

## – Specifying Key Sustainability Issues

Specifying Key Sustainability Issues >

Risks and Opportunities >

## – Performance and Outcome

### The foundation of all activities: legal compliance, fair corporate activities

- Ensuring Full Compliance Awareness
- Initiatives Aimed at Preventing Corruption
- Export Control
- Cutting Ties with Anti-social Forces

### Employees and contractors health and safety

- Occupational Safety
- Process Safety and Disaster Prevention Plan
- Education and Drills
- Environmental Control and Safety Audits
- Health Considerations
- Reporting of Accidents and Lost-Time Accidents

### Energy-saving, resource-saving, and reduction of environmental impacts

- Environment Management
- Response to Climate Change
- Resource Saving
- Biodiversity and Pollutant Countermeasures

### Product Quality Improvements and Product Safety Control

- Quality Control
- Quality Audits and Support
- Product Safety Control

### Promoting CSR Procurement and the Diversification of Supply Sources

- Basic Procurement Policy
- Compliance with the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors
- Sustainable Procurement
- Announcing the "Declaration of Partnership Building"
- Procurement Audit
- Procurement Conferences
- Control of Chemical Substances Used as Raw Materials

### Respect for Human Rights, the Development of Human Resources, and the Promotion of Diversity

- Respect for human rights
- Human resource development
- Creating a comfortable working environment

### Respect for and protection of intellectual property

- Intellectual Property Management
- Initiatives for Information Asset Management
- Protection of Personal Information
- Cyber Security

### Contribution to industry and social initiatives

- Fundraising for the U.N. World Refugee Day
- Traffic Safety Activities
- Supporting the Science and Technology in Society forum
- Supporting the Children of the Next Generation
- Support for Eradicating Poverty in Africa
- Contribution to Society Activities at Overseas Group Company

### Accurate and timely information disclosure and communication with stakeholders

- Information Disclosure
- Communication with Stakeholders

## The foundation of all activities : legal compliance, fair corporate activities

### Policy

The Group will fully comply with all laws and regulations and conduct business fairly.

### Awareness of Issues

The Group's business principle states that "the Group strictly complies with all laws and regulations, conducts fair business practices and creates unrivaled value for society and industry through the provision of key materials and technologies." Compliance with laws and regulations and fair corporate activities are the foundation of all of our activities.

We are working on the long-term development of the Group by not only legal compliance, but also the efforts of each employee to engage in their daily work with a strong sense of ethics as a code of conduct.

Ensuring Full  
Compliance  
Awareness

Employee Initiatives

Initiatives Aimed at  
Preventing Corruption

Export Control

Cutting Ties with  
Anti-social Forces

### – Ensuring Full Compliance Awareness

The Group emphasizes the importance of compliance with laws and regulations in the business principle and annual management objectives, and carries out corporate activities in full compliance with laws and regulations. In the event of promulgation of or amendments to legislation pertaining to corporate activities, the Legal Department takes the central role of issuing internal bulletins and sharing their knowledge of these changes. In addition, in order to promote understanding of important laws and regulations, we posted explanatory articles in our company newsletter, and invited outside lecturers to give lectures to our employee. In July 2021, we invited lawyers as lecturers and held the web seminar relating to compliance with antitrust laws. A total of 34 business locations, including Shin-Etsu Chemical's Head Office, domestic production plants, and worldwide group companies, participated in the seminar. In addition, the Company's Legal Dept. staff attended seminars of the Fair Trade Institute, of which the executive officer of the Company serves as a director, and are working to ensure fair transactions among the Group.

All of the officers and employees have submitted a compliance pledge to the company. We have also established disciplinary measures to deal with any inappropriate action that may occur. Furthermore, officers and employees can consult with and report to the Compliance Consultation Office if they discover any violation of the law, regulations, ethical codes, or the company's regulations, including Anti-Bribery Regulations, or if they experience acts of harassment. The Office will then carry out a detailed investigation in response to the information received, and take the necessary corrective actions. Confidentiality will be maintained for consulters and whistleblowers and there will be no unfavorable treatment as a result of consulting and reporting an incident.



Web Seminar "Corporate Activities and Compliance with Competition Laws" (July 2021, Shin-Etsu Chemical Head Office)

## – Employee Initiatives



Mr. MM,  
Auditing Department,  
Shin-Etsu Chemical  
Head office

### Fair corporate activities that form the basis of corporate activities

#### 1. Please tell us about your job.

I am involved in compliance with the internal control reporting system for financial reporting (J-SOX), as well as antitrust audits, export control audits, and audits of the status of subsidiary operations.

#### 2. Please tell us about legal compliance and fair corporate activities-related initiatives done by the Auditing Department.

The Auditing Department is engaged in various initiatives related to legal compliance and fair corporate activities.

With regard to the internal control reporting system for financial reporting under the Financial Instruments and Exchange Act, the Auditing Department, as the department responsible for evaluating the Group, conducts an evaluation of the effectiveness of the Group's internal control over financial reporting in accordance with relevant laws and internal regulations. The results were audited by our accounting auditors and it was judged to be "appropriate."

Business audits are also focused on auditing the status of compliance with antitrust laws. We pay particular attention to antitrust laws and have established our own Antimonopoly Law Compliance Guidelines. This audit confirms that the Group companies are taking actions that violate antitrust laws.

In addition, in the area of legal compliance, we conduct security export control audits for Group companies to ensure that each company's export control system is properly developed and operated. The Auditing Department attends the Company's the Security Export Control Committee to conduct internal audits. From the viewpoint of preventing fraud, we check whether the seals used to indicate the intention of the organization, such as company's and department's seal impression, are properly managed and used in the audit of the status of fraud management. At the same time, we confirm the management status of department managers' individual seals for those who have the authority to permit payment. In addition, we conduct auditing of the status of operations at Group companies that are not subject to J-SOX. We confirm that each of the subject companies' operations, such as cash and deposit control, purchasing, fixed assets and inventory management, and receivables preservation, are conducted under appropriate internal controls.

#### 3. Please tell us about the details of the system and how to disseminate it within the Company about the Compliance Consultation Office.

The Compliance Consultation Office is the point of contact for consultation and reporting when a problem that is suspected of violating laws, ethics, and company regulations arises or is likely to arise in the course of business. Employees of the Group, including executives, employees, advisors, part-time staff, and temporary staff, as well as retirees, can use this system. We posted guidance about the Compliance Consultation Office on the intranet. In August 2019, "Compliance Consultation and Reporting Rules" and "Guideline for Compliance Consultation Office" were translated into 14 languages and informed throughout the Group. In addition, in order to respond to the revision of the Whistleblower Protection Act, the Compliance Consultation and Reporting Rules were revised on June 1, 2022. We will re-disseminate the rules to the company.

#### 4. What do you intend to focus on in the future with respect to legal compliance and fair corporate activities?

I feel that each company in the Group has a high level of awareness of compliance. By continuing to conduct steady auditing operations in the future, we hope to support each company in the Group in its commitment to legal compliance. For departments undergoing audits, periodic auditing provides an opportunity to consider compliance with laws and regulations, and we will work to make it a habit to check basic operations in business.

## – Initiatives Aimed at Preventing Corruption



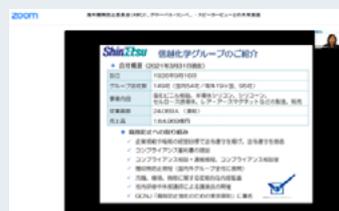
The company has created "Anti-Bribery Regulations" and prohibits actions that involve the unfair transfer of profit from or to parties, and has received compliance pledges from all officers and employees. Simultaneously, we prevent the provision of unfair benefits or demands thoroughly with respect to our customers, domestic or foreign government officials, and suppliers. The status of compliance with ethical standards is also included in personal evaluations, and we carry out regular internal audits for corruption, embezzlement, and bribery.

## – Supporting GCNJ's "Tokyo Principles for Strengthening Anti-Corruption Practices"

The Group's business principle includes "observing all laws and regulations as well as conducting fair corporate activities," and we are working to prevent corruption, including bribery. The Global Compact Network Japan's Tokyo Principles for Strengthening Anti-Corruption Practices correspond with the Group's current policy and initiatives for preventing corruption, so we immediately decided to support them and became a signatory in February 2018.

We will continue to make it our principle to comply with laws and regulations and carry out business activities fairly, and work to conduct business in accordance with the Tokyo Principles and our internal anti-corruption regulations.

> GCNJ's "Tokyo Principles for Strengthening Anti-Corruption Practices"(only available in Japanese)



GCNJ's "Anti-Corruption Annual Forum 2021" (September 2021)

## – Export Control

From the viewpoint of maintaining world peace and security, the company has created "Security Control Management Regulations" to comply with the Foreign Exchange and Foreign Trade Act and other export-related legislation. The following shows our initiatives based on this program:

- Classification, customer review, and transaction review when exporting products
- Internal audit
- Training officers and employees and providing instructions to Group companies

## – Cutting Ties with Anti-social Forces

The Group declares in its "Basic Policy on Internal Controls" that the Group shall adopt a firm attitude towards anti-social forces and shall take the measures necessary to cut itself off from any and all associations with them. In accordance with this policy, we developed internal systems under the leadership of the department in charge of managing these issues, and signed memorandums and letters of confirmation regarding the exclusion of anti-social forces with customers and suppliers. In addition, we are working closely with external specialized agencies.

### Related Information

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[> Sustainability Data](#)

### Policy

The Group will work to create a comfortable and safe workplace with the goals of achieving "zero accidents" and "zero lost-time accidents."

### Awareness of Issues

The Group places top priority on safety. For that, we have created a work environment in which employees can work safely and comfortably. The operations without accidents and disasters protect employees, fulfill our responsibilities as a supplier to customers, and lead to the sustainable development of the company. In recent years, many natural disasters have occurred, and we are addressing them as an important issue.

Occupational Safety ▾	Process Safety and Disaster Prevention Plan ▾	Education and Drills ▾	Environmental Control and Safety Audits ▾
Health Considerations ▾	Employee Initiatives ▾	Targets and Results ▾	Reporting of Accidents and Lost-Time Accidents ▾

## – Occupational Safety

We create the "Shin-Etsu Group Environmental Safety Management Plan" every year in accordance with the Responsible Care Codes<sup>1</sup> and set numerical goals.

Each of the Group's plant in and outside Japan clarifies every single risk that can cause any kind of injury or illness and works hard on risk assessment activities intended to mitigate risks.

In the event of discovering any risk, we take various safety measures such as providing workers with individual protective tools, measures to prevent entry into dangerous areas and posting of off-limits signs in dangerous areas, and locking out<sup>2</sup> and tagging out<sup>3</sup> machines and equipment. We also take measures including attaching safety devices to machines and equipment, and installing fail-safes,<sup>4</sup> foolproof mechanisms,<sup>5</sup> interlocks,<sup>6</sup> and protective walls. In addition, we practice KY<sup>7</sup> hazard prediction activities and make sure to indicate and name all relevant equipment prior to working in order to reconfirm safety.

Furthermore, the workers take measures against unsafe areas by regularly gathering information on close-call incidents from workers who experienced them. At the same time, we share our risk information and prevent similar accidents by disclosing this risk information internally and externally.



Plant Safety Convention (July 2021, Shin-Etsu Chemical Takefu Plant)

#### <sup>1</sup> Responsible Care Codes

Six principle areas are addressed when implementing Responsible Care: Responsible Care Codes consist of seven codes, composed of six codes for different activity areas, namely, environmental preservation, disaster prevention, occupational health and safety, distribution safety, chemical and product safety, and dialogue with the public, and the Management System Code, designed to operate all the above commonly as a system.

#### <sup>2</sup> Lock out

Blocking the power source by locking the switches of machines and equipment so that they cannot be operated.

#### <sup>3</sup> Tag out

Attaching tags to areas where machines and equipment have been locked out, which signifies that operating the machines and equipment is prohibited until the tags are removed.

#### <sup>4</sup> Fail-safe

Controlling equipment and systems so that they always operate safely if a problem occurs due to an error or malfunction.

#### <sup>5</sup> Foolproof

Taking measures in advance so that safety is ensured even if workers operate machines and equipment incorrectly.

#### <sup>6</sup> Interlock

A concept for safety devices and mechanisms in which machines and equipment do not work unless certain conditions are met.

#### <sup>7</sup> KY

Hazard prediction activities in which workers check about safe working methods in order to prevent the occurrence of a disease or injury that could potentially occur during the task, and securely apply the methods.

### Close-calls Incidents Topics

2022.01.31 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)  
2021.07.30 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)  
2021.01.29 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)  
2020.07.31 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)  
2020.01.31 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)  
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2018.07.31 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)  
2018.01.31 [Updated of Close-Call \(Hiyari-Hatto\) Incidents](#)

## — Process Safety and Disaster Prevention Plan

The prevention of serious accidents is a top priority in the Group, and we continue to work on a variety of safety and disaster prevention activities. Countermeasures are taken for dangerous areas identified through process risk assessments, and pipes and equipment are maintained and managed, mainly through scheduled maintenance.

Since FY2013, we have worked to enhance safety management by performing risk assessments and implementing effective safety measures, particularly for abnormal plant conditions that we have predicted.

The company has joined the Japan Industrial Safety Competency Center since its inauguration in FY2012. Each plant uses the Safety Evaluation System of the center to further improve the situation and works even harder on the Process Safety and Disaster Prevention Plan.

### Results of safety management activities (Shin-Etsu Chemical)

	FY2019	FY2020	FY2021
Number of improvements	10,966	7,807	5,062

## — Education and Drills

To keep plant operations constantly safe, it is important for each employee working at our Group's operation sites to improve their skills and knowledge and be aware of danger.

For that purpose, we provide safety education on the risks of handling materials and processes and simulate possible dangers for employees and contractors to experience. In addition, we work on passing down the skills to operate manufacturing equipment to the next generation of employees. We work to give each employee thorough safety awareness by creating a workplace culture in which operation processes and rules are observed.

We plan and conduct emergency drills for abnormal situations such as major earthquakes and fires.



Plant disaster prevention drill  
(May 2021, Shin-Etsu Chemical Naoetsu Plant)



Fire extinguishing training for new employees  
(November 2021, Shin-Etsu Chemical Gunma Complex)

## — Environmental Control and Safety Audits

In order to confirm that activities such as environmental conservation, occupational safety and health, and process safety and disaster prevention plan are carried out as planned, the Group conducts an internal audit at domestic and overseas operation sites. In FY2021, web audits were conducted at 24 domestic operation sites. The results of audits are reported to the top management.

In FY2020, the audit focused on following;

- The results of examinations of measures to deal with serious risks related to plant operations.
- The results of self-evaluation based on the safety evaluation check list.
- The implementation status of activities to improve each result above, and future activity plans.



Comprehensive environmental and safety audit  
(November 2021, Shin-Etsu Handotai Shirakawa Plant)

## – Health Considerations

We are conducting any measures to prevent the development of possible diseases such as encouraging employees to take health checks, offering health counseling on lifestyle diseases, and promoting measures on mental health and activities for health promotion and fitness. In addition, we are implementing measures for infectious diseases, including COVID-19.

Our head office and branch offices have a Health Committee, and each plant has a Safety and Health Committee. The committees work to improve the workplace environment and promote the workers' health with advice and information from industrial physicians. We also have special programs such as physical fitness checks and seminars to help workers maintain and improve their physical conditions.

Furthermore, we offer an outside Family Health Consultation Service, which can be used by our workers and their family, with our health insurance union and an insurance company. It is available 24 hours a day.



Mental health and self-care workshops  
(March 2021, Shinano Electric Refining Co., Ltd.)



Health lecture training  
(October 2021, Shin-Etsu Chemical Takefu Plant)

## — Employee Initiatives



Ms. SF,  
Isobe plant, Medical office,  
Shin-Etsu Handotai

### Ensuring that all employees can work in good health

#### 1. Please tell us about your job.

The Gunma Complex has a medical office to which an industrial health staff belongs. Occupational health management includes health examinations, follow-up health measures, health guidance, occupational health education, maintenance and promotion of physical and mental health, mental health measures in the workplace, measures to prevent health problems due to overwork, creating comfortable workplaces and environment, measures to prevent passive smoking in the workplace, etc. There are four industrial physicians here in total, who take care of Shin-Etsu Chemical, Group companies, and outside contractors working in our premises. I am mainly in charge of the Isobe Plant of Shin-Etsu Handotai Co., Ltd., but I cooperate and respond to issues related to the entire Gunma Complex, such as measures against COVID-19 and education for new employees.

#### 2. Please tell us about your commendations at the Takasaki District Industrial Safety and Health Convention. Also, please tell us your feelings when you won the award.

It was acknowledged that the level of occupational health management in the workplace improved as a result of my active promotion of occupational health management activities, therefore at the Takasaki District Industrial Safety and Health Convention, I received an award from the plant manager as a meritorious person in the hygiene award.

The work of our industrial health staff cannot be done without cooperation not only with our employees but also with HR and Labor Relations representative, supervisors and colleagues of the workplace, related organizations, and local communities. I felt very happy that my work with such colleagues was appreciated.

#### 3. What are your initiatives to ensure the safety of workers and promote health at workplace?

It seems more difficult for the people to continue to work in good health under the situation that people work longer than before due to the aging of employees, the impact of the declining birthrate, mental or physical illness, disease, or disability. Employees aged 18 to at least 65 are now employed by the Company, and the Company is also required to make efforts to extend employment to 70 years of employees' age. There are people who are on various life stages, so we need to deal with each case. We provide new employees and other employees in each stage with interactive hygiene education and health prevention, as well as mental health-related education. For middle-aged and elderly people, we promote prevention of health problems caused by working for many years (back pain, fall accident prevention, issues derived from long working hours) and early detection and early treatment (physical checkups and post-measures for those results) of lifestyle-related diseases such as cancer. Currently, the activities have been interrupted due to the COVID-19, but in accordance with the Occupational Safety and Health Training Annual Plan, we have been conducting various health education sessions at each workplace with a mind that medical offices should be user-friendly. Starting this year, we would like to use videos and other media to resume health education as well.



#### 4. What do you intend to focus on in the future with regard to ensuring the safety of workers and promoting health?

Over the year, the volume of employee health information increased dramatically, and we are required to take actions such as information analysis more speedily than before. In addition, health information is abundant on the Internet, and there is a need for appropriate use and provision of information. We are required to have an ability to judge reliability of information on internet. I believe that there are tasks that require DX (Digital Transformation) for safety and health operations as well. I would like to work together with the Company and employees to create a safe, healthy, and comfortable workplace, not bound by existing ways of working, but with an eye to the future, through dialogue with the Company and employees.

## — Measures for COVID-19

We implement a variety of measures to protect employees and their families from COVID-19. In February 2020, a COVID-19 countermeasures group headed by the president was established at the Shin-Etsu Chemical Head Office, and a series of measures to prevent the infectious disease from spreading in response to the ever-changing situation was sent throughout the company. In each region, we established a local group to take measures against COVID-19 and implement measures to prevent infection and to maintain operations in accordance with each region, based on the notification from the Shin-Etsu Chemical Head Office. We implement company-wide measures thoroughly by asking employees to measure their body temperatures before going to work, wear a mask when commuting and at work, and disinfect their fingers; prohibiting business trips; utilizing telephone and online conferences; and checking the body temperature of visitors, etc. In addition, we pushed for workers to work from home in response to the request by the national government. Each plant takes measures to ensure thorough disinfection, stagger working hours for office workers, and make people use the cafeteria and break rooms at different times and maintain distance when using them.



Partition in the cafeteria



Vinyl curtains at office reception desks

## — Targets and Results

Every fiscal year, the Group creates an environmental and safety management plan based on the Responsible Care Codes. The entire Group works on key issues such as the prevention of major disasters, including explosions and fires, and industrial accidents according to the prepared management plan.

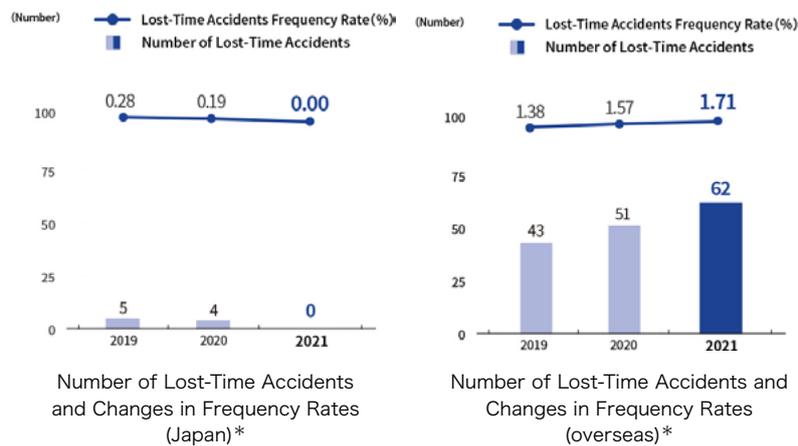
[> Implementation Status, Evaluation, and Planned Implementation Items](#) 

## – Reporting of Accidents and Lost-Time Accidents

In FY2021, there were no serious accidents, and no lost-time injuries in the Group companies in Japan, but there were 62 lost-time injuries in the Group overseas.

We have analyzed the causes for each accident, eliminated hazardous operations, ensured equipment safety, and promptly implemented appropriate safety measures. We prevent work-related accidents by revising the operation manuals and working to prevent re-occurrence of accidents.

The occurrence of work-related accidents is reported to the directors and department heads at monthly business report meetings.



\* The definition of occupational accidents differs between Japan and overseas, so the graphs are shown separately.

### Related Information

[> Sustainability Data](#)

**ShinEtsu** Key Sustainability Issue: **Employees and contractor health and safety** Targets and Results

The safety targets and results for FY2021 and safety targets for FY2022 are as listed below.

Item	Priority Issues (Target)	Implementation Status for Fiscal 2021	Evaluation	Planned Implementation Items for Fiscal 2022
Management System	1. Legal compliance	<ul style="list-style-type: none"> <li>Strengthening the Legal Checking System</li> <li>Proper operation management based on relevant laws and regulations</li> </ul>	◎	<ul style="list-style-type: none"> <li>Strengthening the Legal Checking (ongoing)</li> <li>Proper operation management based on relevant laws and regulations (ongoing)</li> </ul>
	2. Development and revision of Plant Environment Control and Safety Regulations and Standards	<ul style="list-style-type: none"> <li>Development and revision of Plant Environment Control and Safety Regulations and Standards</li> </ul>	○	<ul style="list-style-type: none"> <li>Development and revision of Plant Environment Control and Safety Regulations and Standards (ongoing)</li> </ul>
	3. Continuous improvement of the safety and health management system and improvement of the effectiveness of activities	<ul style="list-style-type: none"> <li>Communication by the president, the plant manager and division heads of their commitment and active involvement</li> <li>Development of good PDCA<sup>1</sup> cycles for the health and safety management system and promotion of effective activities</li> </ul>	◎	<ul style="list-style-type: none"> <li>Communication by the president, the plant manager and division heads of their commitment and active involvement (ongoing)</li> <li>Development of good PDCA<sup>1</sup> cycles for the health and safety management system and promotion of effective activities (ongoing)</li> </ul>
	4. Qualitative improvement of environmental safety audits	<ul style="list-style-type: none"> <li>Qualitative improvement of environmental safety audits at affiliated companies in the plant area</li> </ul>	○	<ul style="list-style-type: none"> <li>Implementation of appropriate follow-up to the findings of the head office's environmental safety audits</li> <li>Effective and proper implementation of environmental safety audits at affiliated companies in the plant area</li> </ul>
	5. Thorough change management	<ul style="list-style-type: none"> <li>Establishment of regulations and standards for MOC<sup>2</sup> rules.</li> <li>Confirmation of application of MOC<sup>2</sup> rules at the plants and thorough compliance with them</li> </ul>	○	<ul style="list-style-type: none"> <li>Establishment of regulations and standards for MOC<sup>2</sup> rules. (ongoing)</li> <li>Strict application of MOC<sup>2</sup> rules at the plants and thorough compliance with them (ongoing)</li> </ul>
	6. Establishment of management infrastructure and fostering of a culture of safety	<ul style="list-style-type: none"> <li>Utilization of the Safety Competency Evaluation System and promotion of systematic self-improvement</li> </ul>	○	<ul style="list-style-type: none"> <li>Understanding of the Safety Competency Evaluation System (evaluation table and explanatory notes)</li> <li>Formulate and implement a plant utilization plan based on the Safety Competency Evaluation System</li> </ul>
Process Safety and Prevention Plan	1. Zero serious accident	<ul style="list-style-type: none"> <li>Achieved target of zero serious accident</li> </ul>	◎	<ul style="list-style-type: none"> <li>Zero serious accident</li> </ul>
	2. Facility and process safety improvement	<ul style="list-style-type: none"> <li>Continue the process risk assessment (Targeting to operations, facilities and chemical plants where accidents due to explosion fires, or chemical reactions are anticipated)</li> <li>Review of safety measures for non-routine work and unsafe operations</li> <li>Safety general inspections of open-system operations that may lead to serious accidents such as fires in operations that handle flammable liquids and flammable powder</li> <li>Reviewing and utilization of safety basic information</li> </ul>	○	<ul style="list-style-type: none"> <li>Continue the process risk assessment (ongoing) (Targeting to operations, facilities and chemical plants where accidents due to explosion fires, or chemical reactions are anticipated)</li> <li>Review of safety measures for non-routine work and unsafe operations (ongoing)</li> <li>Safety general inspections of open-system operations that may lead to serious accidents such as fires in operations that handle flammable liquids and flammable powder (ongoing)</li> <li>Reviewing and utilization of safety basic information(ongoing)</li> </ul>
	3. Improvement of facilities and maintenance management	<ul style="list-style-type: none"> <li>Thorough investigation of equipment trouble causes, recurrence prevention and design technology improvement</li> <li>Improvement of equipment maintenance</li> </ul>	○	<ul style="list-style-type: none"> <li>Thorough investigation of equipment trouble causes, recurrence prevention and design technology improvement (ongoing)</li> <li>Improvement of equipment maintenance (ongoing)</li> </ul>
	4. Predictions and reliable responses to emergencies	<ul style="list-style-type: none"> <li>Consider estimating and minimizing damage if the worst situations such as serious accidents and massive earthquakes occur</li> <li>Preparation of emergency-response criteria manuals (including troubles, accidents and natural disasters)</li> </ul>	○	<ul style="list-style-type: none"> <li>Consider estimating and minimizing damage if the worst situations such as serious accidents, flood, and massive earthquakes occur(ongoing)</li> <li>Preparation of plant emergency-response standards and on-site manuals for major accidents and disasters, and implementation of anticipated drills (ongoing)</li> </ul>
	5. Safe and stable operation management	<ul style="list-style-type: none"> <li>Appropriate daily, monthly, and annual inspections, implementation of operation management, and effective use of data</li> <li>Reviewing and strengthen of response to process abnormal conditions</li> <li>Make sure safety assurance and implementation of reviews during startups (SU) and shutdowns (SD)</li> </ul>	○	<ul style="list-style-type: none"> <li>Appropriate daily, monthly, and annual inspections, implementation of operation management, and effective use of data (ongoing)</li> <li>Reviewing and strengthen of response to process abnormal conditions (ongoing)</li> <li>Make sure safety assurance and implementation of reviews during startups (SU) and shutdowns (SD) (ongoing)</li> </ul>
Occupational Safety	1. Achieve zero labor accidents requiring an absence of a day or more	<ul style="list-style-type: none"> <li>Consolidated in Japan: 0 people</li> <li>Shin-Etsu Chemical: 0 people</li> </ul>	◎	<ul style="list-style-type: none"> <li>Achieve zero labor accidents requiring an absence of a day or more</li> </ul>
	2. Rate of labor accidents not accompanied by an absence of a day or more: 0.5 or less	<ul style="list-style-type: none"> <li>Consolidated in Japan: 0.49</li> <li>Shin-Etsu Chemical: 0.31</li> </ul>	○	<ul style="list-style-type: none"> <li>Rate of labor accidents not accompanied by an absence of a day or more: 0.5 or less</li> </ul>
	3. Human error reduction	<ul style="list-style-type: none"> <li>Prevention of accidents and disasters due to human errors</li> </ul>	○	<ul style="list-style-type: none"> <li>Prevention of accidents and disasters due to human errors (ongoing)</li> </ul>
	4. Improve work safety	<ul style="list-style-type: none"> <li>Promoting of safety activities (practiced Hazard prediction activities, pointing and calling, and 5S<sup>3</sup> activities) (ongoing)</li> <li>Active improvement of work methods and work environment</li> <li>Implement application of similar process and examination of accident in the Group and other companies</li> <li>Preventing Accidents and Disasters among Middle-Aged and Elderly People</li> <li>Measures to prevent accidents by contacting dangerous areas, equipment etc. (ongoing)</li> <li>Review of factory standards for protective equipment and protective clothing for dangerous or harmful work</li> </ul>	○	<ul style="list-style-type: none"> <li>Promoting of safety activities (practiced Hazard prediction activities, pointing and calling, and 5S<sup>3</sup> activities) (ongoing)</li> <li>Active improvement of work methods and work environment (ongoing)</li> <li>Implement application of similar process and examination of accident in the Group and other companies (ongoing)</li> <li>Preventing Accidents and Disasters among Middle-Aged and Elderly People (ongoing)</li> <li>Measures to prevent accidents by contacting dangerous areas, equipment etc. (ongoing)</li> <li>Review of factory standards for protective equipment and protective clothing for dangerous or harmful work (ongoing)</li> </ul>
	5. Review and reorganize work manuals and ensure strict compliance	<ul style="list-style-type: none"> <li>Implement of planned review and content enhancement of work manual maintenance</li> <li>Confirm the compliance of work manuals</li> <li>Creation of a safe culture that complies with rules and manuals</li> </ul>	○	<ul style="list-style-type: none"> <li>Implement of planned review and content enhancement of work manual maintenance (ongoing)</li> <li>Confirm the compliance of work manuals (ongoing)</li> <li>Creation of a safe culture that complies with rules and manuals (ongoing)</li> </ul>
	6. Work risk assessment	<ul style="list-style-type: none"> <li>Implement work risk assessment based on plans(Central Labor Accident Prevention Association<sup>4</sup> method or procedure HAZOP<sup>5</sup>)</li> <li>Risk assessment as stipulated in the Industrial Safety and Health Act</li> <li>Risk assessment for dangerous and non-routine work at one's workplace</li> </ul>	○	<ul style="list-style-type: none"> <li>Implement work risk assessment based on plans / Review of past risk assessments (Central Labor Accident Prevention Association<sup>4</sup> method or procedure HAZOP<sup>5</sup>)</li> <li>Risk assessment as stipulated in the Industrial Safety and Health Act</li> <li>Risk assessment for dangerous and non-routine work at one's workplace</li> </ul>
	7. Safety measures of construction and non-routine work	<ul style="list-style-type: none"> <li>Clarification and solid performance of implementation matters such as construction start permission, safety management during construction, delivery, completion confirmation, etc.</li> <li>Providing safety information in writing to construction contractors, thorough education of plant rules, etc.</li> <li>Clarify work instructions and procedures and implement hazard prediction activities for non-routine work</li> </ul>	○	<ul style="list-style-type: none"> <li>Clarification and solid performance of implementation matters such as construction start permission, safety management during construction, delivery, completion confirmation, etc. (ongoing)</li> <li>Providing hazard information of chemical substances in writing to construction contractors, thorough education of plant rules, etc.</li> <li>Establish factory rules and regulations for directly ordered construction work, and ensure that the ordering party fulfills its responsibility for construction management</li> <li>Clarify work instructions and procedures and implement hazard prediction activities for non-routine work (ongoing)</li> </ul>
	8. Training and drill promotion	<ul style="list-style-type: none"> <li>Plan promotion of education and training</li> <li>Promote acquisition of qualifications</li> <li>Active introduction of awards and prize systems for voluntary safety activities</li> </ul>	○	<ul style="list-style-type: none"> <li>Plan promotion of education and training (ongoing)</li> <li>Active participation in various safety seminars (ongoing)</li> <li>Promote acquisition of qualifications (ongoing)</li> <li>Active introduction of awards and prize systems for voluntary safety activities (ongoing)</li> <li>Implementation of planned training to acquire and improve important safety skills</li> </ul>
	9. Ensuring subcontracting safety	<ul style="list-style-type: none"> <li>Active involvement in safety management at companies to which, as a manufacturer, the Company outsources its operations</li> <li>Implementation of sufficient safety education</li> </ul>	○	<ul style="list-style-type: none"> <li>Active involvement in safety management at companies to which, as a manufacturer, the Company outsources its operations (ongoing)</li> <li>Implementation of sufficient safety education for temporary and contract employees (ongoing)</li> </ul>
Occupational health	1. Create and maintain a comfortable workplace environment	<ul style="list-style-type: none"> <li>Implemented working environment measurements and promote working environment improvements based on the results</li> <li>Implement chemical substance handling education and strict wearing of chemical protective equipment as well as confirmation of compliance status for wearing protective equipment</li> <li>Appropriate implementation under the Industrial Safety and Health Law</li> <li>Appropriate reporting, communication, and consultation, as well as promotion of good communication</li> </ul>	○	<ul style="list-style-type: none"> <li>Realization of comfortable working environment</li> <li>Ensuring an appropriate and safe working environment</li> <li>Implementation of appropriate health management</li> <li>Appropriate reporting, communication, and consultation, as well as promotion of good communication(ongoing)</li> </ul>
	2. Promote physical and mental health wellbeing	<ul style="list-style-type: none"> <li>Implement concrete guidance, etc. and effective utilization of health check results</li> <li>Appropriate compliance with additional inspection criteria due to regulatory amendments</li> <li>Promotion of specific activities to build mental and physical health</li> </ul>	○	<ul style="list-style-type: none"> <li>Implement concrete guidance, etc. and effective utilization of health check results (ongoing)</li> <li>Appropriate compliance with additional inspection criteria due to regulatory amendments of Industrial Safety and Health Law, etc. (ongoing)</li> <li>Promotion of specific activities to build mental and physical health (ongoing)</li> <li>Aggressive promotion and thorough implementation of preventive measures for COVID-19, etc.</li> </ul>

<sup>1</sup> PDCA cycle

One of the method to smoothly carry out management tasks such as production control and quality control in business activities. To improve business operating continually by repeating the four steps such as Plan (P) → Do (D) → Check (C) → Act (A).

<sup>2</sup> MOC

Management of change

<sup>3</sup> 5S activities

It is the first letter "S" of five Japanese words for seiri seiton (organize and order things), seiso (cleaning), seiketsu (cleanliness), and shitsuke (bringing-up).

<sup>4</sup> Central Labor Accident Prevention Association

A corporation for the purpose of public interest established in 1979 with the approval of the Minister of Labor (currently: Minister of Health, Labor and Welfare) under the Labor Accident Prevention Group Act. It aims to improve safety and health and to eliminate occupational accidents through promotion of voluntary occupational accident prevention activities by business owners.

<sup>5</sup> HAZOP

Hazard and Operability Study. Standard process hazard analysis methods in the chemical process industry.

\* Evaluation standards

◎: Goal achieved ○: Goal basically achieved △: 50% achieved x: Far from achieved

# Energy-saving, resource-saving, and reduction of environmental impacts

## Policy

The Group will further promote energy conservation and the effective use of resources, and work to resolve a variety of environmental issues for the future of the Earth.

## Awareness of Issues

We recognize that specific measures to combat climate change, the efficient use of limited resources, and a circular economy<sup>1</sup> are key issues that companies face. The Group is committed not only to contributing to the global environment, but also to enhancing our competitiveness and achieving sustainable development through efforts to conserve energy, effectively use resources, and reduce the environmental impact of our manufacturing processes.

<sup>1</sup> Circular economy

Economic activities to recycle and circulate existing resources, such as converting waste after use into resources for another business

Environment Management

Response to Climate  
Change

Resource Saving

Biodiversity and Pollutant  
Countermeasures

## — Environment Management

### Environment Management

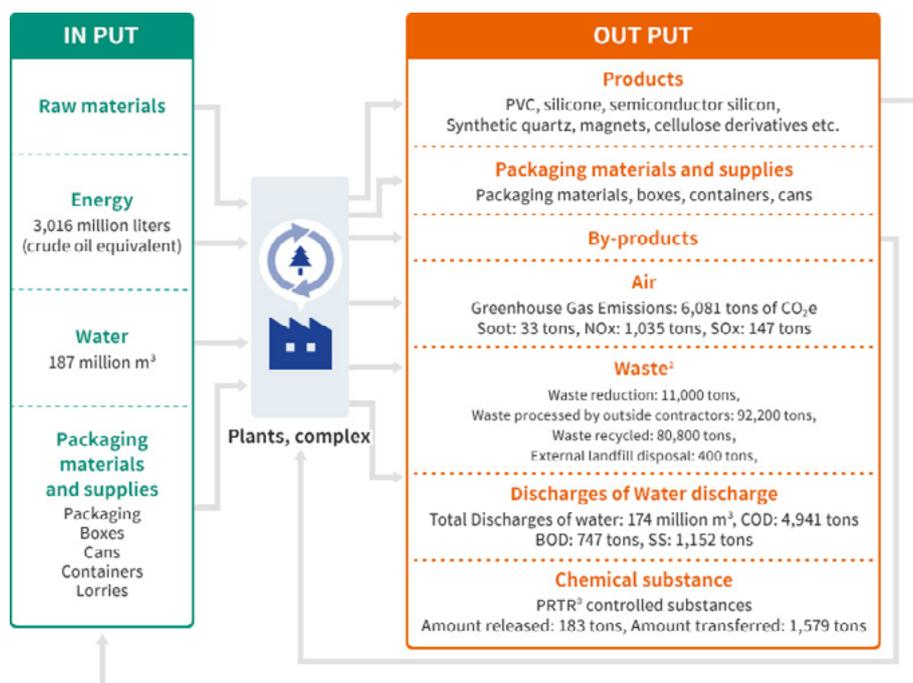
The Group works on energy savings, waste reduction, and chemical substance management as important issues. We create the "Shin-Etsu Group Environmental Safety Management Plan" every year in accordance with the Responsible Care Codes<sup>1</sup> and set numerical goals. The company and all of the plants of our Group companies set goals annually according to this plan and work to achieve them. Annual activity results are reported to the corporate officer in charge of the environment control at the Group Environmental Protection Conference.

In order to increase the quality of activities, each plant and the Group companies perform several internal audits a year to check if they have set appropriate goals and the progress that they have achieved. In addition, we also check their activities and achievements through periodical environmental control and safety audits. The audit results are reported to the top management.

### Promoting the Reduction of Environmental Impact

The Group constantly works to promote the reduction of environmental impact in the manufacturing stage. Furthermore, we are considering ways to reduce the environmental impact at the product usage stage and to contribute to energy and resource conservation. The Research, Manufacturing, and Sales Departments work together to develop products that are used in various fields, including the manufacturing industry, our daily lives, and the renewable energy industry.

## Environmental Impact of Business Activities



<sup>1</sup> Responsible Care Codes Six principle areas are addressed when implementing Responsible Care: Responsible Care Codes consist of seven codes, composed of six codes for different activity areas, namely, environmental preservation, disaster prevention, occupational health and safety, distribution safety, chemical and product safety, and dialogue with the public, and the Management System Code, designed to operate all the above commonly as a system.

<sup>2</sup> Waste

Since the standards of waste differs between Japan and other countries, the range of entities for the waste is Shin-Etsu Chemical Co., Ltd. and the consolidated in Japan.

<sup>3</sup> PRTR controlled substances

· 462 substances have been identified as Class I designated chemical substances from the Pollutant Release and Transfer Register (PRTR) system in the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management. Since the standards of PRTR differs between Japan and other countries, the range of entities for the PRTR is Shin-Etsu Chemical Co., Ltd. and the consolidated in Japan.

※ The waste recycling ratio indicates the ratio of the amount recycled to the total waste generated.

※ The final disposal ratio indicates the ratio of the amount of landfill waste to the total waste generated.

## Targets and Results

The following shows our targets and results for environmental protection and chemical substance management for FY2021 and our targets for FY2022.

[> Target, Implementation Status, Evaluation, and Planned Implementation Items](#)

## Environmental Certification

In FY2021, the company referred to the "Environmental Accounting Guidelines 2005" prepared by the Ministry of the Environment in Japan to calculate the investments and expenditures necessary to reduce the environmental impacts of air pollution, water pollution, environmental release of chemical substances, etc.; energy-saving measures to conserve the global environment; and reducing waste and recycling to reuse resources.

[> ISO 14001 Certification of the Shin-Etsu Group](#)

[> Sustainability Data](#)

## – Environmental Accounting

In FY2021, the company referred to the "Environmental Accounting Guidelines 2005" prepared by the Ministry of the Environment in Japan to calculate the investments and expenditures necessary to reduce the environmental impacts of air pollution, water pollution, environmental release of chemical substances, etc.; energy-saving measures to conserve the global environment; and reducing waste and recycling to reuse resources.

### Environmental Conservation Costs in FY2021

million yen

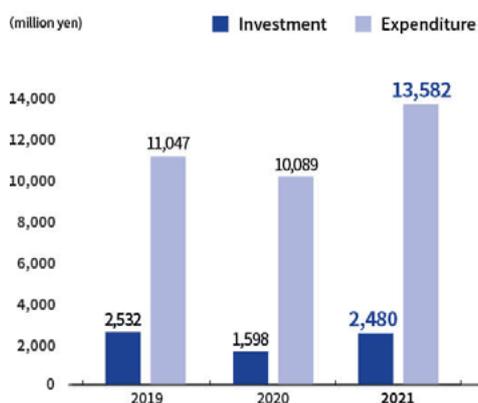
Category	Details	Investment	Expenditure
Plant area costs		2,373	10,087
(1) Pollution prevention costs	Prevention measures for air, water, noise and other type of pollution	674	4,521
(2) Global environmental conservation costs	Energy saving and global warming mitigation measures	1,230	3,018
(3) Resource recycling costs	Waste reduction, recycling and other measures	469	2,549
Upstream and downstream costs	Green purchasing and container and packaging measures	64	64
Administration costs	Environmental management, environmental impact monitoring and environmental education measures	36	460
Research and development costs	Research and development of environmentally conscious products and processes	5	2,819
Social engagement costs	Donations and contributions to environmental saving	0	93
Environmental remediation costs	Assessment, handling and other costs related to environmental pollution	1	59
<b>Total</b>		<b>2,480</b>	<b>13,582</b>

### Economic Benefits of Environmental Accounting in FY2021

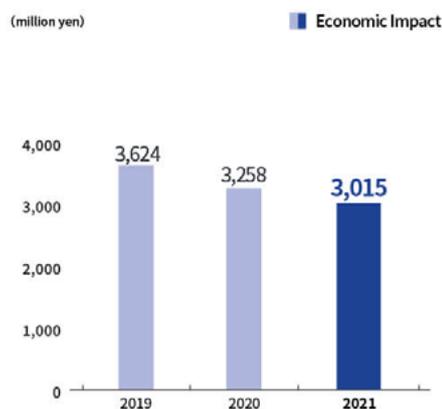
million yen

Details of benefits	Economic benefit
Energy saving	1,820
Improved production efficiency	1,209
(1) Production process	1,004
(2) Secondary materials costs	205
Reduction in waste treatment costs	-303
Profit from sale of valuable resources	288
<b>Total</b>	<b>3,015</b>

### Cost of Environmental Conservation : Investment and Expenditure



### Economic Impact



\* The range of entities for the Environmental Accounting is Shin-Etsu Chemical Co., Ltd.

## — Employee Initiatives

**We are working to reduce the environmental impact of our manufacturing processes.**

### **1. Please tell us about your business.**

I am in charge of summarizing the data for the periodic reports, medium- and long-term plans, and greenhouse gas emissions required under the Energy Conservation Act. In addition, I also notify government agencies when installing or modifying facilities related to the Air Pollution Control Law and Water Pollution Control Law, and when modifying or installing new energy-saving equipment in facilities handling hazardous materials under the Fire Service Law.



Mr. YM,  
Environment Control & Safety  
Department,  
JAPAN VAM&POVAL CO., LTD.,

### **2. How is JAPAN VAM & POVAL working to conserve energy, conserve resources, and reduce environmental impact?**

We are working to reduce environmental impact by optimizing the operating conditions of the distillation column, which uses a large amount of thermal energy, making effective use of waste heat, upgrading to high-efficiency electric motors, and optimizing the capacity of pumps. Furthermore, we are constantly reviewing our manufacturing conditions to ensure to minimize production loss. When disposing of products that do not meet quality standards as industrial waste, we avoid landfill disposal as much as possible and work with waste disposal companies to determine whether they can be turned into cement material or thermally recycled. We are also considering whether we can sell products that do not meet quality standards for other purposes in order to minimize industrial waste.

### **3. What do you intend to focus on in the future in terms of energy conservation, resource conservation, and reduction of environmental impact?**

Until now, we have mainly worked on improving the energy intensity, but in the future we will consider changing the type of energy used to energy that generates less CO<sub>2</sub>. In addition, we would like to consider ways to reduce the amount of energy used, such as changing the method of recovering and purifying the solvent generated during Poval production to a method that does not use much heat energy.

Key Sustainability Issue: Energy-saving, resource-saving and the reduction of the environmental impact Targets and Results

The FY2021 targets and results and FY2022 targets for environmental protection and management of chemical substances are as listed below.

Item	Priority Issues (Target)	Implementation Status for FY 2021	Evaluation	Planned Implementation Items for FY 2022
Management System	1. Continuous improvement and implementation of the environmental management system	<ul style="list-style-type: none"> <li>Implement plans and achieve goals without fail through activities leveled throughout the year</li> <li>Conduct substantial internal audits</li> <li>Appropriate responses to the findings of head office audits and plant internal audits, and reliable follow-up</li> </ul>	◎	<ul style="list-style-type: none"> <li>Formulation and steady implementation of an action plan throughout the year (ongoing)</li> <li>Conduct substantial internal audits (ongoing)</li> <li>Appropriate responses to the findings of head office audits and plant internal audits, and reliable follow-up (ongoing)</li> </ul>
	2. Qualitative improvement of environmental safety audits	<ul style="list-style-type: none"> <li>Qualitative improvement of environmental safety audits for affiliated companies at the plant area</li> </ul>	○	<ul style="list-style-type: none"> <li>Implementation of appropriate follow-up to the findings of the head office's environmental safety audits</li> <li>Effective and proper implementation of environmental safety audits at affiliated companies in the plant area</li> </ul>
Environmental conservation	1. Zero environmental accidents	<ul style="list-style-type: none"> <li>Achieved target of zero environmental accidents</li> </ul>	◎	<ul style="list-style-type: none"> <li>Zero environmental accidents</li> </ul>
	2. Thorough environmental management	<ul style="list-style-type: none"> <li>Continued appropriate compliance with environmental laws and regulations</li> </ul>	◎	<ul style="list-style-type: none"> <li>Appropriate compliance with environmental laws and regulations (ongoing)</li> </ul>
	3. Promotion of energy savings (Reduce energy consumption by an average annual rate of 1% per unit production)	<ul style="list-style-type: none"> <li>The Shin-Etsu Group: Reduced at an annualized rate of 0.4%</li> <li>Shin-Etsu Chemical: Reduced at an annualized rate of 0.7%</li> </ul>	○	<ul style="list-style-type: none"> <li>Reduce energy consumption at an annualized rate of 1% in production intensity and formulation and promotion of an activity plan for achievement</li> </ul>
	4. Reducing greenhouse gas emissions (Intensity reduction to 54% of 1990 level by fiscal 2025)	<ul style="list-style-type: none"> <li>The Group reduced to 52.9% and the Company 46.3% compared to fiscal 1990</li> <li>Periodic inspection based on the Act on Rational Use and Proper Management of Fluorocarbons and reporting to the national government on the amount of leakage calculated</li> </ul>	○	<ul style="list-style-type: none"> <li>Reduction to 45% of 1990 level in production intensity by fiscal 2025 and formulation and promotion of an activity plan for achievement</li> <li>Periodic inspection based on the Act on Rational Use and Proper Management of Fluorocarbons and reporting to the national government on the amount of leakage calculated (ongoing)</li> </ul>
	5. Reduce waste (Achieve zero waste emissions (waste to landfill ratio to 1% or less))	<ul style="list-style-type: none"> <li>Consolidated in Japan: Landfill waste to total waste ratio of 0.95%</li> <li>Shin-Etsu Chemical: Landfill waste to total waste ratio of 1.27%</li> </ul>	○	<ul style="list-style-type: none"> <li>Promote achievement of zero emissions (waste generation to landfill ratio to 1% or less), and formulation and promotion of an activity plan for achievement</li> <li>Promotion of waste generation in production intensity, and formulation and promotion of an activity plan for achievement</li> </ul>
	6. Reduced emissions of substances causing water pollution or air pollution (Reduction in intensity at annualized rate of 1%)	<ul style="list-style-type: none"> <li>No change for BOD<sup>1</sup></li> <li>Increased at an annualized rate of 27.4% for soot</li> <li>Reduced at an annualized rate of 3.2% for SOx</li> <li>Regular review and strict compliance with specific facility using hazardous substances pertaining to the Water Quality Pollution Control Act and installation standards for designated storage facilities</li> <li>Promotion of separation of process wastewater and rainwater discharged (including cooling water) and the laying of pipes installed in the rainwater drainage way on the ground</li> </ul>	○	<ul style="list-style-type: none"> <li>Regular review and strict compliance with specific facility using hazardous substances pertaining to the Water Quality Pollution Control Act and installation standards for designated storage facilities (ongoing)</li> <li>Promotion of separation of process wastewater and rainwater discharged (including cooling water) and the laying of pipes installed in the rainwater drainage way on the ground (ongoing)</li> </ul>
	7. Reduction in water withdrawals (Reduction in intensity at an annualized rate of 1%)	<ul style="list-style-type: none"> <li>Consolidated: reduced at an annualized rate of 7.7%</li> <li>Shin-Etsu Chemical: reduced at an annualized rate of 3.5%</li> </ul>	◎	<ul style="list-style-type: none"> <li>Reduction in production intensity at an annualized rate of 1% and formulation and promotion of an activity plan for achievement</li> <li>Plan and implement measures for improving recycling water ratio</li> </ul>
Chemical substance management	1. Thorough new chemical substance management	<ul style="list-style-type: none"> <li>Thorough management of permitted production volumes (confirmed) and production results</li> <li>Communicated reporting of harmful substance information, etc., at the time of acquisition</li> </ul>	◎	<ul style="list-style-type: none"> <li>Thorough management of permitted production volumes (confirmed) and production results (ongoing)</li> <li>Communicated reporting of harmful substance information, etc., at the time of acquisition (ongoing)</li> </ul>
	2. Compliance with legal and other requirements for chemical substance control	<ul style="list-style-type: none"> <li>Responded to revisions and strict compliance with the Chemical Substances Control Law<sup>2</sup>, Industrial Safety and Health Act, PRTR Law<sup>3</sup>, and Poisonous and Deleterious Substances Control Act</li> <li>Strict compliance with overseas laws and regulations</li> <li>Implement control of PCB waste and dispose required by the deadline (Deadline: 2022)</li> </ul>	◎	<ul style="list-style-type: none"> <li>Respond to revisions and strict compliance with Chemical Substances Control Law, Industrial Safety and Health Act, PRTR Law, and Poisonous and Deleterious Substances Control Act (ongoing)</li> <li>Compliance with overseas laws and regulations (ongoing)</li> <li>Implement control of PCB waste and dispose required by the deadline (Deadline: 2022)</li> </ul>
	3. Information disclosure on the harmfulness of chemical substances	<ul style="list-style-type: none"> <li>Information disclosure and awareness raising of substances handled by contractors and subcontractors</li> </ul>	○	<ul style="list-style-type: none"> <li>Making sure of well-known situations and information provision related to substances handled by contractors and subcontractors (ongoing)</li> </ul>

1 BOD (Biochemical Oxygen Demand)

Biochemical oxygen consumption. The amount of oxygen required when decomposing contaminants in the water by microorganisms. This indicates the degree of water pollution.

2 Chemical Substances Control Law

Short for the "Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc." A law intended to prevent environmental pollution by chemical substances that can be harmful to human health or to ecosystems.

3 PRTR Law

Short for the "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof." A law intended to promote improved self-directed control of chemical substances by business operators, in order to prevent the risk of damage to the environment.

\* Intensity unit

A measure calculated from the production volume of a reference product.

\* Average annual rate for implementation

Average annual reduction rate from FY 2018 to FY 2021

\* Evaluation standards

◎: Goal achieved ○: Goal basically achieved △: 50% achieved ×: Far from achieved

# Energy-saving, resource-saving, and reduction of environmental impacts

## Policy

The Group will further promote energy conservation and the effective use of resources, and work to resolve a variety of environmental issues for the future of the Earth.

## Awareness of Issues

We recognize that specific measures to combat climate change, the efficient use of limited resources, and a circular economy<sup>1</sup> are key issues that companies face. The Group is committed not only to contributing to the global environment, but also to enhancing our competitiveness and achieving sustainable development through efforts to conserve energy, effectively use resources, and reduce the environmental impact of our manufacturing processes.

<sup>1</sup> Circular economy

Economic activities to recycle and circulate existing resources, such as converting waste after use into resources for another business

Environment Management

Response to Climate Change

Resource Saving

Biodiversity and Pollutant Countermeasures

### Mid-term target

Reduce greenhouse gas emissions in terms of production intensity to 45% of the FY1990 level by FY2025.<sup>1</sup>

### Results and evaluation in FY2021

Achieves reduction to 52.9% for the Shin-Etsu Group<sup>2</sup> and 46.3% for Shin-Etsu Chemical.

### FY2021 target

Reduce energy consumption in terms of production intensity at an average annual rate of 1%.

### FY2021 results

The average annual reduction rate from FY2018 to FY2021 was 0.4% increased for the Shin-Etsu Group.

### FY2021 evaluation

The target was not achieved.

### FY2022 target

Reduce energy consumption in terms of production intensity at an average annual rate of 1%.

<sup>1</sup> : For the calculation of emissions, CO<sub>2</sub> emission factors for electricity are averaged from 2000 to 2009 so that efforts to reduce electricity can be clarified.

<sup>2</sup> : Includes non-consolidated group companies.

## — Results

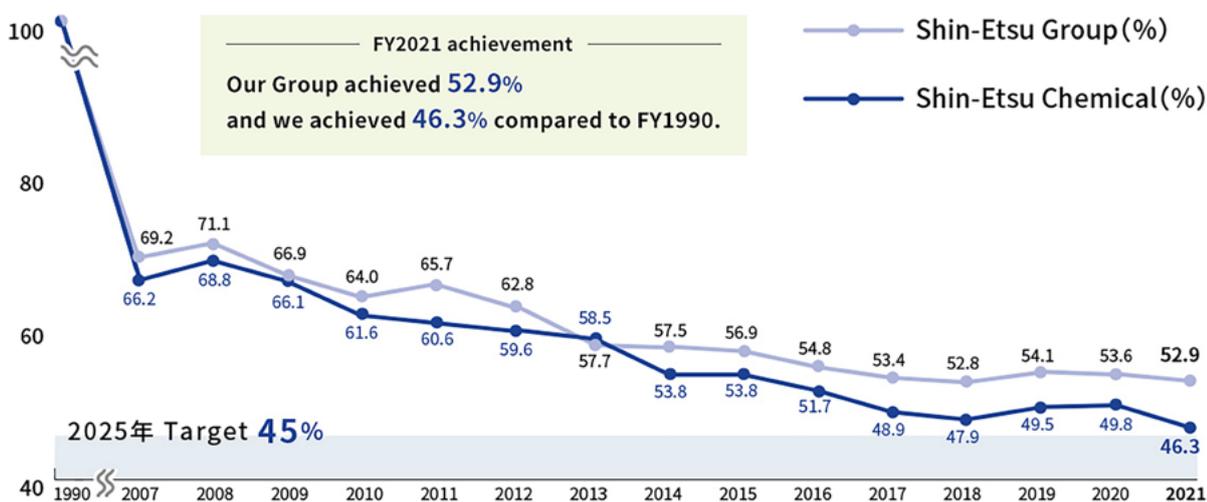
In order to take concrete measures against climate change, the Sustainability Committee, chaired by the President, works with each department to tackle these important issues.

Starting from FY2010, the Group has implemented energy-saving strategies and installed a cogeneration system as well as innovative technologies, in order to achieve the mid-term goal of reducing greenhouse gas emissions in terms of production intensity to 50% of the FY1990 level by FY2015. Furthermore, in FY2016, we set a new mid-term target of reducing greenhouse gas emissions in terms of production intensity to 45% of the FY1990 level by FY2025, and we have been working towards that goal. From FY2020, we started reducing power consumption by deploying cogeneration systems with gas turbines among other initiatives.

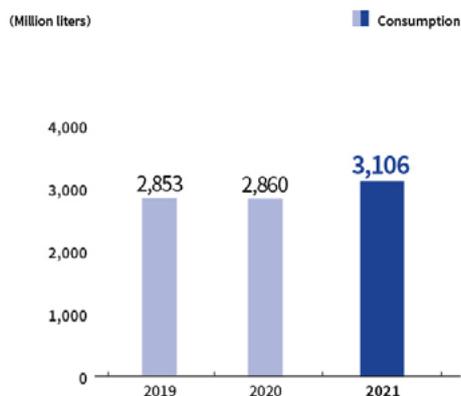
### Related Information

#### > Shin-Etsu Group and Climate Change

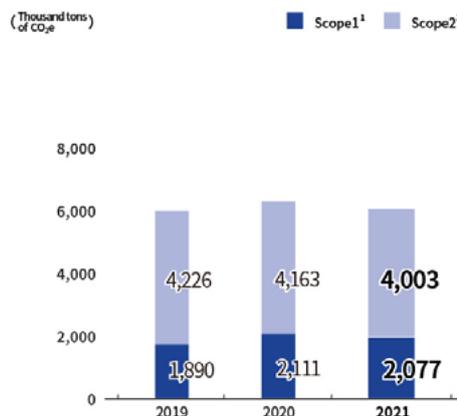
#### Changes in Greenhouse Gas Emissions in Terms of Production Intensity Relative to the FY1990 Level



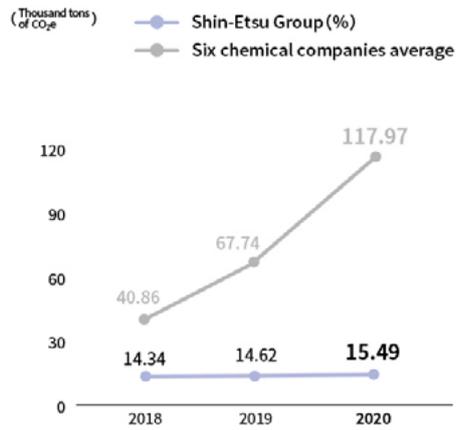
#### Energy Consumption (crude oil equivalent)



#### Greenhouse Gas Emission Volume Trends



## Greenhouse Gas Emission Volume Trends (Ordinary income intensity)<sup>3</sup>



<sup>1</sup> Scope 1

Direct emissions from facilities you own or control (e.g., fuel oil, natural gas)

<sup>2</sup> Scope 2

Emissions from the production of energy purchased by the company (e.g., purchased electricity, steam)

<sup>3</sup> Greenhouse Gas Emission Volume Trends (Ordinary income intensity)

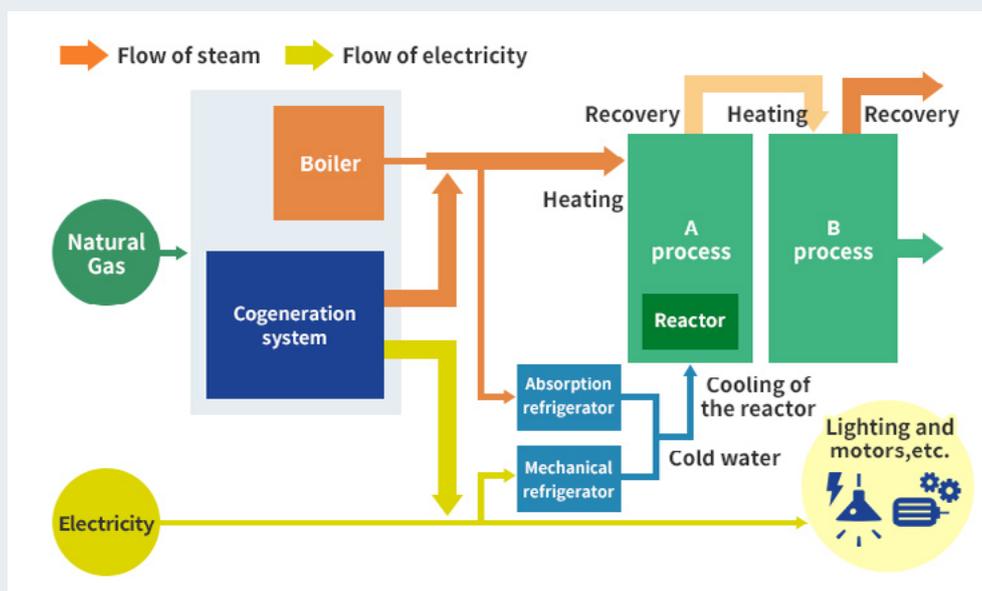
· Ordinary income intensity = emissions (CO<sub>2</sub>-ton) / consolidated or non-consolidated ordinary income (million yen)

· Scope of calculation for 5 chemical companies other than Shin-Etsu: 4 consolidated companies and 1 major group company

\* In cases where emissions were reported to national governments, the reported values were retroactively used for Scope 1 and Scope 2 calculations.

## Thermal Energy Recycling Initiatives

Each plant in Shin-Etsu Chemical is working on recycling thermal energy.



Flow of steam and electricity at the plant

### ■ Installation of a Cogeneration System

Steam and electricity are produced in a plant by using a cogeneration system.<sup>1</sup> Electricity produced by the cogeneration system supports manufacturing operations. In addition, steam is used for heating and the thermal insulation of manufacturing equipment. The steam used for heating will not be emitted but reused for manufacturing equipment that can handle low-temperature steam. Eventually, the steam is converted into water to be collected and recycled.

### ■ Waste Heat Recovery

Heat is recovered from the production process and is used as thermal energy in another process. Furthermore, the remaining waste heat is collected mainly as steam to make cold water in the absorption refrigerator. This chilled water is used to cool the manufacturing equipment, etc.

<sup>1</sup> Cogeneration system (heat and power combined)

This system generates power with engines, turbines, and fuel cells using natural gas, petroleum, liquefied petroleum gas, etc., and simultaneously collects the generated heat as steam. Effective use of both electricity and waste heat can reduce CO<sub>2</sub> emissions and improve economic efficiency through energy conservation.

## Scope 3 Greenhouse Gas Emissions

The Group's scope 3<sup>1</sup> greenhouse gas emissions for FY2021 were 10,315 thousand tons of CO<sub>2</sub>, amounting to 63% of the supply chain.<sup>2</sup>

<sup>1</sup> Scope 3

Emissions from your own supply chain

<sup>2</sup> Supply chain

All stages of a product from raw material production until it reaches the final customer

### Scope 3 Emissions Calculation Methods

Category	Category definition	Emissions (Unit: thousand CO <sub>2</sub> tons)	Amount of activity	Source of emission intensity used
1.Purchased goods and services	Emissions from activities leading up to the production of raw materials and parts, purchased products, and sales materials	5,150	Volume of raw materials purchased	Ministry of the Environment Emissions Source Database (Ver. 3.1) IDEA v2 Emissions per unit of production obtained from suppliers
2.Capital goods	Emissions from the construction and manufacture of the company's capital goods	584	Increase in property, plant and equipment and intangible assets	Ministry of the Environment Emissions Source Database (Ver. 3.1)
3.Fuel-and energy-related activities not included in Scope 1 and 2	Emissions associated with mining and refining of procured fuel Emissions associated with mining and refining of fuel used to generate electricity procured	806	Total amount of energy purchased	Ministry of the Environment Emissions Source Database (Ver. 3.1)
4.Transportation and delivery (upstream)	① Emissions associated with logistics from suppliers of products and services purchased in the fiscal year covered by the report to the company.	921	Weight of purchased raw materials and the transportation distance of raw materials	Energy Conservation Law (ton-kilometers method)
	② Emissions associated with logistics services other than ① purchased in the fiscal year covered by the report (emissions associated with logistics incurred by the company)		Product transport volume and distance (at the company's expense)	Energy Conservation Law (ton-kilometers method)
5.Waste generated in operations	Emissions from the transport and treatment of waste generated in-house	44	Amount of Waste by Type	Ministry of the Environment Emissions Source Database (Ver. 3.1)
6.Business Trip	Emissions from employee business trips	2	Total number of days traveled by type	Ministry of the Environment Emissions Source Database (Ver. 3.1)
7.Employer's commutation	Emissions due to transfer when employees commute to the office	22	Commuting expenses such as commuter pass expenses	Ministry of the Environment Emissions Source Database (Ver. 3.1)
8.Leased assets (upstream)	Emissions from the operation of leased assets leased by the company	-	Exclusion from calculation (The Group covers leasing of non-production bases overseas, but does not cover it due to the small amount)	
9.Transportation and delivery (downstream)	Emissions associated with the distribution of products sold by the company to final consumers (not borne by the company)	215	Volume and Distance of Product Transportation (at the customer's expense)	Energy Conservation Law (ton-kilometers method)
10.Processing of sold products	Emissions from the processing of intermediate products by businesses	-	Non-applicable (Application of WBCSD's Chemical Sector Guidelines : "Chemical companies are not required to report Category 10emissions due to the difficulty of obtaining reliable figures due to the diverse use and client mix.")	

11. Use of sold products	Emissions from the use of products by users (consumers and businesses)	-	Non-applicable (Application of WBCSD Guidelines for the Chemicals Division: "If an end-user of a chemical is unknown, a chemical company should not include indirect use phase emissions in its inventory.")	
12. End of life treatment of sold products	Emissions from the disposal of products by users (consumers and businesses)	2,571	Volume of products	Ministry of the Environment Emissions Source Database (Ver. 3.1) IDEA v2
13. Leased assets (downstream)	Emissions from the operation of leased assets	-	Non-applicable (We do not have any assets leased to other companies.)	
14. Franchise	Emissions by franchisees	-	Non-applicable (We are not a franchised entity.)	
15. Investment	Emissions associated with the operation of investments	-	Non-applicable (There is no investment for profit.)	
	Scope 3 total emissions	10,315		

\*After reviewing the amount of activities and emission factors to be calculated, emissions in categories 1, 3, 4, and 12 were revised retroactively to previous years.

## Support for TCFD recommendations

Support TCFD's recommendations In May 2019, the Shin-Etsu Group announced its support of the recommendations from the TCFD.<sup>1</sup> We also participated in the TCFD Consortium of Japan.<sup>2</sup> We will continue to share information regarding climate change in line with the TCFD recommendations.



### <sup>1</sup> TCFD

The Task Force on Climate-related Financial Disclosures (TCFD) is a special team focusing on climate change disclosure, and was established by the Financial Stability Board (FSB) in September 2015. In July 2017, the TCFD published a set of recommendations calling for corporations to analyze their risks and opportunities based on future scenarios and various mid to long-term predictions of climate change, and to disclose the impact on their finances.

### <sup>2</sup> TCFD Consortium of Japan

It is a group established by the Ministry of Economy, Trade and Industry, the Financial Services Agency, and the Ministry of the Environment in May 2019. Companies and financial institutions that agree with the recommendations from TCFD aim to promote the effective disclosure of information by companies and the efforts to link the disclosed information to appropriate investment decisions by financial institutions and other investors.

## Related Information

[> Sustainability Data](#)

[> Shin-Etsu Group and Climate Change](#)

# Energy-saving, resource-saving, and reduction of environmental impacts

## Policy

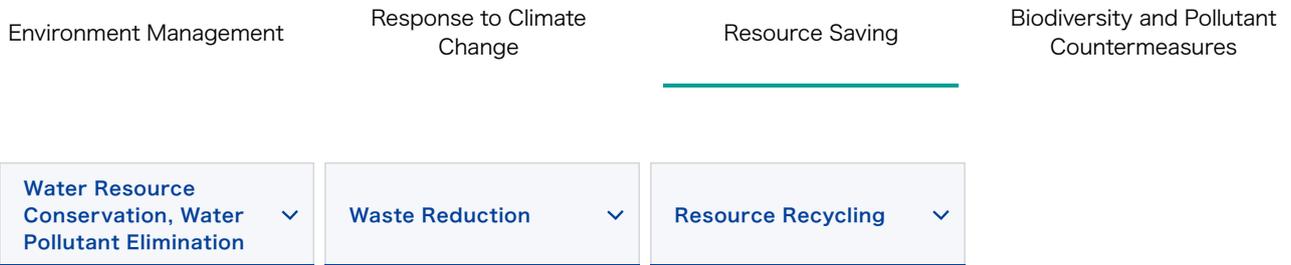
The Group will further promote energy conservation and the effective use of resources, and work to resolve a variety of environmental issues for the future of the Earth.

## Awareness of Issues

We recognize that specific measures to combat climate change, the efficient use of limited resources, and a circular economy<sup>1</sup> are key issues that companies face. The Group is committed not only to contributing to the global environment, but also to enhancing our competitiveness and achieving sustainable development through efforts to conserve energy, effectively use resources, and reduce the environmental impact of our manufacturing processes.

<sup>1</sup> Circular economy

Economic activities to recycle and circulate existing resources, such as converting waste after use into resources for another business



## – Water Resource Conservation and Water Pollutant Elimination



### FY2021 target

Reduce water withdrawal in terms of production intensity at an average annual rate of 1%.  
Reduce water pollutant discharge in terms of production intensity at an average annual rate of 1%.

### FY2021 results

The average annual rate from FY2018 to FY2021 was decreased by 7.7% in terms of water withdrawal and no change in terms of BOD emission.

### FY2021 evaluation

Achieved the target for withdrawal, but not for BOD.

### FY2022 target

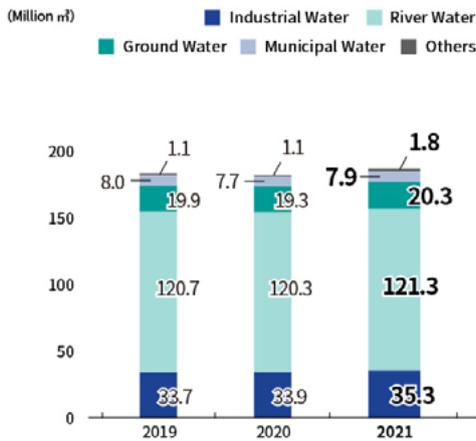
Reduce water withdrawal in terms of production intensity at an average annual rate of 1%.  
Reduce water pollutant discharge in terms of production intensity at an average annual rate of 1%.

## — Results

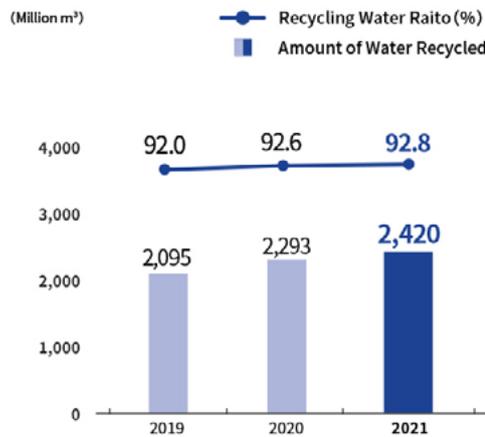
There are water scarcity areas in the world, and the United Nations Environment Program (UNEP) has predicted that the issue of water scarcity in some regions will become serious by the year 2025. The Shin-Etsu Group's major manufacturing plants are located where clean water is abundant. However, we recognize that tackling water shortages around the world is an important issue for us to work on. The Group carries out water risk assessments and works proactively study for the technology for the conservation of water resources by reducing water withdrawal, ensuring that water is recycled, and implementing thorough wastewater purification and water quality management.

In addition, we are working to recycle water to the utmost limit, and we also properly treat the water that is finally discharged, comply with regulations concerning water contaminants when discarding water, and check the water quality ourselves for verification.

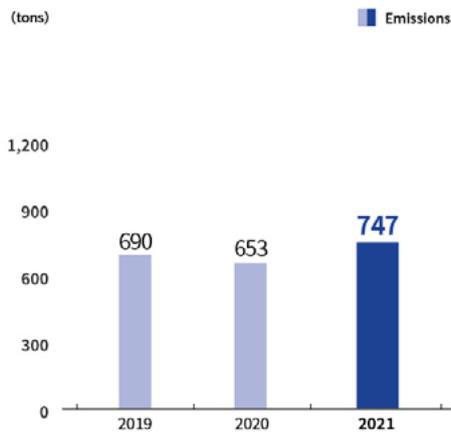
Trend of Amount of Water Withdrawn



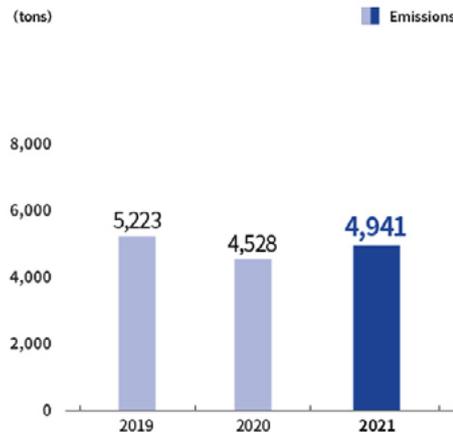
Trend of Amount of Recycled Water



Trend of BOD Emission Volume



Trend of COD Emission Volume



### Related Information

[> Sustainability Data](#)

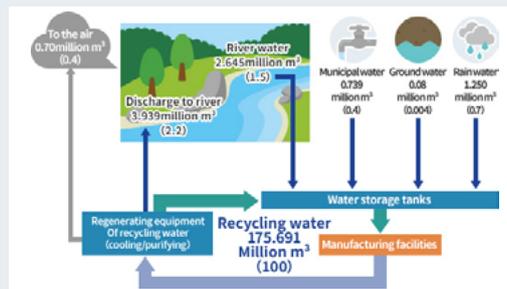
## Working with suppliers to create a sustainable society

The Shin-Etsu Chemical Gunma Complex manufactures highly functional materials such as silicones. Located inland in the southwest region of Gunma Prefecture, the complex draws almost all of the water required for manufacturing from nearby rivers and purifies the wastewater from the complex before discharging it.

The Gunma complex is situated in a rich natural environment. The Tokyo metropolitan area is downstream from the nearby rivers, which sustain the daily lives of Tokyo residents as well as its industry and agriculture. Although the manufacturing of chemical products requires large quantities of water, the complex strives to conserve valuable water resources by keeping its water intake from these rivers to a minimum. For this reason, the complex **reuses as much water as possible** in its manufacturing and water cooling processes by **recycling and circulating** inside the Complex.

Besides **purifying the water** before returning it to the rivers, **rigorous water quality management** is also applied. The Complex strives to maintain optimum conditions by continually monitoring the operating status of water treatment facilities and conducts regular water quality analysis of discharged water to verify that it is in strict compliance with high water standards. Furthermore, it separate rainwater to prevent the inflow of rainwater during heavy downpours as a measure to protect their treatment facilities from being damaged by natural disasters. In addition, it have been carrying out seismic strengthening works since 2014 in preparation of large-scale earthquakes.

By effectively utilizing limited water resources, the Gunma complex will continue to fulfill its responsibility as a production base that is located upstream.



Water Flow at the Shin-Etsu Chemical Gunma Complex (FY2021)

## Rainwater Utilization at Overseas Group Company

Calls are increasing for the protection of the world's water resources, and since its foundation, Asia Silicones Monomer Limited has been making effective use of the abundant rainfall it enjoys in its location in Thailand.

It stores rainwater in storage tanks on-site, using it for industrial water and as coolant for waste gas incinerator. It always maintains a reserve of rainwater for use in firefighting in the event of an emergency. It also supplies Group company Shin-Etsu Silicones (Thailand) and its nearby partners with industrial water using rainwater.



## — Waste Reduction



### FY2021 target

Achieve zero waste emissions (landfill waste of 1% or less of the final amount of all waste generated)  
Promote the reduction of waste generation in terms of production intensity

### FY2021 results

The final waste landfill disposal rate was 0.95% in Japan and 32.4 in overseas.

### FY2021 evaluation

The target was achieved in Japan, but not for overseas.

### FY2022 target

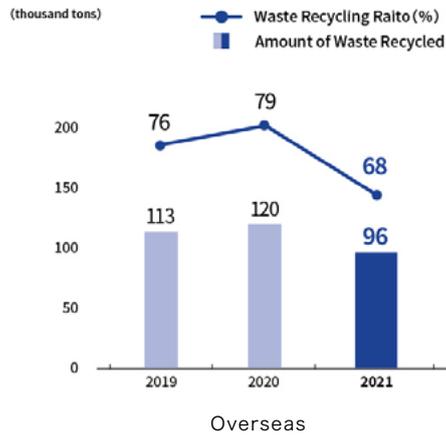
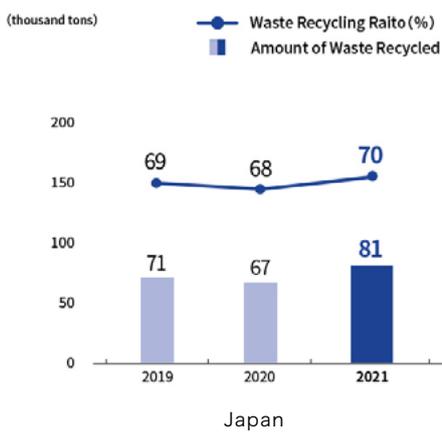
Achieve zero waste emissions.  
Promote the reduction of waste generation in terms of production intensity.

## — Result

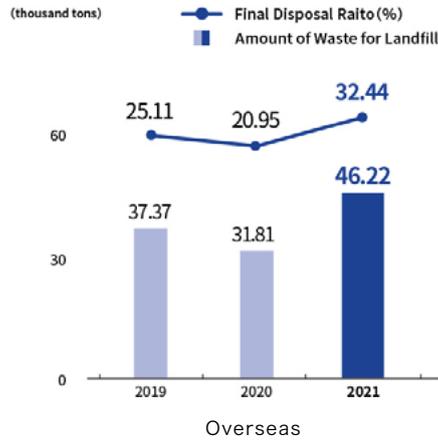
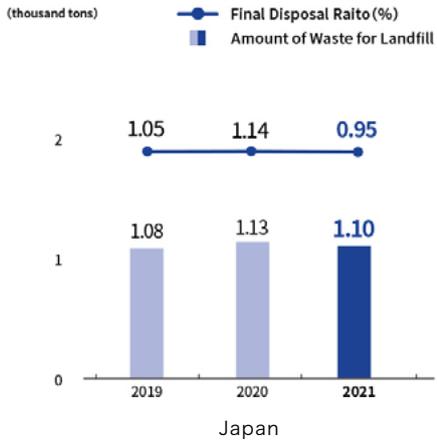
Although the amount of Japan waste generated increased in FY2021 compared to FY2020, the amount recycled also increased. In FY2021, we worked to reduce dewatered sludge and other materials by improving manufacturing processes and increasing the recycling rate of raw materials.

We hire external contractors to handle our disposals. We check to confirm that they handle disposals properly by regularly inspecting their operations.

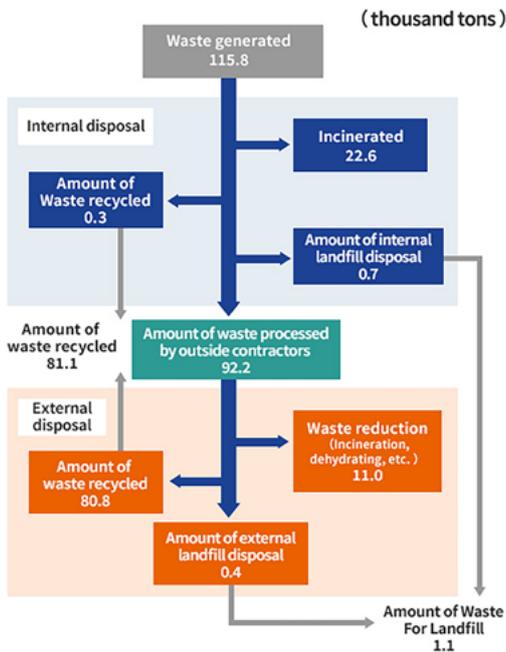
### Trend of Amount of Waste Recycled



### Trend of Amount of Waste Sent to Landfills



### Flow of Waste Disposal (Japan)



\* Since the standards of waste differs between Japan and other countries, the graphs are shown separately.  
 \* The figures of "Flow of waste disposal" is total of Shin-Etsu Chemical and domestic consolidated companies.

### Related Information

[> Sustainability data](#)

## – Resource Recycling



The Group collaborates with customers and related industry groups, using cutting-edge technologies to recover used products, extract resources, and reuse them in the Group's products. Through these initiatives, it is possible to reduce the waste output of our customers and the Group itself. We are also contributing to environmental conservation by reusing resources.

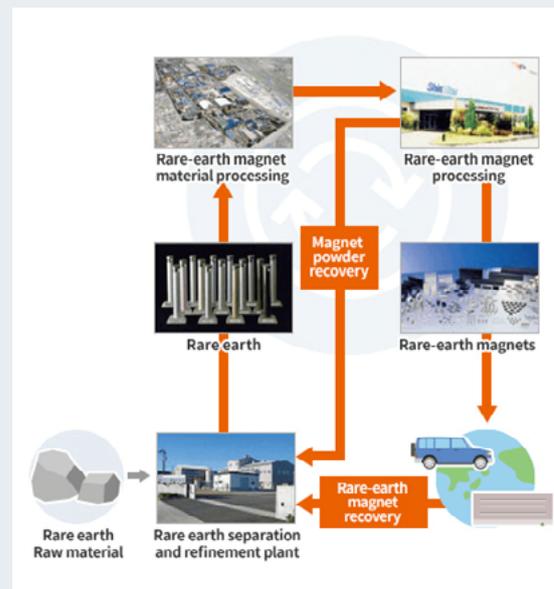
### Rare Earth Magnet Resource Recycling

The Group manufactures rare earth magnets with our integrated production process using separation and refinement techniques to extract rare earth magnets from rare earth raw materials.

Since 2007, the Group has been recycling the magnet powder generated by our manufacturing processes for rare earth magnets as one of our measures for the stable procurement of raw materials. Furthermore, since March 2013, we have also been developing techniques to recycle the rare earth magnets used in recovered power-saving air conditioners and hybrid cars in order to reuse resources.

These initiatives have made it possible to reduce the environmental impact that comes along with resource development and to safely and securely protect the valuable resource of rare earth. The Group's rare earth magnets create significant economic and social value as recycled products and also contribute significantly to energy conservation.

### Rare Earth Magnet Resource Recycling Process

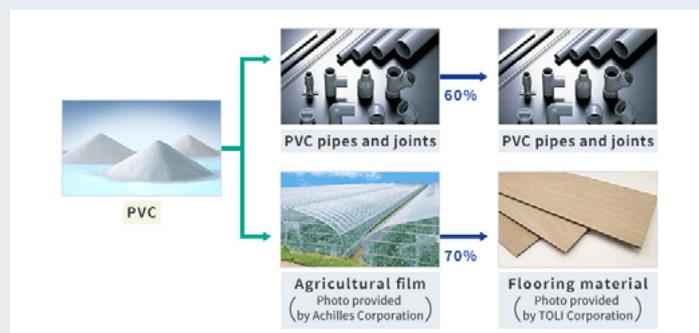


### Recycling of PVC Products

Initiatives to recycle products containing PVC are making progress. There are various methods for recycling PVC, the most common of which is material recycling.

Material recycling uses used PVC products as raw materials to create new PVC products. PVC pipes, flooring materials, and other PVC products are not greatly influenced by foreign substance contamination, so various kinds of recycling are conducted for those products. In particular, 60% of used PVC pipes and joints are recycled for reuse in new PVC pipes and joints, and 70% of agricultural film is recycled for use in flooring material.

### Examples of Recycling PVC Products



> [Vinyl Environmental Council](#) 

### Recycling the Use of Product Shipping Cartons

Shin-Etsu Chemical started recycling product shipping cartons for heat-dissipating silicone grease from FY2018. Heat-dissipating silicone grease must be transported while frozen to stabilize its product quality. Therefore, we used dry ice to cool products in disposable boxes in transit in the past. As a result of extensive research conducted collaboratively with customers, the company has successfully developed the new packaging that can be recycled multiple times while maintaining optimal temperatures. In addition, this new packaging eliminates the need for dry ice, resulting in a reduction of 28.2 tons of carbon dioxide per year.

### Marine Plastic Problem

Marine plastic problem is one of the most important issues for the chemical industry. We believe that there are business opportunities since the problem is unlikely to be resolved with existing products. It is therefore all the more worth it for the Group to take on this challenge. We are working on this issue together with the Japan Initiative for Marine Environment.<sup>1</sup>

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<sup>1</sup> Japan Initiative for Marine Environment

An organization established in September 2018 by the Japan Chemical Industry Association, the Japan Plastics Industry Federation, the Plastics Waste Management Institute, the Japan Petrochemical Industry Association, and the Vinyl Environmental Council to address the marine plastic waste problem for the entire chemical industry.

# Energy-saving, resource-saving, and reduction of environmental impacts

## Policy

The Group will further promote energy conservation and the effective use of resources, and work to resolve a variety of environmental issues for the future of the Earth.

## Awareness of Issues

We recognize that specific measures to combat climate change, the efficient use of limited resources, and a circular economy<sup>1</sup> are key issues that companies face. The Group is committed not only to contributing to the global environment, but also to enhancing our competitiveness and achieving sustainable development through efforts to conserve energy, effectively use resources, and reduce the environmental impact of our manufacturing processes.

<sup>1</sup> Circular economy

Economic activities to recycle and circulate existing resources, such as converting waste after use into resources for another business

Environment Management

Response to Climate Change

Resource Saving

Biodiversity and Pollutant Countermeasures

## — Conservation of Biodiversity

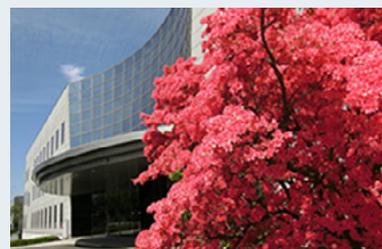


The Shin-Etsu Group aims to design environmentally considerate product starting from the product development stage. At the same time, we are also meeting our responsibilities as a chemical company by working actively to ensure the strict control of chemical substances, mitigate global warming, reduce energy consumption, reduce the amount of waste generated, prevent air and water pollution, and make other environmental contributions. We are also engaged in activities such as tree planting at our plant sites in compliance with the Factory Location Act and voluntary river cleaning in areas around our plants. Furthermore, we request our suppliers to implement environmental conservation initiatives in accordance with our CSR procurement guidelines.

The Group preserves the earth's ecosystem through these efforts.



Nearby river cleanup effort (June 2021, Shin-Etsu Chemical Takefu Plant)



Animals and plants that live and grow in the premises of our factories (From the left : squirrels, Japanese pigmy woodpeckers, and Kirishima azaleas at the Shin-Etsu Handotai Shirakawa Plant)

## Biodiversity Conservation Efforts of Our Pulp Suppliers

We have purchased pulp derived from wood as the main raw material of cellulose derivatives. When purchasing pulp, we ask all our pulp suppliers to consider the conservation of biodiversity, and we have confirmed that they have all obtained national and / or international forest certifications. In addition, we work hard to learn about our pulp suppliers' biodiversity activities.

### – Reduction of chemical emissions



The Group strictly manages the discharge of necessary chemical substances. The Group works to reduce chemical release with proper manufacturing processes and the proper operation conditions of pollutant treatment facilities. In addition, the Group reports the amount of chemical substances released and transferred in the environment according to the PRTR system<sup>1</sup> under the PRTR Law.<sup>2</sup>

In FY2021, we invested in the recovery of chloromethane by increasing the separation capacity of the silane synthesis rectification column, thereby lowering the emissions intensity. However, PRTR emissions increased due to a significant increase in chloromethane production. In addition, acetaldehyde emissions were originally within effluent limits, but we further reduced emissions by separating wastewater in the process.

The Group does not use or produce substances that fall under the Stockholm Convention on Persistent Organic Pollutants.<sup>3</sup>

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<sup>1</sup> PRTR system

Chemical substance release and transfer notification based on the "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof"

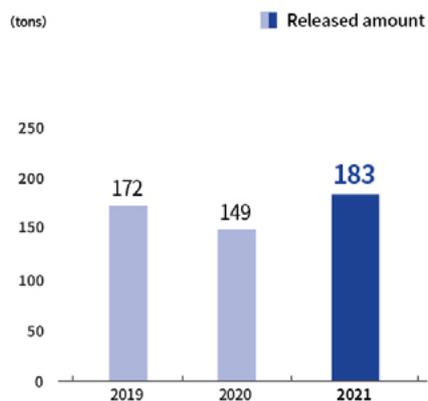
<sup>2</sup> PRTR Law

Short for "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof," it is intended to promote the voluntary control of chemical substances by business operators in order to prevent the risk of damaging the environment.

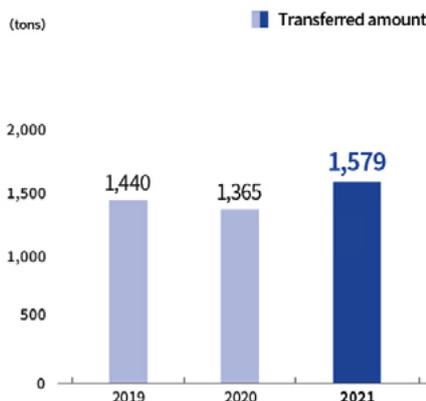
<sup>3</sup> Stockholm Convention on Persistent Organic Pollutants

It is a convention that prohibits or restricts the production, use, export, or import of designated substances for the purpose of reducing persistent organic pollutants that would require immediate attention. It is also known as the Stockholm Convention or POPs Convention.

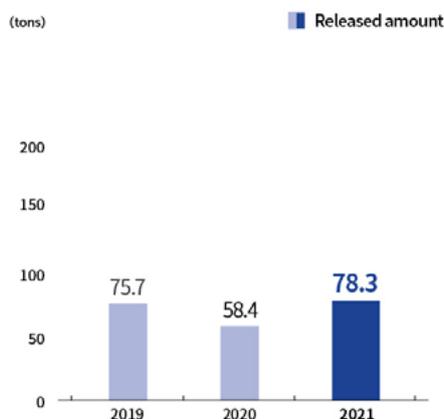
**PRTR Controlled Substance :  
Trend of Total Amount Released**



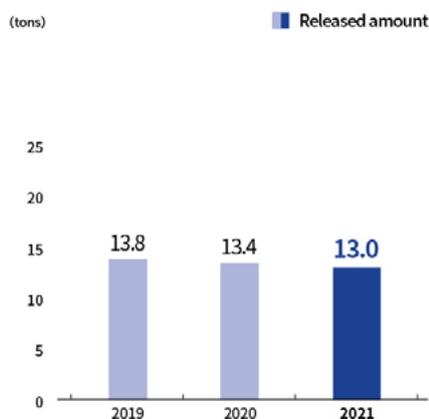
**PRTR Controlled Substance :  
Trend of Total Amount Transferred**



**PRTR Controlled Substance :  
Chloromethane Release Trend**



**PRTR Controlled Substance :  
Chloroethylene Release Trend**



\* The figures are aggregated only for Shin-Etsu Chemical and consolidated companies in Japan.

\* The amount of emissions of substances designated by the PRTR system changes depending on the production volume.

**Related Information**

[> Sustainability Data](#)

**— Prevention of Air Pollution**



The Group is working to reduce emissions of air pollutants by setting emission reduction targets at each of our Group companies and by converting to the use of fuel components with less sulfur. Each group company carried out regular investigations on their emitted gas to confirm that they comply with laws and regulations.

**FY2021 target**

Reduce emissions of air pollutants in terms of production intensity at an average annual rate of 1%.

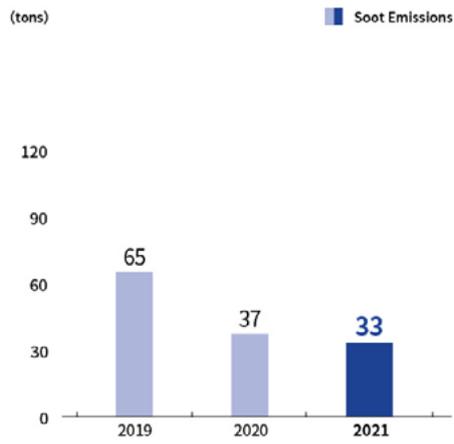
**FY2021 results**

Soot was decreased 24.7%, and Sox was decreased 3.2%.

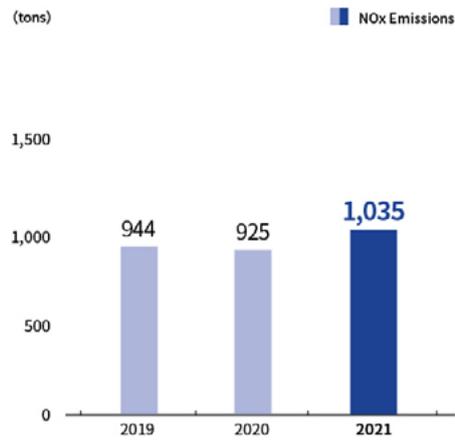
**FY2021 evaluation**

The target was achieved.

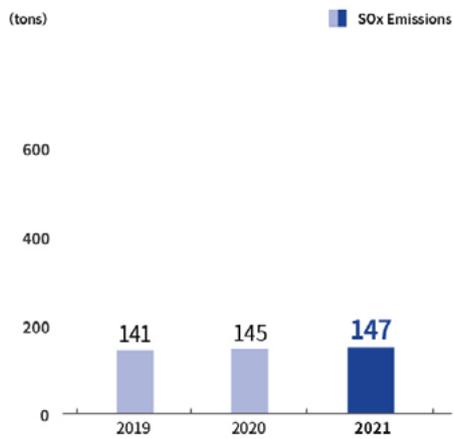
### Soot Emissions Trend



### NOx Emissions Trend



### SOx Emissions Trend



### Related Information

[> Sustainability Data](#)

### — Prevention of Soil Pollution



Groundwater and soil monitoring is carried out at each plant in accordance with the Soil Contamination Countermeasures Act, and we make sure that we are in compliance with laws and regulations. In FY2021, the company performed groundwater and soil monitoring 228 times at its plant sites.

# Product Quality Improvements and Product Safety Control

## Policy

The Group will stably provide high-quality products to customers.

## Awareness of Issues

The Group is working to achieve "zero quality problems." The superior quality of general-purpose products as well as high-value-added products will lead to non-price competitiveness. In order to ensure a stable supply of products, it is essential that the sales, research, production, quality assurance, and shipment departments fulfill their respective roles. In addition, not only in terms of characteristics, but also in terms of environmental and health safety is an important factor for product quality.

Quality Control



Employee Initiatives



Quality Audits and Support



Product Safety Control



## – Quality Control

The Group is making a continuous effort to provide high-quality products to customers stably. We have established a robust internal quality management system, and are continuously striving to improve quality and reduce deviations and waste.

Customer requests are promptly and accurately sent to the Research Center and Production Department through the Sales Department, and utilized for the research and development of new products and the improvement of existing products.

The products are delivered to customers after a final inspection, taking into account the characteristics of the products and how customers will use them.

Sales Department, Research and Development Department, Production Department, and Quality Assurance Department of each of the company's department and Group companies cooperate by taking on the following roles in order to meet the requests of our customers.

### Sales Department

Understand the customer's requests, and promptly and accurately share the information with our Research and Development Department and the Production Department.

### Research and Development Department and Production Department

Research and develop new products and improve existing products based on the customer's requests. We are promoting the automation of the manufacturing process in order to achieve consistent quality.

### Quality Assurance Department

Make the final confirmation on the product while taking into account the characteristics of the product and how they will be used. We have enhanced the accuracy of quality measurement by pursuing the automation of measurement processes to eliminate variations due to quality measurement personnel, sample preparation, and measurement procedures. In addition, convert measurement results into data and used to prevent typing errors when creating inspection tables and labels.

Almost all of the Group's manufacturing bases, both domestic and overseas, have obtained certifications for their quality control systems, such as ISO 9001 and IATF16949.<sup>1</sup> We have also established a strict rule to respond to all inquiries related to product quality from customers within two business days.

## Related Information

[> ISO 9001 Certification of the Shin-Etsu Group](#) 

## – Employee Initiatives



Ms. AT,  
Assurance Department,  
Shin-Etsu Chemical  
Naoetsu Plant

### 1. Please tell us about your job.

I am in charge of responding to laws and regulations related to product safety. There are various laws and regulations in Japan and overseas markets for each application, such as food, cosmetics, and industrial use. My job is to investigate and consider the measures to be taken in order to comply with the laws and regulations according to the application in each country, and to deal with them in cooperation with related departments. For example, I make sure that our products do not contain substances restricted by laws and regulations, and we create and distribute SDS (Safety Data Sheet). I also provide information when we receive customer inquiries regarding compliance with laws and regulations.

### 2. Please tell us about the product safety management initiatives implemented by the Quality Assurance Department.

The Quality Assurance Department is responsible not only for the quality control of products, but also for preparing an SDS for the transmission of safety information. The SDS is an important document that contains information on product hazards, appropriate handling methods, transportation, and applicable laws and regulations. When preparing an SDS, we strive not only to comply with the rules established by JIS, but also to provide easy-to-understand information to customers about the characteristics of our products and appropriate methods of handling them.

### 3. What do you intend to focus on in the future with regard to product safety management?

As stated in the Shin-Etsu Group Business Principle, I will thoroughly comply with the law, which is a major premise of our corporate activities. I think that various law revisions will be made in the future to achieve a higher level of safety, I will intend to respond appropriately.

## – Quality Audits and Support

Since 2000, we have conducted quality audits annually to improve quality and customer service. Quality control activities are evaluated based on two different viewpoints: customer and quality cost. We work to find the root cause of quality issues and strive to prevent re-occurrence. In the quality audit in FY2021, the following items were audited as priority items:

- (1) "Efforts to mitigate instability in manufacturing processes" :  
In addition to improving the conventional manufacturing technologies, DX and AI were introduced to confirm the improvement status of manufacturing processes.
- (2) "Automation of inspection process" :  
To prevent human errors caused by a person's misunderstandings and to eliminate measurement variations which are dependent on persons, automation of measurement was promoted, and the status of improvement in accuracy of quality measurement was confirmed.
- (3) Confirmation of quality improvement activities such as "yield improvement" and "zero human error," which have been continuously implemented.

Six Sigma programs<sup>1</sup> were also deployed throughout the company to improve the quality level.



Quality audit (September 2021, Shin-Etsu Chemical Kashima Plant)



The 22nd debrief session of the results of Shin-Etsu Six Sigma (February 2022, Shin-Etsu Chemical Head Office)

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<sup>1</sup> Six Sigma programs

Quality improvement method developed by Motorola in the 1980s. Focusing on processes with quality variation, it is designed to minimize variations within the processes, thereby reducing the incidence of quality defects. This approach has been adopted across the Group.

## — Product Safety Control

We manage product safety, from product development to transportation, based on internal regulations. To ensure the safety of new chemical substances, we assess and confirm environmental and health risks at the development stage. When developing new chemical substances, we focus on products and manufacturing technologies that do not use hazardous substances that have been designated by the Industrial Health and Safety Act and Chemical Substances Control Law,<sup>1</sup> as well as the EU RoHS Directive.<sup>2</sup> Furthermore, we make sure that the necessary notifications and reports are submitted according to laws and regulations.

We offer customers information such as on product hazards and harms in the form of SDS<sup>3</sup> in order to ensure the proper transmission of information to customers and transportation firms. In addition, we request customers to handle products safely by complying with laws and regulations, installing abatement equipment, wearing protective equipment and so on through SDS.

As a product transportation safety measure, we issue yellow cards<sup>4</sup> and container yellow cards<sup>5</sup> that are affixed to containers. In accordance with the Industrial Safety and Health Act, we also attached symbols to indicate hazardous and harmful substances in accordance with GHS<sup>6</sup> on product containers and packaging.

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### <sup>1</sup> Chemical Substances Control Law

Short for "Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.," it is intended to prevent environmental pollution by chemical substances that can be harmful to human health or to ecosystems.

### <sup>2</sup> Restriction of Hazardous Substances (RoHS)

An EU directive that restricts the use of certain hazardous substances in electrical and electronic equipment.

### <sup>3</sup> Safety Data Sheet (SDS)

SDS lists the physical and chemical properties of chemical substances, together with their harmfulness and emergency response procedures. Designed to promote safer use of chemical substances and prevent accidents and incidents, SDS are supplied by manufacturers, importers, and distributors to customers during sales or shipment.

### <sup>4</sup> Yellow cards

Yellow cards are cards that describe all relevant information on the treatment required in case of an accident during the transportation of chemical substances. The cards are handed to the transport contractor, who carries them when transporting the chemical substances in tanker lorries, etc.

### <sup>5</sup> Container yellow cards

The standard yellow card system is not suitable for use with mixed cargoes and small-lot deliveries; instead, each container carries a label displaying the safety information such as the UN number of a chemical name and the ERG guide number.

### <sup>6</sup> Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

An internationally standardized system of classification and labeling of chemicals.

## Related Information

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### > [Sustainability Data](#)

# Promoting CSR Procurement and the Diversification of Supply Sources

## Policy

The Group will build a supply chain to conduct fair procurement and to consider the environment.

## Awareness of Issues

Environment issues and human rights infringement by raw material suppliers are important management risks. We have been working on CSR procurement more than ever before, and we check the fairness of our suppliers' activities based on our CSR Procurement Guidelines. We also recognize that the stable procurement of high-quality raw materials at reasonable prices leads to stable production and high-quality products.

Basic Procurement Policy	Employee Initiatives	Compliance with the Act against Subcontractor	Sustainable Procurement
Announcing the "Declaration of Partnership Building"	Procurement Audit	Procurement Conferences	Control of Chemical Substances Used as Raw Materials

## — Basic Procurement Policy



Created by the Group, this policy is shared within the company and posted on the website. We ask suppliers to understand the "Basic Procurement Policy" and to incorporate the content of the policy into their supply contracts. To let suppliers better understand the policy, we created the CSR Procurement Guidelines, which is posted on the website. We held meetings to explain the guidelines to suppliers in July 2017 and January 2018, asking suppliers for their understanding and cooperation in promoting CSR.

In January 2018, we established the Supplier Hotline to ensure the transparency and fairness of transactions between the Group and suppliers.

# Shin-Etsu Group's Basic Procurement Policy

## 1. Legal compliance

As the most important of its management objectives, the Company conducts all of its business activities in a law-abiding spirit. Each and every staff member is made fully aware of corporate social responsibilities and they carry out their business activities in strict conformity with the law, business ethics and the various rules and regulations of the Company.

In its purchase and procurement activities, the Company acts in good faith and in a fair manner, and does not practice favoritism, nor make improper demands. In addition, based on mutual trust, not only between the Company and the suppliers that the Company directly procures from, but also with vendors in the linked supply chain, all those companies involved carry out their business activities in strict accordance with the principal labor standards of International Labor Organization (ILO), any laws and regulations related to protection of the environment and business transactions including those of small- and medium-size enterprises.

## 2. Promotion of corporate social responsibility

The Company places primary importance on corporate social responsibility (CSR) activities. For the promotion of CSR, the cooperation of all the Company's suppliers is essential, and we ask you to comply with the Company's policies in the areas listed below. At the same time, we will strive to maintain mutual trust and close, friendly relationships.

- (1) Strive to strengthen and promote conformance with social norms, business ethics and laws.
- (2) Place first priority on assuring safety, protection against disasters and effective environmental preservation (Cooperate in "Green" environmentally friendly purchasing and procurement activities, and at the same time, each person should have a consciousness of the importance of these issues.
- (3) Conduct risk management activities such as paying attention for accurate and fair disclosure of information on assuring the delivery of safe and reliable products and taking speedy measures to deal with various contingencies
- (4) Respect for human rights and promote anti-discriminatory practice. Comply with the labor standards of the International Labor Organization (ILO) and prohibit unfair labor practices.
- (5) Protect against the disclosure of classified information, personal confidentiality and respect the rights of the third party's intellectual property.
- (6) Pay attention to biodiversity preservation.
- (7) Avoid the purchase of Minerals that are clearly involved in conflicts and human rights infringement in conflict-affected and high-risk areas (CHAHRA).

## 3. Supplier selection

The Company follows an open-door policy regarding its purchasing activities and globally seeks suppliers based on open, fair, impartial and equal-opportunity principles. The company selects suppliers in a rational and comprehensive manner, taking into consideration the following core considerations : 1. Globally competitive in product quality, price, delivery time and supply stability 2. Objective standards such as suppliers' management stability, reliability and technological superiority. 3. Matters as mentioned in "2. Promotion of corporate social responsibility" above

## 4. Development and review of the suppliers

The Company provides suppliers with the essential information necessary for transactions and also cooperates with suppliers' VA and VE improvement activities as well as in activities related to the maintenance and improvement of product and service quality. The Company also routinely or as necessary promotes evaluation and review of suppliers' performance.

\* VA : Value Analysis, VE : Value Engineering Method for developing high value new products satisfying customers and improving existing products

## Related Information

> [Shin-Etsu Group CSR Procurement Guidelines](#) 

> [Supplier Hotline](#)

## — Employee Initiatives



Mr. MA and Mr. JS,  
Purchasing Department,  
Shin-Etsu Chemical  
Head Office

### Working with suppliers to create a sustainable society

#### 1. Please tell us about your job.

We are responsible for the procurement of electricity, gas, and raw materials such as chemical products and pulp used by Shin-Etsu Chemical.

#### 2. What prompted you to create the "CSR Procurement Guidelines" (hereinafter referred to as the Guidelines) in 2017?

The Purchasing Department has been working on CSR procurement for a long time and had a "Basic Procurement Policy." We prepared the Guidelines to explain the "Basic Procurement Policy" in detail and to help our business partners to understand it.

The Guidelines were developed based on version 5.0 of the EICC (currently RBA)<sup>1</sup> Code of Conduct, which was the industry standard at the time. We added our own items, such as business continuity planning, to the document. By developing the Guidelines, we have clarified what we should keep in mind regarding CSR procurement as the Purchasing Department and what we need to ask our suppliers to do.

#### 3. What was the focus of the 2020 revisions?

Additions and revisions to "RBA Code of Conduct Version 6.0" for 2018 were reflected in the Guidelines. In addition, the content and the text was revised in line with the update of CMRT<sup>2</sup> in 2020.

At the same time, specific examples of business continuity plans were provided to make them easier to understand.

#### 4. Please tell us about your supply chain management plans for the future.

We have already asked our major suppliers to participate in briefing sessions and questionnaires based on these Guidelines. By expanding the scope, more suppliers can learn about them, which will lead to stable, fair, and impartial procurement activities.

#### 5. How was procurement affected by COVID-19 infections?

Raw materials procurement from overseas was partially affected by production suspension caused by lockdown. However, our manufacturing was unaffected as we had secured substitute raw materials by doing multiple-source purchasing. While preventing COVID-19 infection cases, we managed to continue purchasing operations through remote work and staggered working hours as well as customer meetings using a web conference system.

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<sup>1</sup> EICC (currently RBA)

A CSR alliance for the electronics industry. In 2018, it was renamed to the Responsible Business Alliance (RBA). It sets standards to ensure that the work environment is safe, to treat workers with respect and dignity, to fulfil environmental responsibilities, and to implement ethical business practices in the electronics industry or industries and supply chains that use mainly electronic components.

<sup>2</sup> CMRT

A template for conflict minerals reporting created by RBA's conflict minerals free promotion initiative titled "Responsible Sourcing of Minerals Initiative." This template is an information control tool for the entire supply chain, intended to enable procurement of raw materials free of conflict minerals.

## – Compliance with the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors

Staff members in charge of purchasing and procurement attend seminars on the Subcontract Act to gain an understanding of it. We also conduct regular internal audits of subcontracting transactions to ensure full compliance with the Subcontract Act. In addition, we make sure that all subcontractors that are subject to the Subcontract Act are in full compliance by periodically checking the details of existing transactions and reports on new transactions.

## – Sustainable Procurement

In our "Basic Procurement Policy," the Group has declared our dedication to eliminating minerals from conflict-affected and high-risk areas (CAHRAs) that are clearly involved in conflicts and human rights infringement in all product procurement. We ask that all suppliers adhere to this policy, and we regularly perform studies of pertinent minerals, tracking their production all the way back to the smelting process. Furthermore, in February 2021, the Company participated in a meeting of the Roundtable on Sustainable Palm Oil (RSPO) as an associate member. The RSPO is a non-profit organization that promotes sustainable growth and use of palm oil by way of cooperation within the supply chain and open dialogue with interested parties. The Company agreed with the purpose of the RSPO and decided to participate.

## – Announcing the "Declaration of Partnership Building"

We announced the "Declaration of Partnership Building" in December 2020, agreeing with its concept "Building the mutually beneficial relationships among entirety of the supply chain". In particular, during a negotiation of the pricing of a deal, we agree to include the appropriate profits of suppliers in the pricing and make sure that we do not make unreasonable cost reduction requests. As a result of these efforts, in the "Price Negotiation Promotion Month Follow-up Survey" conducted by the Ministry of Economy, Trade and Industry and the Small and Medium Enterprise Agency in 2021, the score of the price pass-through was 9.71 points (average was 6.86 points), and received the highest evaluation among the companies evaluated.



## – Procurement Audit

By asking suppliers to complete a supplier CSR procurement questionnaire, we confirm whether they conduct business activities in accordance with the Group's "CSR Procurement Guidelines." Additionally, we visit suppliers in Japan and overseas whenever necessary to carry out audits.

## — Procurement Conferences

The Purchasing Department holds a company-wide meeting every six months with all purchasing department personnel to discuss material procurement. In this meeting, we do not only report material procurement, but we also train purchasing department personnel according to the "CSR Procurement Guidelines," check the status of CSR procurement, and learn the latest examples of CSR procurement inside and outside the Company.

## — Control of Chemical Substances Used as Raw Materials

The Group checks the ISO 14001 acquisition status of business partners and considers prioritizing suppliers that have an ISO certification so as to purchase materials with smaller environmental impact. When signing contracts on specifications for the supply of raw materials, we work to confirm the following :

- Compliance with relevant laws and regulations regarding the use of chemical substances that affect the environment in products and packaging materials
- Compliance with the RoHS Directive
- Substance management using SDS or chemSHERPA

# Respect for Human Rights, the Development of Human Resources, and the Promotion of Diversity

## Policy

The Group will respect human rights in all business activities, and promote the development and diversity of human resources.

## Awareness of Issues

The Group respects for human rights as the basis for all business activities. Amidst rising global interest in human rights, it is important to comply with this policy and respect the human rights of the Group and all stakeholders. Furthermore, we believe that the development and diversification of human resources is indispensable for the growth of our business and the sustainable development of the Group.

Respect for human rights

Human resource development

Creating a comfortable working environment

Establishment of the Shin-Etsu Group Human Rights Policy

Human Rights Promotion Structure

Conducting Human Rights Risk Surveys

Observance of International Labor Standards

Consulting and Reporting on Human Rights

## — Establishment of the Shin-Etsu Group Human Rights Policy

The Shin-Etsu Group has been engaged in business activities based on ongoing respect for human rights at all its business sites around the world. The company's commitment to respecting human rights is outlined in the Shin-Etsu Group "Human Rights Policy" on May 2019, which is implemented thoroughly in the Group and communicated outside the company.

[The Shin-Etsu Group Human Rights Policy ^](#)

### The Shin-Etsu Group Human Rights Policy

Shin-Etsu Group (the "Group") engages in business based on its Business Principle, "The Group strictly complies with all laws and regulations, conducts fair business practices and creates unrivaled value for society and industry through the provision of key materials and technologies." The foundation of this is respect for human rights. The Group respects the human rights of all individuals. All our Group companies worldwide respect human rights perpetually in accordance with the international code of conduct\* and actively promote the following actions to respect human rights.

## Respect for Human Rights

### 1. Prohibition of discrimination

We do not discriminate at all on the basis of nationality, race, ethnicity, gender, religion, personal views, beliefs, age, social status, disability, sexual orientation, gender identification, labor union participation, health, marital status, political opinion, or any other status.

### 2. Prohibition of damaging human dignity

We do not in any case conduct sexual harassment, power harassment, maternity harassment or any other acts that damage human dignity.

### 3. Protection of privacy

We protect the privacy of individuals and handle personal information properly in accordance with the applicable laws and regulations of each country.

### 4. Respect for basic labor rights

We respect the workers' right to organize, the right of collective bargaining, and further rights given to workers to establish, maintain, and improve trust and good cooperative relationships through dialogue between labor and management.

### 5. Prohibition of child labor and forced labor

We prohibit our operations in all countries and regions from using child labor in accordance with the applicable laws and regulations of each country. We also prohibit the use of forced labor.

\* International code of conduct

The Universal Declaration of Human Rights, ILO International Labour Standards, UN Guiding Principles on Business and Human Rights, UN Global Compact's 10 Principles, etc.

## Activities for Respecting Human Rights

### 1. Human rights awareness

The people responsible for human resources in each business site and company of the Group will strive to develop the proper understanding of human rights and awareness of respect for human rights through activities including education for employees on human rights.

### 2. Human resources development

The Group will create an environment in which diverse individuals can work at their full capacity and equally give all employees opportunities aligned with their aptitudes to develop and utilize their abilities.

### 3. Working environment

The Group will make efforts to create a sound and comfortable working environment and to ensure safety.

### 4. Prevention of human rights infringement

The Group will make efforts to prevent the infringement of human rights in the course of business activities by conducting human rights due diligence\* in accordance with the UN Guiding Principles on Business and Human Rights.

### 5. Measures for handling issues

If there are concerns regarding human rights infringement in our business activities, the Group will take appropriate measures promptly to resolve them.

### 6. Promotion of respect for human rights

The Group will encourage all people associated with the Group to comply with international standards for human rights.

\* Human rights due diligence

To regularly implement the identification, evaluation, preventative / corrective measures, investigation, monitoring, and information disclosure of human rights risks in accordance with the Group's human rights policy.

Established on May 21, 2019

## – Human Rights Promotion Structure

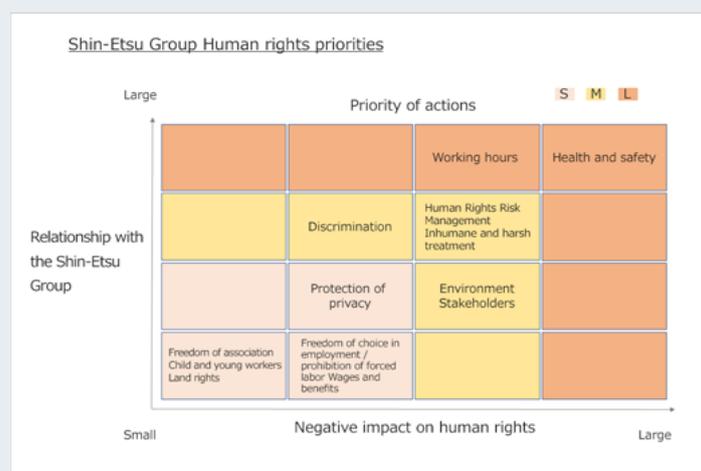
The Human Rights Due Diligence Subcommittee established within the Sustainability Committee plays a central role in promoting respect for human rights. The subcommittee is engaged in overall action items associated with human rights due diligence such as the formulation of the "Human Rights Policy," survey of human rights risks for the Group, and the establishment and maintenance of a system for consulting and reporting on human rights.

In addition, the subcommittee works with the Shin-Etsu Chemical's Human Rights Enlightenment Promotion Committee to promote awareness and education of human rights. This committee holds regular human rights awareness training for directors and employees. Human rights Q & A are serialized in our internal company newspaper, and the committee asks people to submit human rights enlightenment mottos to coincide with our annual human rights week in December. In FY2021, we conducted human rights awareness online training, such as power harassment training, training on discrimination against infectious diseases and LGBTQ issues.

Furthermore, the company is a member of both the Industrial Federation for Human Rights, Tokyo and the Corporate Federation for Dowa and Human Rights Issue, Osaka. We discover human rights developments and obtain latest information through federation activities and training sessions held by administrative organizations to promote awareness of human rights.

## – Conducting Human Rights Risk Surveys

In December 2019, we began conducting human rights risk surveys with all Group companies to identify human rights risks in the Group's value chain. The survey is part of our human rights due diligence conducted in line with the UN Guiding Principles on Business and Human Rights. In FY2021, we evaluated the priority of human rights issues from the two axes of "severity of potential impact on human rights" and "relationship between human rights risk and the company," and identified the human rights issues that our Group should prioritize and address. In the future, we will thoroughly address human rights issues that must be prioritized throughout the Group, checking progress on initiatives to address the issues raised by each site, and making sure that responses are being taken. An analysis of the responses to the internal human rights risk survey revealed that approximately 40% of the Group companies believe that human rights management is important in their supply chains. Starting in February 2022, we are gradually conducting a survey of suppliers in our Group regarding their sustainability initiatives, including human rights.



## — Observance of International Labor Standards

The Group supports the Universal Declaration of Human Rights and respects the human rights in accordance with the international labor standards through the International Labour Organization (ILO). In order to confirm the status of human rights compliance, we distribute questionnaires to consolidated companies every year to investigate whether items related to respect for human rights<sup>1</sup>, labor management, and employment are properly implemented in accordance with the laws and regulations of each country and region. In addition, when building a new plant, its impact on the region in terms of human rights is taken into consideration.

<sup>1</sup> Confirmation Items concerning Respecting Human Rights

Prohibition of child labor, proper working hours, decent wages, proper employment contract in writing, prohibition of inhuman treatment, prohibition of discrimination, freedom of association

## — Consulting and Reporting on Human Rights

Our group has the following three contact points :

· [Compliance Consultation Office](#)

Officers, employees, advisors, contract employees, part-time employees, and temporary employees can report by email or phone.

· [Dial Shin-Etsu](#)

Domestic employees, advisors, contract employees, part-time employees, and temporary employees can consult anonymously by phone.

· [Supplier Hotline](#)

Our Group's suppliers can report by e-mail.

# Respect for Human Rights, the Development of Human Resources, and the Promotion of Diversity

## Policy

The Group will respect human rights in all business activities, and promote the development and diversity of human resources.

## Awareness of Issues

The Group respects human rights as the basis for all business activities. Amidst rising global interest in human rights, it is important to comply with this policy and respect the human rights of the Group and all stakeholders. Furthermore, we believe that the development and diversification of human resources is indispensable for the growth of our business and the sustainable development of the Group.

Respect for human rights

Human resource development

Creating a comfortable working environment

Education / Training and Personal Development

Performance-based Personnel Evaluation Systems

Promotion of Diversity

Employee Initiatives

## — Education / Training and Personal Development

The Shin-Etsu Group supports employees' growth through various training systems, which include training for different staff rank, global communication training, auditing student system, environmental education, safety education, and mental health education. As part of digitization measures, AI training also started in FY2021.

### Training for different staff grades

We provide various level-specific training programs to learn management, leadership, communication, and problem-solving skills that are essential for improving performance and are required at each level of the organization.

- General manager training (Advanced management training, S staff group / M staff group training)
- Section manager training (Middle management training)
- Junior manager training (Line management training / Staff management training)
- Regular employees (Mid-career employees training, Women employee training, Junior leader training, Third-year training)

### Global Communication Training

The Group is expanding its business activities throughout the world. Competency in a foreign language is an essential skill for smooth operations. Therefore, the company offers the following kinds of training:

- English language training (meeting skills course and presentation skills course)
- Cross-cultural communication training
- Chinese conversation classes

## AI Training

In FY2021, we started the following AI training programs in order to discover and develop human resources capable of using AI and to improve the overall level of AI in the company.

- AI literacy training (e-learning for new and young employees)
- Data analysis skill acquisition training : Problem-based learning for mid-career employees to solve practical problems
- AI project management training : E-learning for general and section manager involved in projects

## Auditing Student System for Employees

In 1962, Shin-Etsu Chemical established an auditing student system for employees. Under this learning system with the goal of improving the workforce, up to about 10 operators from manufacturing sites of the Group are chosen each year to study at universities for one year. In the 58 years since the system was introduced, a total of 547 employees have completed the program and are now active in various workplaces.

## Training system list

	Training for different staff grades		Specialized education		Environment and safety education	Quality control education	Special education	General education		
			AI/MI education							
General manager level	Advanced management training	S staff group/ M staff group	Patent training Training for adaptation to internationalization	DX management training	Specialized education in environmental control and safety	Environmental health and safety education				
Section manager level	Middle management training		English language training		· Supervisor education · ISO education	Hazardous materials safety education	Course for management development training (external training)	Mental health seminars		
Junior manager level	Line management training	Staff management training	· meeting skills course I/II · presentation skills course I/II	AI management training · Basic training · PBL**		Industrial Safety and Health Act. Radiation	QC intermediate course	· self-care · line-care · Human rights awareness training		
Regular employees	Job/family change training		· Chinese conversation Classes	Introduction course MI* training	New recruit education	High-pressure gas				
	Mid-career employees		· Intercultural communication training			*) Material Informatics				
	Women employee					***) Problem-based Learning				
	Junior leader training									
	Third-year training					Mono-pressure, boilers, etc.	QC basic course	Auditing student system (1 year)		
	New employee induction/second-phase training									

## – New lecturing style in COVID-19 calamity

Ms. YD, lecturer in Chinese

I have been in charge of Chinese-language classes at Shin-Etsu Chemical since about 20 years ago. Affected by the global spread of COVID-19, classes took the form of online sessions, an unprecedented format, instead of in-person sessions. At first, the classes were slow to progress partly because I was not accustomed to the online format while being unable to meet learners in person, which made me feel lonesome. I would like to express gratitude to the students who worked hard, undaunted in the face of that hardship. I hope the COVID-19 crisis will end as soon as possible, and hold classes with students in person. I will strive to teach Chinese in an easy-to-understand way so that students can use it effectively for work and travel. Your help and support is appreciated.



Oline Chinese languages classes (Shin-Etsu Chemical Head Office)

## – Performance-based Personnel Evaluation Systems

The Group has introduced an employee evaluation system that emphasizes their ability and work performance. This system aims to increase employees' motivation by reflecting their performance and attitude to the benefits that they will receive, and evaluates how they meet their challenges to achieve higher goals. To manage the personnel system in a fair and appropriate manner, evaluation training is provided for all managers who conduct performance review, so that they can carry out personnel evaluations fairly. Transparency is increased by informing evaluation standards to employees. In addition, there is a system of interviews between an evaluator and a direct report to ensure that they can communicate successfully. During interviews, each staff member and their immediate supervisor use Communication Sheets to ensure mutual awareness of expectations and set half-year goals. Furthermore, feedback on progress is given for further development of skills.

## – Promotion of Diversity



### Active Promotion of Diverse Human Resources

The Group hires local employees at overseas Group companies and hires foreign nationals in Japan. The entire Group is also working to proactively employ people with disabilities and create environments where it is easy for them to work. Furthermore, in order to promote women's participation and advancement, the Group set a five-year goals in FY2016. From FY2021, we set new five-year goals and started to work on them.

#### Goals to Promote Women's Participation and Advancement

In the next five years from FY2021, the company aims to achieve the following :

1. The rate of hiring women will be 40% for administrative positions and 10% for engineering positions.
2. The number of women in managerial positions, including junior manager level, will be quadruple compared to the number in FY2014.

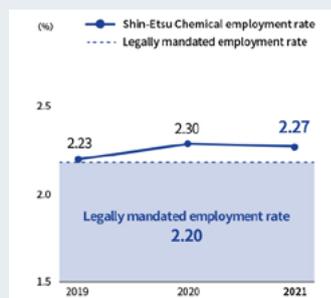
#### Changes in the number of female managers compared to the 2014 level

April 2021	April 2022
Approx.260%	Approx.280%

#### Changes in the rate of hiring women

	April 2021	April 2022
Administrative position	36.4%	40.0%
Engineering position	6.9%	4.5%

### Employment Rate of Persons with Disabilities



Wheelchair ramps  
(Shiin-Etsu Chemical Gunma Complex)

\* The legally mandated employment rate has been 2.3% since March 2021.

## – Employee Initiatives



Ms. SF,  
HR Manager,  
Shintech Inc.

### Working as a manager who considers the entire organization

#### 1. Please tell us about your career after joining Shintech and your current responsibilities.

I joined Shintech as an HR Generalist at the Freeport, Texas PVC manufacturing site concentrating on the HR disciplines of Talent Acquisition and Employee Relations. As a function of Shintech's rapid growth, social reforms and cultural shifts, health and privacy concerns, and employee turnover rates, my position now as an HR Manager-and as a member of the Benefits Committee-demands equal concentration on the HR disciplines of Organizational and Employee Development, Total Rewards / Compensation and Benefits, and Employee Health / Safety / Security.

#### 2. Please tell us about Shintech's initiatives to respect human rights, development of human resources and promotion of diversity.

Shintech complies with regulations-federal, state and local-including equal employment opportunity, discrimination and harassment related to race / religion / sex / national origin, etc. Our employee handbook is one of our initial points of contact in our employer / employee relationship, supported by HR policies in which we communicate our commitment to ensuring a fair and equitable work environment. In addition, Shintech aligns our initiatives with Shin-Etsu's Sustainability Key Issues and Management Objectives.

#### 3. What do you want to focus on in the future in your work regarding to initiatives to respect human rights, development of human resources and promotion of diversity?

My focus will be HR's vision. HR strives to be a strategic business partner with Shintech management; demonstrating we are collaborative, process driven, solutions oriented, transparent, and customer focused, etc. HR will work to influence policy development / enhancement to ensure a work environment conducive to respect and professionalism in the workplace. We will continue to provide consultative input on organizational development, analyze positions, post and recruit positions from diverse labor pools, hire based on the applicants demonstration of the critical competencies required of the position, and pay according to external market data and internal equity-regardless of race, religion, sex, national origin, etc.

#### 4. What kind of career do you want to pursue in the future?

I am in the latter stage of my career with Shintech and am focusing my contributions on the HR discipline of Organizational and Employee Development. Developing critical competencies-both technical and behavioral-and succession planning are paramount as we navigate the evolving labor pool and the future of the way we work.

#### 5. Do you have a message for the women who work at Shintech and the Shin-Etsu Chemical Group?

The more we empower ourselves and demonstrate our contribution to problem solving, continuous improvement, innovation, creativity-to ensuring the decisions we make in our positions are focused on what is holistically in the best interest of Shintech / Shin-Etsu-the more we can realize our vision of gender equality.

### Raising Retirement Age

In April 2019, the company raised the retirement age from 60 to 65 after continuing discussions with the Shin-Etsu Chemical Labor Union. It is the first time that such a system was implemented at a major Japanese chemical company. After turning 60, they will receive 80% of the salary received at age 59. We will also raise salaries and promote people based on personnel evaluation.

By adjusting the employment environment after the age of 60, skilled workers at manufacturing sites will be able to pass on the technology and their experience to the next generation.

\* Personnel subject to human resource development and promotion of diversity in the Group are the employees of and loaned employees from Shin-Etsu Chemical.

## Related Information

[> Sustainability data](#)

# Respect for Human Rights, the Development of Human Resources, and the Promotion of Diversity

## Policy

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Respect for human rights

Human resource development

Creating a comfortable working environment

System for Work-life Balance

Nursing Care Leave System

Welfare and Benefits

Labor-management Relations

## — System for Work-life Balance

### Childcare Support System

The Group supports employees' childbirth and childcare. The Company has published the "Childbirth and Childcare Guidebook," which summarizes the governmental systems and procedures related to childbirth and childcare. Employees can use the company's childcare leave system for children up to three years old. About 30 employees on average use the childcare leave system in the company and consolidated companies in Japan. In addition, we grant a paid leave of five days to an employee whose spouse gives birth. Employees are allowed to use the short-time work system, which shortens their working hours for a maximum of two hours a day. This system can be used until their children graduate from elementary school. Furthermore, we will promote use of the teleworking system.

Childcare is supported according to local laws and regulations in overseas Group companies.

### Main System for Childcare Support (Shin-Etsu Chemical)

	Childbirth	Three years old	Entering elementary school	Graduating from elementary school
Maternity leave	Six weeks before and eight weeks after the childbirth			
	Three days when a spouse has childbirth			
Childcare leave				
	* Legally 1.5 years old			
Sick/injured child care leave	Five days per year when having one child 10 days per year when having two children			
	* As per the legal requirements			
General manager level				
	* Legally three years old			
Legal	Progressive measures at Shin-Etsu Chemical			

\* From October 2017 onwards, employees can take childcare leave until their child reaches the age of two, provided they meet certain conditions.

## Number of Employees Who have Taken Childcare Leave

	FY2019		FY2020		FY2021	
	Male	Female	Male	Female	Male	Female
Shin-Etsu Chemical (Non-consolidated)	1	8	7	8	15	8
Consolidated in Japan	2	26	12	24	24	24
Consolidated	71	91	84	66	88	99

\* The length of childcare leave differs from country to country, because the program is based on local laws.

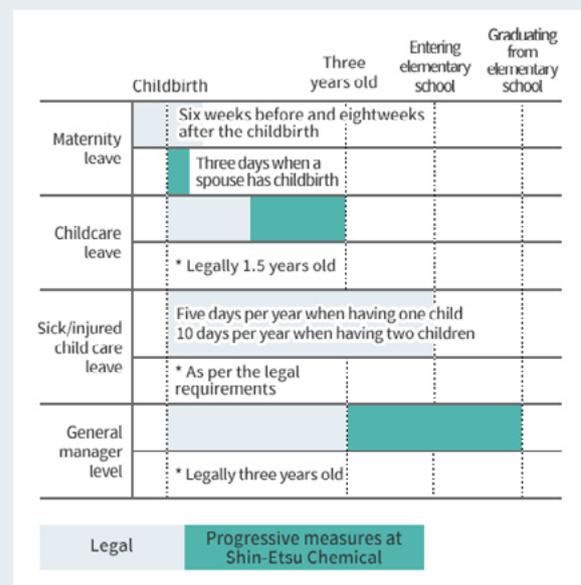
## – Nursing Care Leave System

### Nursing Care Leave System

The Group has a nursing care leave system as shown in the chart on the right. The system enables employees to work in the company while caring for elders.

The "Nursing Care Guidebook" is issued in which all of the necessary information on our nursing care system and care insurance is provided. Furthermore, we started health care and nursing support services in FY2014 to provide counseling by external experts.

### Main System for the Nursing Care System (Shin-Etsu Chemical)



## Number of Employees Who Have Taken Nursing Care Leave

	FY2019	FY2020	FY2021
Consolidated in Japan	3	2	2

## – Welfare and Benefits

### **Saved Holidays System**

If the annual paid leave granted in accordance with labor regulations has expired without being taken, a certain number of days can be treated as saved holidays. Employees may use these saved holidays for nursing care, for injury or illness, for volunteer work for regional disasters, or for donating organs or bone marrow transplants.

### **Counseling Hotline for Employees**

As a counseling service for troubles at work or other issues, we have set up Dial Shin-Etsu, which is staffed by external counselors, who are specialists from outside of the company. Consultations are received anonymously and treated with strict confidentiality, but if requested by the consulter, the counselor will contact the Personnel and Labor Relations Department to discuss possible solutions.

### **Shinkansen Commuting Allowance System**

Since 1989, the Group has allowed employees to commute by Shinkansen at company expense. This system allows employees who relocate from Gunma Fukushima Prefectures, where our plants are located, to work in the Tokyo area without changing their lifestyles or educational environments. This also, promote employees to own houses.

As of March 2021, 71 employees have used this system.

### **Other Systems**

The Dr. Kanagawa Scholarship was established in June 2012 for employees to study at Clark College in Washington, USA, for one year. This scholarship was created due to the relationship of trust that was built over many years between the college and our Chairman, Dr. Kanagawa.

In addition, we have established asset-building schemes, an employee shareholding system, and mutual aid groups to provide support for weddings, childbirths, and sudden hospitalizations of family members.

### **Dormitories and Company housing**

We have dormitories and company housing near the head office and plants for employees who live outside the commutable area.

### **Recreational Facilities**

We have directly operated recreational facilities in Kanagawa, Shizuoka, Fukushima, and Niigata Prefectures. The Group's employees can use these facilities with family and friends. Furthermore, we have partnerships with external recreational facilities, and subsidies are given to the users.



Shin-Etsu Chemical Hakone Shinsensou  
(Kanagawa Prefecture)

## — Labor-management Relations

The company engages in various dialogues with the Shin-Etsu Chemical Labor Union to promote mutual understanding between labor and management. The Central Labor-Management Meeting is held once a month at the head office and is attended by top management. They engage in thorough discussions with the labor union on subjects such as the management policy, overview on individual businesses, and personnel systems. Each business site also holds a monthly local labor meeting with the local branch of the Shin-Etsu Chemical Labor Union.

Repeated dialogues and discussions between labor and management deepen mutual understanding and trust and facilitate the expansion of business operations in which staff and management can come together to respond quickly to the changing business environment.

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\* Personnel subject to human resource development and promotion of diversity in the Group are the employees of and loaned employees from Shin-Etsu Chemical.

### Related Information

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[> Sustainability Data](#)

### Policy

The Group will protect and respect intellectual property and manage information assets appropriately and strictly.

### Awareness of Issues

The Shin-Etsu Group believes intellectual property such as products and technologies developed in-house are important information assets and they need to be controlled strictly. At the same time, we think it is important to respect the intellectual property of other entities.

We are adequately controlling information in our possession such as intellectual property, business information, and technology information, and are taking utmost care for measures to counter potential information leakage and cyberattack incidents.

[Intellectual Property Management](#) ▾

[Employee Initiatives](#) ▾

[Initiatives for Information Asset Management](#) ▾

[Protection of Personal Information](#) ▾

[Cyber Security](#) ▾

## – Intellectual Property Management

The Company has established the "Basic Regulations for Intellectual Properties," which stipulate the regulations regarding the acquisition, management, and utilization of intellectual property assets. We acquire useful and highly original intellectual property assets based on these regulations and we protect them from infringement by third parties. These regulations also require us to respect all intellectual property rights of third parties.

In addition, employees who have devised useful inventions, improvements, and devices at work have been awarded under the following systems:

### Actual Compensation Awards

A system to recognize and award employees who have created an invention or idea which greatly contributed to the company in the form of patents

### Multiple Inventor Awards

A system to recognize employees who have made a large number of inventions and acquired a large number of patent rights in the company

## Related Information

[> Sustainability Data](#)

## — Employee Initiatives



Ms. KF,  
Patent Department,  
Shin-Etsu Chemical, Head  
Office

### Working to protect the intellectual property assets of both our company and third parties

#### 1. Please tell us about your job.

I am mainly responsible for acquiring patents and other intellectual property rights for inventions obtained through R&D activities and examining the technical content of other parties' intellectual property rights.

#### 2. How do you manage and protect our intellectual property assets?

We protect our intellectual properties from infringement by others by converting it into rights and managing it as patent rights. Given that there are many production bases and markets for our products in foreign countries, we are actively acquiring rights not only in Japan but also in foreign countries.

In addition, intellectual properties that should not be disclosed is managed and protected in an appropriate manner according to the content, such as concealing it as know-how..



#### 3. Please tell us about your initiatives to avoid infringing on the intellectual property rights of other parties.

We are investigating published patent gazettes and patent gazettes of others related to our current business and new business. In addition, we hold regular review meetings to scrutinize the content and share information among related parties. Based on these efforts, we are able to conduct research and development in order not to infringe upon the intellectual property rights of others by examining technologies to avoid the scope of rights of others and by conducting procedures with the Patent Office as necessary.

#### 4. What are your thoughts on respecting and protecting intellectual properties in the future?

I will further strengthen the cooperation between related departments and the Patent Department, and aim to optimally protect the intellectual property obtained through R & D activities. In addition, I will continue to strive to respect the intellectual property of others by thoroughly disseminating legal compliance.

## — Selected as a Derwent Top 100 Global Innovator™ for the 11 Consecutive Year

For the 11 consecutive year, the company has been awarded the Top 100 Global Innovator, which identifies and celebrates the world's most innovative companies and organizations.

The award is granted by Clarivate (United States)—a global information services company that analyzes intellectual property assets and patent trends based on its patent data—to the world's leading companies and organizations that are engaged in protecting original inventions with intellectual property rights, and successfully commercializing them. Nine Japanese companies, including our company, have been awarded for the 11 consecutive year, and we are the only chemical company among them.



## – Initiatives for Information Asset Management

For daily business operations and smooth communication, it is extremely important to use information assets effectively. On the other hand, the risk of information being leaked or otherwise mishandled is growing due to the inappropriate management of information assets. For this reason, all personnel who handle information are required to understand the importance of information assets and manage and use them properly. In the case of an emergency, we must prevent it from becoming worse and affecting other operations, and make the greatest possible effort to maintain information security on a Group-wide basis. Regulations are set under the "Information Asset Management Basic Policy" to protect, utilize, control, and manage information assets. Furthermore, related rules and regulations such as "Information Asset Management Standards" stipulate the details concerning the handling, management, retention period, and discarding of all information related to our customers and suppliers. In addition, we have formulated the "Standards for Preventing Technology Leaks" in order to prevent the outflow of technologies. We also regularly carry out training related to information asset management, check the status of compliance with the "Information Asset Management Basic Policy" and other rules, and perform internal audits. In FY2021, we established "Guidelines for Handling Electronic Information" based on the findings from the previous year's audit. The implementation and execution status of the guidelines were confirmed through audits of all company divisions, mainly by the Information Management Secretariat established at the head office and in each region. We are working to prevent information leaks and further develop the organization and effective use of information.

## – Protection of Personal Information

In order to properly protect personal information in accordance with the Act on the Protection of Personal Information, we have established a "Privacy Policy," which is available on our website. We also educate our staff on laws and regulations and hold lectures regarding personal information protection in trainings for each staff rank in order to ensure the appropriate handling and protection of personal information.

Group companies in the EU area comply with the EU's General Data Protection Regulation (GDPR),<sup>1</sup> which came into force in May 2018.

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<sup>1</sup> General Data Protection Regulation (GDPR)

The General Data Protection Regulation stipulates on the handling and transfer of personal information. EU member countries had their own regulations to protect personal data, and these regulations were unified under the General Data Protection Regulation in May 2018.

## – Cyber Security

In preparation for cyber-attacks, we have bolstered our surveillance system with an intrusion detection service that operates 24 hours a day, 365 days a year, and received security diagnoses from external contractors. We also continue to take necessary security measures.

We have deployed a system to prevent targeted email attacks. In addition to measures for preventing intrusions, we are strengthening our measures for detecting and analyzing attacks. Furthermore, we have separated the information network from the control network to minimize the impact of any incidents. We also conduct targeted email attack drills every year to raise the security awareness of employees while establishing a system to respond to possible incidents.

## Contribution to industry and social initiatives

### Policy

The Group will participate in a variety of activities in local communities and work to resolve global issues.

### Awareness of Issues

In addition to obtaining the understanding of local communities, it is important to develop together with local communities in order to conduct business activities, including manufacturing at our plants. To this end, we are conducting various social contribution activities, such as volunteer activities, at our plants and offices around the world.

At the same time, we support to resolve global issues that cannot be addressed by the Group alone, such as by providing ongoing donations to the UN's refugee support activities.

Fundraising for U.N. World Refugee Day

Traffic post guard activities

Supporting the Science and Technology in Society forum

Supporting the Children of the Next Generation

Support for Eradicating Poverty in Africa

Contribution to Society Activities at Overseas Group Company

### — Fundraising for the U.N. World Refugee Day



### Japan

Since 2006, the Group have donated the money to the Office of the United Nations High Commissioner for Refugees (UNHCR) for the World Refugee Day (June 20), which was established by the United Nations. We have supported world refugees who have been driven out of their homes due to conflict, persecution, and disaster by donating the money to the UNHCR. Since 2012, we have continued to make matching donations in which the company contributes the same amount as donations from employees.



## – Traffic Safety Activities (Shirakawa Plant)

### Japan

The Shirakawa Plant conducts traffic safety activities in conjunction with the Spring National Traffic Safety Campaign every year. It was held at two entrances of the plant, and greet to commuting employees and children who were going to school, remind people of traffic safety.



## – Supporting the Science and Technology in Society forum

### Japan

Shin-Etsu Chemical supports the STS Forum, a non-profit organization that organizes the International Forum on Science, Technology and the Future of Humanity. The problems facing humanity are becoming increasingly complex against the backdrop of globalization and international competition, and cannot be solved by a single country alone. Many of these problems can be solved through a review of social systems, international cooperation, worldwide networking, and the formation of common rules. The STS Forum has been holding the "Science and Technology in Society forum (STS Forum)" in Japan every year since 2004. The purpose of this annual forum is to build a human network where not only researchers in science and technology but also politicians, managers, journalists, and other public opinion formers from around the world can frankly discuss and solve problems in an informal setting. It also explores opportunities arising from science and technology, and takes measures to overcome barriers to the use of science and technology to solve problems facing humanity.



## – Supporting the Children of the Next Generation

### Japan

Shin-Etsu Chemical supports the "JOES Davos Next" project implemented by the Japan Overseas Educational Services. This project aims to provide opportunities for students in Japan and abroad, who will be the leaders of the next generation, to develop an interest in global issues, to cultivate the independence to "research, think, communicate, and act on their own initiative," to work with peers with different perspectives to refine their skills, and to learn how to solve and improve issues.



## – Support for Eradicating Poverty in Africa

### Japan

Shin-Etsu Chemical supports the activities of SDGs Promise Japan (SPJ), a non-profit organization working to eradicate poverty in Africa and other regions in order to achieve the Sustainable Development Goals (SDGs). Through the training program in Africa organized by MPJ Youth\*, an organization under SPJ, we donated our PVC wraps and reusable bags to local students. In addition, when SPJ had a booth at the 7th Tokyo International Conference on African Development (TICAD7) in Japan in 2019, we provided PVC wraps for distribution to visitors.



\* MPJ Youth

An organization of students who support the activities of SPJ

## – Contribution to Society Activities at Overseas Group Company



### SEH Malaysia Sdn. Bhd.

The monsoon floods that occur in Malaysia every year from November to March cause extensive damage to the local residents. SEH Malaysia employees set up a "Flood Relief Team" which is the team to support the victims and went to the affected areas with relief supplies such as food, bottled water, and clothing. Then we conducted cleanup activities. We also posted information about the affected area on all social media sites to encourage more volunteers to come to the area. We will continue to support the affected areas in the future.



### Simcoa Operations Pty. Ltd.

Simcoa Operations supports the Science & Engineering Challenge, held annually throughout Australia. In 2021, 10 of the company's employees volunteered to help run the Simcoa Challenge Day on the first day of the event.

The event aims to encourage student participation in high school subjects (physics, chemistry, biology, and mathematics), which are prerequisites for future careers in technical fields. 512 students participated in 2021, gaining valuable experience in science and engineering.



### Social Contribution Activities of Shintech Inc.

Since launching the Shintech Addis Plant in Louisiana in 2000, the company has been actively involved in organizations, sponsorships, leadership development, and civic activities that support the development and success of the communities in which we live and work.

Several Shintech employees and contractors have continuously participated in the Safety Town program since 2007. Safety Town is a safety program designed for kindergartners to educate them in the proper ways of crossing streets, riding bikes, handling emergencies (such as home fires) and other safety-related issues.

Furthermore, the employees of Shintech Louisiana, LLC, SE Tylose USA, Inc. and many of the plant contractors have collected toys during the Christmas holidays to donate to a children's hospital in Baton Rouge. They have made the annual delivery of toys to the hospital since 2009. With Shintech and SE Tylose's help, the playroom of the hospital is now a special place that is stocked with games, toys, and electronic equipment for children of all ages to enjoy.

Community involvement is important to the long-term success of Shintech. It benefits the long-term well-being of our employees, our families, our friends, and those who will both join us and succeed us as we continue to grow. As a good neighbor, it is our privilege to be a part of this community, and we work hard to support those around us.



# Accurate and timely information disclosure and communication with stakeholders

## Policy

The Group will continue to hold dialogue with stakeholders at every opportunity.

## Awareness of Issues

The Group recognizes that it is important to gain an accurate understanding of its business and management by disclosing information and communicating with stakeholders. At the same time, we also understand the importance of incorporating the opinions of our stakeholders into our management. We continue to pursue these goals and strive to achieve sustainable growth and increase corporate value.

Information Disclosure



Communication with Stakeholders



Employee Initiatives



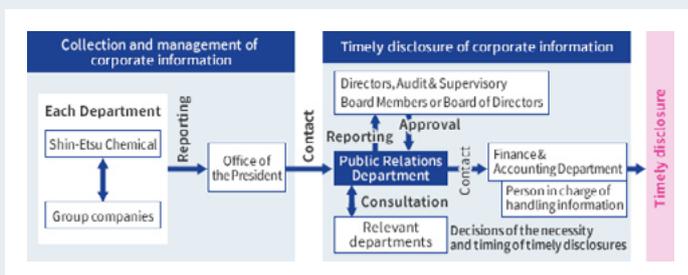
## — Information Disclosure

The Group believes that the appropriate and timely disclosure of company information boosts the understanding of stakeholders and leads to the creation of a fair market evaluation.

The company has disclosed financial information in accordance with the Financial Instruments and Exchange Act and the regulations regarding information disclosure set by the stock exchange. Regarding the collection, management, and timely disclosure of corporate information, the company formulated internal regulations such as the "Regulations on Timely Disclosure of Corporate Information" and the "Rules on Regulations of Insider Trading." We have announced these regulations to all of the departments in the company and Group companies to promote seamless and timely disclosure.

For non-financial information, we disclose information voluntarily, such as posting information on the company's website, publicizing it through the news media, and providing an annual report, financial statements and other reports.

### State of the internal system for timely disclosure



General Meeting of Shareholders  
(June 2021, Shin-Etsu Chemical Head Office)

## – Communication with Stakeholders

The Group communicates with stakeholders actively through a variety of methods and opportunities. We believe that this effort contributes to the sustainable growth of the Group and increases corporate value.

### Major Communication Method and Opportunities

Shareholders and Investors
<p>General Shareholders' Meeting</p> <p>Presentations of earnings and conference calls for analysts and institutional investors (four times in FY2021)</p> <p>Plant tours for analysts and institutional investors / Business briefing session (once in FY2021)</p> <p>One-on-one meetings with analysts (about 280 times in FY2021)</p> <p>Small meetings for investors hosted by securities companies (eight times in FY2021)</p> <p>Information provided on the company website, annual report, etc.</p>
Customers
<p>Day-to-day communications by sales representatives</p> <p>Information provided on the company website, exhibitions, etc.</p>
Suppliers
<p>Day-to-day communications by the Purchasing Department</p> <p>Supplier Hotline</p>
Local communities
<p>Communication with organizations such as local governments</p> <p>Participation in local events</p>
Employees
<p>Communication and consultation with labor unions</p> <p>Information provided on the company magazine and intranet</p> <p>Conducting employee satisfaction surveys</p>



Chemical material Japan 2021-Online- (October 2021, Shin-Etsu Chemical Headoffice)

## — Employee Initiatives



Ms. YN,  
Semiconductor Materials  
Department,  
Shin-Etsu Chemical Head  
Office

### 1. Please tell us about your job.

I am in charge of domestic sales for silicon wafer products. Specifically, I'm responsible for sales expansion, volume / price negotiations, delivery management, responding to prototypes request, and product marketing.

### 2. What do you value in your communication with customers?

It is important to keep in mind that dialogue is based on relationships of trust with customers. Obtaining information about the customer's situation cannot be achieved without a relationship of mutual trust. In addition, picking up potential needs from the customers' issues and future prospects to make proposals through dialogue is an opportunity to gain more trust from customers. As a result of the COVID-19, having a face-to-face meeting has become difficult, and the web-based meetings has increased. Now, even though it has become difficult to build further relationships of trust with customers, a firm relationship of trust

is required even more than before. That is why I intend to listen carefully to each and every customer talk, while keeping the above in mind, and to build and continue a relationship of trust.

### 3. Are there episodes that remain in the impression of customers in interactions?

I was impressed when we decided to mass-produce the prototypes we had been involved in and talked about the actual final product using our product. It was the moment when I was able to get a concrete image and a real sense of how the products I was involved in would be useful in society and life in the future.

### 4. What are the features and appeals of your product?

Silicon wafers are the "substrates" of semiconductors and are used in smartphones, automobiles, and all other products, making them indispensable for our daily lives. In today's world, where things around us are becoming increasingly electronic, and in the future, when this trend is expected to accelerate, silicon wafers will become more important, and the standards required for products will become higher. Our wide range of products, advanced technology, and high quality enable us to meet these requirements. We will continue to share information with the technical division so that we can commit to more requests in the future.



## – Corporate Governance

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Number of Board Directors	Directors	Shin-Etsu Chemical	Persons	21	21	11
	Outside directors	Shin-Etsu Chemical	Persons	4	5	5
	Women on the board	Shin-Etsu Chemical	Persons	0	0	0
Number of Audit & Supervisory Boards	Audit & Supervisory Boards	Shin-Etsu Chemical	Persons	5	5	5
	Outside Audit & Supervisory Boards	Shin-Etsu Chemical	Persons	3	3	3
	Women on the Audit & Supervisory Boards	Shin-Etsu Chemical	Persons	0	0	1
Structure of Officers' Remuneration Committee	Independent outside directors ratio	Shin-Etsu Chemical	%	20	20	60
Remuneration of directors <sup>1</sup>	Excluding outside directors	Shin-Etsu Chemical	Millions of yen	2,006	1,851	1,507
Remuneration of Audit & Supervisory Boards	Excluding the Audit & Supervisory Boards	Shin-Etsu Chemical	Millions of yen	36	36	36
Remuneration of Outside directors and the Audit & Supervisory Boards		Shin-Etsu Chemical	Millions of yen	149	165	171
Payments of income taxes		Japan	Millions of yen	785	765	811
		United States	Millions of yen			581
		Europe	Millions of yen	293	249	41
		Asia / Oceania	Millions of yen			40
Amount of political contributions		Shin-Etsu Chemical	Millions of yen	0	2	0.3

<sup>1</sup> In accordance with the Companies Act, stock options were included in remuneration of directors retroactively from FY2021.

\*Please refer to [IR information](#) for details on financial information.

## – The foundation of all activities : legal compliance, fair corporate activities

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Number of violators of the Anti-Bribery Regulations		Consolidated	Persons	0	0	0
Total costs of penalties regarding corruption		Consolidated	Yen	0	0	0

## – Employees and contractors health and safety

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Management	ISO45001 / OHSAS18001 certification ratio <sup>1</sup> (Employees)	Consolidated manufacturing companies	%	-	25	35
Occupational health and safety	Number participants in safety training (Total number of persons)	Consolidated	Persons	39,328	46,998	56,236
	Lost-time accidents rate <sup>2</sup>	Japan		0.28	0.19	0.00
		Overseas		1.38	1.57	1.71
		Industry average (JCIA)		0.42	0.28	0.41
	Rate of accidents not accompanied by an of absence a day <sup>2</sup>	Japan		0.77	0.43	0.53
		Overseas		4.25	3.57	3.82
	Lost-time accidents severity rate <sup>2</sup>	Japan		0.02	0.01	0.00
		Overseas		0.04	0.04	0.07
		Industry average (JCIA)		0.010	0.107	0.009
	Number of work-related employee fatalities	Consolidated	Persons	0	0	0

<sup>1</sup> ISO45001 / OHSAS18001 certification ratio

The plants which does not have certification has a occupational health and safety management system the same level as ISO45001 / OHSAS18001.

<sup>2</sup> Lost-time accidents rate and Rate of accidents not accompanied by an of absence a day and Lost-time accidents severity rate These were calculated in calender year.

## – Energy-saving, resource-saving, and reduction of environmental impacts

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Management	ISO14001 certification ratio <sup>1</sup> (Plants)	Shin-Etsu Chemical	%	100	100	100
		Consolidated plants	%	64	66	70
	Total costs of environmental fines and penalties	Shin-Etsu Chemical	Yen	0	0	0
Response to climate change	Energy Consumption (Crude Oil Equivalent)	Consolidated	Million ℓ	2,853	2,860	3,106
	GHG Emissions (Scope1+Scope2)	Consolidated	Thousand tons of CO <sub>2</sub> e	6,116	6,092	6,081
	GHG Scope1 emissions <sup>2</sup>	Consolidated	Thousand tons of CO <sub>2</sub> e	1,890	2,111	2,077
	GHG Scope2 emissions <sup>2</sup>	Consolidated	Thousand tons of CO <sub>2</sub> e	4,226	4,163	4,003
	EGHG Scope3 emissions <sup>3</sup>	Consolidated	Thousand tons of CO <sub>2</sub> e	11,012	10,298	10,315
	Emissions intensity index of production volume relative to 1990	Shin-Etsu Chemical	%	49.5	49.8	46.3
		Shin-Etsu Group	%	54.1	53.6	52.9
Water resource conservation	Water use <sup>4</sup>	Consolidated	Million m <sup>3</sup>	2,278	2,475	2,606
	Water withdrawals	Consolidated	Million m <sup>3</sup>	183	182	187
	Water recycle	Consolidated	Million m <sup>3</sup>	2,095	2,293	2,420
	Water recycle ratio	Consolidated	%	92.0	92.6	92.8
	Water discharge	Consolidated	Million m <sup>3</sup>	178	170	174
	COD emission	Consolidated	t	5,223	4,528	4,941
	BOD emission	Consolidated	t	690	653	747

Waste reduction	Waste generated	Japan	Thousand tons	103	99	116	
		Overseas	Thousand tons	149	152	143	
	Waste recycled	Japan	Thousand tons	71	67	81	
		Overseas	Thousand tons	113	120	96	
	Waste recycling ratio	Japan	%	69	68	70	
		Overseas	%	76	79	68	
	Waste for landfill	Japan	Thousand tons	1.08	1.13	1.10	
		Overseas	Thousand tons	37.37	31.81	46.22	
	Disposal ratio	Japan	%	1.05	1.14	0.95	
		Overseas	%	25.11	20.95	32.44	
	Prevention of Air Pollution	Soot	Consolidated	t	65	37	33
		NOx	Consolidated	t	944	925	1,035
SOx		Consolidated	t	141	145	147	
VOC		Shin-Etsu Chemical	t	258	238	286	
Reduction of chemical emissions	PRTR Controlled Substance : Trend of Total Amount Released	Japan	t	172	149	183	
	PRTR Controlled Substance : Trend of Total Amount Transferred	Japan	t	1,440	1,365	1,579	
	PRTR Controlled Substance : Chloromethane Release Trend	Japan	t	75.7	58.4	78.3	
	PRTR Controlled Substance : 1,2-Dichloroethane Released Amounts	Japan	t	16.8	13.7	15.4	
	PRTR Controlled Substance : Chloroethylene Release Trend	Japan	t	13.8	13.4	13.0	

<sup>1</sup> ISO14001 certification ratio

The plants which does not have ISO14001 certification has a occupational health and safety management system the same level as ISO14001.

<sup>2</sup> GHG Scope1,2 emissions

In cases where emissions were reported to national governments, the reported values were retroactively used for Scope 1 and Scope 2 calculations.

<sup>3</sup> GHG Scope3 emissions

After reviewing the amount of activities and emission factors to be calculated, emissions in categories 1, 3, 4, and 12 were revised retroactively to previous years.

<sup>4</sup> Warer use

Amount of water withdrawals and water recycle.

## – Product quality improvements and product safety control

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Product safety training	Number participants (Total number of persons)	Consolidated	Persons	31,445	42,933	49,851

## – Respect for human rights, the development of human resources, and the promotion of diversity

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021	
Employees	Number of employees by region	Japan	Persons	8,665	8,748	9,101	
		Asia / Oceania	Persons	9,203	10,262	10,617	
		Latin America	Persons	0	0	0	
		United States	Persons	3,361	3,474	3,638	
		Europe	Persons	1,554	1,585	1,598	
		Consolidated	Persons	22,783	24,069	24,954	
		Number of employees (male)	Consolidated	Persons	16,356	16,840	17,434
		Number of employees (female)	Consolidated	Persons	6,427	7,229	7,520
	Turnover rates	Shin-Etsu Chemical	%	0.7	1.2	1.3	
		Consolidated	%	11.0	12.6	18.4	
Voluntary turnover rates	Shin-Etsu Chemical	%	0.7	1.0	1.1		
	Consolidated	%	10.8	12.1	17.2		
Human rights	Number of child labour	Consolidated	Persons	0	0	0	
	Number of forced labour	Consolidated	Persons	0	0	0	
Diversity	Employment rate of persons with disabilities	Shin-Etsu Chemical	%	2.23	2.30	2.27	
	The number of women in managerial positions including junior manager level	Shin-Etsu Chemical	Persons	43	49	56	
		Consolidated	Persons	433	517	538	
Work-life balance	Number of employees who have taken childcare leave <sup>1</sup> (female)	Consolidated	Persons	91	66	99	
		Japan	Persons	26	24	24	
		Overseas	Persons	65	42	75	
	Number of employees who have taken childcare leave <sup>1</sup> (male)	Consolidated	Persons	71	84	88	
		Japan	Persons	2	12	24	
		Overseas	Persons	69	72	64	
	Number of people obtaining nursing care leave	Japan	Persons	3	2	2	

<sup>1</sup> Number of employees who have taken childcare leave

The length of childcare leave differs from country to country, as the program is based on local law.

## – Respect for and protection of intellectual property

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Patents acquired	Japan	Main consolidated manufacturing companies	Number of patents	527	466	606
	Overseas	Main consolidated manufacturing companies	Number of patents	1,339	1,363	1,351
	Asia / Oceania	Main consolidated manufacturing companies	Number of patents	587	614	768
	North America	Main consolidated manufacturing companies	Number of patents	204	259	205
	Europe	Main consolidated manufacturing companies	Number of patents	538	482	374
	Other	Main consolidated manufacturing companies	Number of patents	10	8	4
	Total	Main consolidated manufacturing companies	Number of patents	1,866	1,829	1,957
Patents held	Japan	Main consolidated manufacturing companies	Number of patents	7,546	7,350	7,535
	Overseas	Main consolidated manufacturing companies	Number of patents	13,162	13,352	14,102
	Asia / Oceania	Main consolidated manufacturing companies	Number of patents	6,019	6,120	6,633
	North America	Main consolidated manufacturing companies	Number of patents	3,126	3,191	3,203
	Europe	Main consolidated manufacturing companies	Number of patents	3,959	3,973	4,197
	Other	Main consolidated manufacturing companies	Number of patents	58	68	69
	Total	Main consolidated manufacturing companies	Number of patents	20,708	20,702	21,637

## – Contribution to industry and social initiatives

Aspect	Classification	Scope	Unit	FY2019	FY2020	FY2021
Total Amount of donations		Consolidated	Millions of yen	62	60	59

\* Sustainability data covers the following

Consolidated : Shin-Etsu Chemical and its domestic and overseas consolidated companies.

Japan : Shin-Etsu Chemical and its domestic consolidated companies.

Overseas : Shin-Etsu Chemical's overseas consolidated companies.

Shin-Etsu Chemical Group : Shin-Etsu Chemical and its domestic and overseas group companies.



レスポンシブル・ケア

信越化学工業株式会社

代表取締役社長 齊藤 恭彦 殿

## 「信越化学サステナビリティレポート2022」

### 第三者検証 意見書

2022年6月28日

一般社団法人 日本化学工業協会  
レスポンシブル・ケア検証センター長

尾崎 智



#### ■ 検証の目的

本検証は、信越化学工業株式会社が作成した「信越化学サステナビリティレポート2022」(以後、報告書と略す)に記載された下記の事項について、レスポンシブル・ケア検証センターが化学業界の専門家の意見を表明することを目的としています。

- 1) パフォーマンス指標(数値)の算出・集計方法の合理性及び数値の正確性について
- 2) 数値以外の記載情報の正確性
- 3) レスポンシブル・ケア活動(以後RCと略す)及びサステナビリティ活動の内容について
- 4) 報告書の特徴について

#### ■ 検証の手順

- ・ 本社において、各サイト(事業所、工場等)から報告される数値の集計方法の合理性、及び数値以外の記載情報の正確性について調査を行いました。調査は、報告書の内容について各業務責任者及び報告書作成責任者に質問すること、並びに彼らより資料提示と説明を受けることにより行いました。
- ・ 直江津工場の検証は、本社と直江津工場を繋いだWeb会議で、本社に報告する数値の算出方法の合理性、数値の正確性、及び数値以外の記載情報の正確性の調査を行いました。調査は、各業務責任者及び報告書作成責任者に質問すること、証拠となる資料提示・説明を受けることにより行いました。
- ・ 数値及び記載情報の調査についてはサンプリング手法を適用しました。

#### ■ 意見

- 1) パフォーマンス指標(数値)の算出・集計方法の合理性及び数値の正確性について
  - ・ 本社および直江津工場では換算係数等を組込んだ自動集計システムを採用しています。さらに、異常値入力時の警告表示、数値の変更があったことを認識させるセルの着色化等を実施し、数値の正確性確保に工夫されており数値は正確、かつ効率的に集計されています。
- 2) 数値以外の記載情報の正確性について
  - ・ 報告書に記載された情報は正確であることを確認しました。原案段階では表現の適切性或いは表現の分かりやすさに関し若干の指摘をしましたが、現報告書では修正されており、現在修正すべき重要な事項は認められません。
- 3) RC活動及びサステナビリティ活動の内容について
  - ・ 地球の未来への貢献に向けて、グループのサステナビリティの基本方針を制定して、経営トップがRC活動及びサステナビリティ活動に率先して取り組んでいることを評価します。
  - ・ 社長が委員長であるサステナビリティ委員会の構成員を見直して、地区の代表者である工場長と研究所長を新たに構成員に加えたことを評価します。
  - ・ 2021年の安全活動では、国内での重大事故ゼロ、休業災害ゼロの目標を達成したことを評価します。
  - ・ 直江津工場では、保安防災、労働安全に関し定常時のみならず非定常にも踏み込んでリスクアセスメントを実施しています。保安力向上センターなどの第三者機関の意見を取り入れて更なる安全文化の醸成を図っています。総合防災訓練についても、ブラインド訓練方式を取り込み、単なる消防訓練に終わらせない工夫を取っていることを評価します。
- 4) 報告書の特徴について
  - ・ Web版、PDF版の両方で報告書が提供されています。Web版では、トップメッセージ、信越化学グループと気候変動、9に分類されたサステナビリティの重要課題などの詳細ページリンク機能を用いて容易に移動できる構成となっています。
  - ・ PDF版では、目次が追加されており必要な情報に容易に到達できる報告書構成となっています。
  - ・ TCFDの提言に従い、気候変動への情報を開示しています。昨年度の報告書では、事業機会、事業リスクと対応策について2°C、4°Cのシナリオを開示し、今年度版ではより条件の厳しい1.5°Cシナリオを開示しています。

-以上-

***ShinEtsu***

[www.shinetsu.co.jp](http://www.shinetsu.co.jp)