



Sustainability Report 2020

Shin-Etsu Chemical Co., Ltd.

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— ESG Activities

The Shin-Etsu Group carries out ESG¹ activities as an integral part of our business. We have made significant progress in our initiatives regarding climate change, by announcing our support for the recommendations offered by the TCFD (Task Force on Climate-related Financial Disclosures)² in May 2019 and by joining the TCFD Consortium³. We are continuing to pursue thorough energy-saving activities as we have done previously, and we are also working to analyze the risks and opportunities that climate change can bring to our businesses. This report features detailed information on our initiatives related to climate change.

We are currently taking initiatives for respecting human rights as a priority agenda for action. The Group has conducted its business at its sites around the world always on the basis of respecting human rights of all individuals. In May 2019, we established “The Shin-Etsu Group Human Rights Policy” to codify our approach to management based on the respect for human rights, and we have thoroughly disseminated the Policy and made it known to all Group companies. We are also currently conducting human rights due diligence⁴. As we move ahead, we will continue to adhere to the relevant international codes of conduct⁵ and promote activities that respect human rights in order to instill an abiding sense of respect for human rights among Group companies worldwide.

— Contributing to the SDGs

In order to achieve sustainable development of human society and raise its quality of life while reducing the burden on the environment, it is crucial to maximize efficiency. I believe that the Group has a significant role to play in this regard. Carrying on from the previous fiscal year, we continue to aim toward “Contributing to the SDGs⁶” as one of our management objectives for FY 2020. The 17 goals of the SDGs illustrate the challenges faced equally by us all in the 21st century. We always bear in mind the need to resolve SDG-related issues as we carry out our daily duties, and also as we engage in capital investment, develop new products and pursue new areas of business. Over 94% of capital investment projects at Shin-Etsu Chemical in FY 2019 were conducive to the SDGs. We believe that our product offerings facilitate the achievement of the SDGs, and the SDGs will in turn facilitate our business. For the parallel pursuit of sustainable development of human society, improvement of its quality, and greater lessening of the burden on the environment, we believe that it is essential to maximize efficiency. We have an extensive product range, including polyvinyl chloride resin that is used as an essential material for infrastructure investment, semiconductor silicon wafers that support our advanced information society, and silicone resins that are employed in a wide range of applications. In 2019 we launched several new products, which include quartz cloth, thermoset ultra-low dielectric resin, heat sinks and gallium nitride which meet 5G requirements. Connectivity, resource efficiency, productivity advancement, smart infrastructure, and health enhancement are the key themes that we are working on. In this endeavor, we commit ourselves to applying and improving what we have and produce and innovating further throughout our operations.

We will strive to maximize efficiency and contribute to the SDGs in all aspects, be it in expanding the range of uses for existing products or in developing new ones.

— 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 Japan⁷. Our signing on to the Tokyo Principles is compatible with our stated intention to “comply with all laws and regulations, and conduct fair business practices” indicated in our Business Principle. It also contributes to the achievement of the Goal 16 of the SDGs: “Peace, justice and strong institutions.” We will incorporate the Tokyo Principles into our daily operations by sharing them throughout the Group and maintaining the anti-corruption norm as a key element in our corporate activities. Further, in accordance with Responsible Care®⁸ Global Charter, we are continuously striving to ensure environmental conservation and to improve occupational safety and health as well as process safety and prevention. In FY 2019, a total of 22 Group offices, globally, conducted their business activities in compliance with the Charter through such means as carrying out audits of environmental and safety management.

— Human Resource Development

We have been running all the plants as hard as we can. We do so with our strong commitment to safety and quality. We have highly motivated people working day in day out to deliver our commitments. Our success comes from the energy and passion of all those team members. By enhancing the employee experience, we foster a culture where everyone is respected and valued, and has an equal opportunity to contribute. We invest in our employees through managerial interactions, various training programs and career development opportunities. We are proud of our colleagues who work with a strong sense of purpose.

As above, I have introduced some aspects of the ESG activities that we are engaged in. These activities are explained in greater detail in each chapter of this Report. I would appreciate it if you could refer to them.

The role of our Group is to provide such materials of value as would be considered vital in improving people's quality of life and in solving issues the market is facing. Our goal is to realize “Shin-Etsu Everywhere.” We will work to achieve sustainable growth alongside other members of society through our products serving their roles at all locations, in all industries and within all finished products. We would greatly appreciate your continued understanding and support as we move ahead.

June 2020
Yasuhiko Saitoh, President,

1 ESG

An element of CSR defined by investors and others to evaluate a company's CSR efforts. E is Environment, S is Social and G is Governance.

2 TCFD (Task Force on Climate-related Financial Disclosures)

This task force deals with the disclosure of information on climate change, and was established in September 2015 by the FSB (Financial Stability Board). The FSB is an international organization that monitors the state of international finance and plans measures and regulations to govern it. In December 2017, the TCFD announced its recommendation that companies should analyze their own risks and opportunities based on multiple medium and long-term climate change scenarios (varied future climate scenarios with a rise in temperature of 2°C or less), and to disclose information regarding the degree to which finances will be affected.

3 TCFD Consortium of Japan

This group was established in May 2019, led by the Japanese Ministry of Economy, Trade and Industry, the Financial Services Agency, and the Ministry of the Environment. Companies, financial institutions and other organizations that are in agreement with the TCFD recommendations join forces in this consortium. All participating parties share the aim of promoting initiatives for disclosing corporate information effectively, as well as encouraging accurate decisions to be made based on this information in investments made by financial institutions and similar organizations.

4 Human rights due diligence

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

5 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.

6 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.

7 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 March 2019, more than 300 Japanese companies/groups are participating in GCNJ.

8 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® 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.

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 programs¹.

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, 2019 to March 31, 2020

Overseas: January 1, 2019 to December 31, 2019

Issue information

Issued: June 2020 (Previous issue: June 2019)

Next issue: scheduled for June 2021

Organizations Covered by the Report

The report covers our 150 Group companies including Shin-Etsu Chemical Co., Ltd, herein after called the Company. 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

The report includes data from the 124 companies of the Group.

63 manufacturing bases in Japan

118 non-manufacturing bases in Japan

49 overseas manufacturing bases

64 overseas non-manufacturing bases

② Environmental Accounting

The Company

③ Other

The Group, except for the Shin-Etsu Polymer Group²

④ A collection of ESG data

Consolidated companies including the Shin-Etsu Polymer Group

— 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

Millennium Promise Japan, etc.

¹ 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.

² For a report on the Shin-Etsu Polymer Group, see "Shin-Etsu Polymer Sustainability Report 2020" (to be published at the end of September 2020).

Contributing to the Achievement of SDGs Through Product

PVC/Chlor-Alkali business



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.

Example ^

Segment	Our Products	Sustainable Development Goals (SDGs)	Solution Example
		 Goal2 ZERO HUNGER End hunger, achieve food security and improved nutrition and promote sustainable agriculture	PVC is used for agricultural films such as vinyl plastic hothouses and plastic tunnel culture. It provides agricultural materials indispensable to grow vegetables and other crops.
		 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	PVC window reduce the amount of heat that escapes from windows by 71% compared to aluminum windows.
	 > Polyvinyl chloride (PVC)	 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	






PVC/Chlor-Alkali business		 Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	The use of highly durable PVC for PVC pipes and joints makes replacement of service water and sewage piping unnecessary for at least 50 years.
	 <ul style="list-style-type: none"> > Sodium hypochlorite  > caustic soda  hydrochloric acid 	 Goal6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all	Make tap water and drinking water safe and sanitary by using high-quality sodium hypochlorite with less impurities to sterilize the water.
		 Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns	
		 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	Caustic soda and hydrochloric acid make harmful substances generated from productive operations harmless, protecting the air and aquatic environment.
		 Goal11 SUSTAINABLE CITIES AND COMMUNITIES Make cities and human settlements inclusive, safe, resilient and sustainable	

Semiconductor Silicon Business



As a basic material supporting our modern high-speed information society, silicon wafers contribute to the improvement of electronic device performance, the miniaturization of electrical equipment and energy conservation. Silicon wafers are a particularly essential material in the automotive field, where they are utilized to reduce environmental impact, improve safety and fully automate vehicle operation. Furthermore, they are useful for the stable supply of electric power, mainly to electronic equipment, as power semiconductors can minimize power consumption and accommodate high voltage and high currents. Group products also are used to accurately regulate motor drive controls from high to low speeds and used as power-saving transistors enabling the efficient transfer of power from generators to transmission lines.

Example ^

Segment	Our Products	Sustainable Development Goals (SDGs)	Solution Example
Semiconductor Silicon Business	 Semiconductor silicon	 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	Semiconductor silicon is used for electronic devices of medical devices and medical robots.
		 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	<ul style="list-style-type: none"> • Semiconductor silicon is used in electronic devices such as inverters that enable substantial power conservation. • Semiconductor silicon is used for electronic devices that control the fuel efficiency of motor vehicles.
		 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	
		 Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	<ul style="list-style-type: none"> • We provide silicon wafers that are most suitable for the miniaturization and high functionality of semiconductor devices. • It has become the core material of semiconductors indispensable for industrial innovation such as AI (artificial intelligence) and IoT (the Internet of Things: which means that everything is connected to the Internet through networks). • It is used in electronic devices that control hybrid cars, electric cars, etc., contributing to substantial reductions in CO² emissions. • Promote reuse of silicon wafer shipping containers.

		 Goal11 SUSTAINABLE CITIES AND COMMUNITIES Make cities and human settlements inclusive, safe, resilient and sustainable	It is used for surveillance cameras and monitor camera sensors that protect safe life.
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Silicones Business



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. Furthermore, it contributes to the achievement of sustainable societies, as it is used in solar power generation and other environmentally friendly products, including electric vehicles, eco tires and LED lights.

Example ^

Segment	Our Products	Sustainable Development Goals(SDGs)	Solution Example
		 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	<ul style="list-style-type: none"> • Silicones are used to provide contact lenses with oxygen permeability. They help enhance the performance of contact lenses. • They are used for the joint motors of nursing care and support robots, such as to help reduce heavy workloads for nurses and caregivers, cushioning, and electronic device control.
		 Goal6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all	The use of silicone antifoaming agents in sewage water suppresses the foaming of sewage discharged into rivers.

Silicones Business



> Silicones 



Goal7
AFFORDABLE AND CLEAN ENERGY
Ensure access to affordable, reliable, sustainable and modern energy for all

- Solar batteries can be used for 30 years or more by sealing their modules with weather-resistant, durable silicone.



Goal13
CLIMATE ACTION
Take urgent action to combat climate change and its impacts

- Silicones are used as raw materials for ship bottom paint . By preventing marine organisms from sticking to them, the fuel efficiency of the ship is improved.

- By replacing metal parts of motor vehicles with silicone products, fuel efficiency will be improved.



Goal11
SUSTAINABLE CITIES AND COMMUNITIES
Make cities and human settlements inclusive, safe, resilient and sustainable

Highly waterproof silicone adhesive sheets are adhered to outdoor tanks or the joints of walls of viaducts. Silicone adhesive sheets have a long service life and are easier to handle than butyl rubber or urethane resin, thus contributing to the promotion of sustainable urbanization.



Goal14
LIFE BELOW WATER
Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Silicones are used as raw materials for ship bottom paint and antifouling agents for fishing nets. They help prevent marine organisms from sticking to them, protecting the ocean ecosystem.



Goal15
LIFE ON LAND
Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss












The use of silicones as a spreader for agricultural chemicals makes them spread easily. As a result, the amount of agricultural chemicals sprinkled can be reduced.




Rare earth magnets have 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.

Example ^

Segment	Our Products	Sustainable Development Goals (SDGs)	Solution Example
	 Rare earth magnets	 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	Rare earth magnets are used for the joint motors of nursing care and support robots, such as to help reduce heavy workloads for nurses and caregivers, cushioning, and electronic device control.
		 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	<ul style="list-style-type: none"> • The use of rare earth magnets for the compressor motor of air-conditioning systems increases energy consumption efficiency and reduces power consumption. • The use of rare earth magnets for industrial motors increases motor efficiency and reduces power consumption.
		 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	<ul style="list-style-type: none"> • The use of high-performance small rare earth magnets for the driving motor of hybrid cars, electric vehicles, and fuel-cell vehicles and various motors for vehicles helps reduce the overall weight of the cars or vehicles, thus increasing fuel efficiency.
		 Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns	<ul style="list-style-type: none"> • Rare earth magnets contribute to making wind power generators highly efficient.

 <p>> Rare earth </p>	 <p>Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages</p>	<p>Rare earth is used for scintillator materials for diagnostic imaging systems such as CT scanning and PET. It contributes to reducing X-ray doses, high-speed diagnosis, and improving diagnostic accuracy.</p>
	 <p>Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all</p>	<p>Rare earth is used as a material for fluorescent substances, which convert the color of LED to white. The use of long-life LED for lighting and displays contributes to energy conservation.</p>
	 <p>Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts</p>	
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<ul style="list-style-type: none"> • Rare earth is used for electronic components, which are indispensable to smartphones as they become smaller and smaller and offer increasingly high performance, as well as for the safe driving of vehicles and automated operation systems. • Highly plasma-resistant rare earth materials are attracting attention as they enhance the performance of semiconductor production equipment as semiconductor devices indispensable to AI, IoT, and smart grids evolve.
	 <p>Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns</p>	<p>It is used for ceramic materials, which are indispensable to new energy systems such as wind power generation and fuel cells.</p>
 <p>> LED encapsulating materials </p>	 <p>Goal7 AFFORDABLE AND CLEAN ENERGY Ensure healthy lives and promote well-being for all at all ages</p>	<p>Among long-life, energy-saving LED optical modules, silicone packaging materials are used for most of the major components other than LED.</p>
	 <p>Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts</p>	



> Semiconductor encapsulating materials 



Goal3
GOOD HEALTH AND WELL-BEING
Ensure healthy lives and promote well-being for all at all ages

Semiconductor encapsulating materials are used for electronic devices (such as monitors and sensors) for medical equipment (MRI and medical testers).



Goal7
AFFORDABLE AND CLEAN ENERGY
Ensure access to affordable, reliable, sustainable and modern energy for all

Semiconductor encapsulating materials are used for electronic devices that control the fuel efficiency of motor vehicles.




Goal13
CLIMATE ACTION
Take urgent action to combat climate change and its impacts



Goal9
INDUSTRY, INNOVATION AND INFRASTRUCTURE
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- Semiconductor encapsulating materials contribute to development of next-generation semiconductors such as stacked three-dimensional semiconductors.
- They provide materials and technologies indispensable to artificial intelligence (AI), Internet of things (IoT, which means that everything is connected to the Internet through networks), and smart grids.



> Silicon tetrachloride 



Goal7
AFFORDABLE AND CLEAN ENERGY
Ensure access to affordable, reliable, sustainable and modern energy for all
















Goal9
INDUSTRY, INNOVATION AND INFRASTRUCTURE
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Silicon tetrachloride is used for compounds and materials that constitute Green Tire, which improves fuel efficiency by reducing rolling resistance.

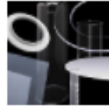


Goal13
CLIMATE ACTION
Take urgent action to combat climate change and its impacts

Electronics &
Functional
Materials
Business

 <p>> Synthetic quartz substrates </p>	 <p>Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages</p>	<p>In DNA analysis, synthetic quartz wafers are used for fixed DNA sequencing boards for detection. They contribute to reducing the analytical time and improving the resolution.</p>
 <p>> Synthetic quartz wafers </p>	 <p>Goal4 QUALITY EDUCATION Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</p>	<p>Synthetic quartz wafers are used for TFT liquid crystal panels for educational data projectors at schools and other institutions. They project a larger image of the teaching materials to clarify the aims of learning and allow students to easily share what they are studying.</p>
 <p>> Synthetic quartz preforms for optical fibers </p>	 <p>Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages</p>	<p>Synthetic quartz fibers are used for some medical endoscopes and fiber scopes. Compared to previous ones, they reduce the burden on patients and enable more accurate diagnosis and treatment.</p>
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<p>Synthetic quartz fibers are used as materials for optical fibers, which are essential for the information society.</p>
 <p>> Oxide single crystals (Lithium Tantalate) </p>	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<p>Oxide single crystals are used for mobile phones' SAW filters, contributing to enhancing the functions of mobile phones and improving their sound quality.</p>

 <p>> Photoresists </p> <p>> Photomask blanks </p>	 <p>Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all</p>	<p>Photoresists and Photomask are used for electronic devices that control the fuel efficiency of motor vehicles.</p>
	 <p>Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts</p>	
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<ul style="list-style-type: none"> • Photoresists and Photomask blanks contribute to development of next-generation semiconductors such as stacked three-dimensional semiconductors. • They provide materials and technologies indispensable to artificial intelligence (AI), Internet of things (IoT, which means that everything is connected to the Internet through networks), and smart grids.
 <p>> Anode material of lithium ion batteries </p>	 <p>Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns</p>	<p>The anode material of lithium ion batteries increases the capacity and output of lithium ion secondary batteries.</p>
 <p>> Quartz glass for lamps </p>	 <p>Goal6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all</p>	<p>Ultraviolet lamps using quartz glass tubes sterilize super-pure water and drinking water to secure safe, high-quality water. They are also used to sterilize foodstuffs.</p>
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<p>Quartz glass for lamps are used as materials for optical fibers, which are essential for the information society.</p>



> Quartz glass products for semiconductor manufacturing



Goal7
AFFORDABLE AND CLEAN ENERGY
Ensure access to affordable, reliable, sustainable and modern energy for all



Goal13
CLIMATE ACTION
Take urgent action to combat climate change and its impacts



Goal9
INDUSTRY, INNOVATION AND INFRASTRUCTURE
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Quartz glass products for semiconductor manufacturing are used for electronic devices that control the fuel efficiency of motor vehicles.






- Quartz glass products for semiconductor manufacturing contribute to development of next-generation semiconductors such as stacked three-dimensional semiconductors.
- They provide materials and technologies indispensable to artificial intelligence (AI), Internet of things (IoT, which means that everything is connected to the Internet through networks), and smart grids.










Specialty Chemicals Business









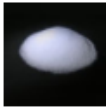




Industrial cellulose derivatives reduce the separation of concrete in water, enabling concrete to be poured without polluting water. This contributes to environmental preservation by preventing water pollution. Synthetic pheromones are very safe, environmentally friendly and eliminate agricultural pests. They are useful for making food safer through the reduction of insecticides and agricultural chemicals sprayed in fields.

Example ^

Segment	Our Products	Sustainable Development Goals(SDGs)	Solution Example
 Cellulose derivatives		 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	<ul style="list-style-type: none"> • If Cellulose derivatives are added to tablets, they enable the adjustment of the location of the tablets' dissolution, the amount dissolved, and the time required for their dissolution in the body. • The bitterness and smell of tablets can be eliminated by covering them with cellulose films, making them easier to take. • They are used to manufacture catalyst carriers and filters, which purify exhaust gas generated from the internal-combustion engines of vehicles and other systems that use gasoline or light oil. They contribute to improving the atmospheric environment by preventing the emission of NOx and SOx in exhaust gas and diesel soot, thus allowing people to lead a healthy life.
		 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	Cellulose derivatives are used to mold electrolytic ceramics for solid-oxide fuel cells, which are used for the Ene-Farm home-use fuel cell.
		 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	
		 Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	<ul style="list-style-type: none"> • Cellulose derivatives improve the resistance of bridge piers to massive earthquakes, thus making their structures stronger. • During non-excavation work for old sewage pipes, cellulose derivatives are added to heighten the liquidity of mortar to fill gaps inside the pipes..
		 Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns	Cellulose derivatives use natural cellulose for raw materials. They are biodegradable and return to nature after use.

	 Goal14 LIFE BELOW WATER Conserve and sustainably use the oceans, seas and marine resources for sustainable development	The addition of cellulose derivatives to concrete reduces its separation in water. This makes it possible to cast concrete without polluting water.
 > Synthetic pheromones 	 Goal2 ZERO HUNGER End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Synthetic pheromones provide a new type of agricultural material that suppresses the mating of harmful insects to prevent the growth of the next generation of such insects. Since it aims only at eliminating agricultural insects, agricultural products can be cultivated while maintaining the ecosystem of many living creatures such as these insects' natural enemies.
	 Goal6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all	By using synthetic pheromones, it is possible to reduce the spread of agricultural chemicals that cause contamination of groundwater and rivers.
	 Goal15 LIFE ON LAND Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Synthetic pheromones provide a new type of agricultural material that inhibits the mating of harmful insects to reduce the next generation of these insects. By using synthetic pheromones, <ul style="list-style-type: none"> • since it aims only at eliminating agricultural insects, agricultural products can be cultivated while maintaining the ecosystem of many living creatures such as these insects' natural enemies. • it is possible to reduce the spread of agricultural chemicals that cause contamination of groundwater and rivers.
 > Silicone/acrylic group hybrid resin 	 Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Silicone/acrylic group hybrid resin is used for industrial hoses and abrasion-resistant electric cables. They strengthen the durability of such hoses and electric cables by being combined with major types of resin used for hoses and electric cables.

 <p>> Copolymer resin emulsions </p>	 <p>Goal11 SUSTAINABLE CITIES AND COMMUNITIES Make cities and human settlements inclusive, safe, resilient and sustainable</p>	<p>The application of wall paper coated with copolymer resin emulsions in hotels and houses help dissolve smells generated by human activities.</p>
 <p>> Vinyl acetate emulsion resin </p>	 <p>Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages</p>	<p>Binder for glass wool heat insulation material that does not use organic solvent and does not generate VOC. By using this product as a heat insulating material, a safe living space can be realized without fear of sick house syndrome. It also contributes to making houses more energy efficient.</p>
	 <p>Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all</p>	
	 <p>Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts</p>	
 <p>> Vinyl chloride-Vinyl acetate based copolymer </p>	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<p>It has excellent pigment dispersion stability and chemical resistance, is highly soluble in solvents with low environmental impact, and is used as a raw material for environmentally-friendly gravure inks.</p>






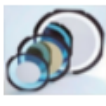




 <p>> Acetylenic chemicals Silicone family additive agents</p>	 <p>Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well- being for all at all ages</p>	<ul style="list-style-type: none"> • It has been adopted as a water-based ink for digital printing by inkjet for its excellent ability to reduce surface tension and its defoaming properties. Relative to conventional analog printing, it contributes to low VOC, production of many kinds of products in small quantities and short delivery time, and reduction of environmental impact.
	 <p>Goal6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all</p>	<ul style="list-style-type: none"> • It is also used in digital printing inkjet inks for textiles. Compared with the conventional dyeing process, there is almost no loss of dyeing materials, which contributes to reducing the amount of wastewater treatment.
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	
 <p>> Polyvinyl alcohol</p>	 <p>Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well- being for all at all ages</p>	<ul style="list-style-type: none"> • Coating the surface of tablets with polyvinyl alcohol, which has high gas barrier properties, contributes to preventing the degeneration of medicines and reducing their smells. • The fibers of polyvinyl alcohol replace asbestos, which causes mesothelioma and pneumoconiosis. They prevent exposure to asbestos from construction materials, etc.
	 <p>Goal11 SUSTAINABLE CITIES AND COMMUNITIES Make cities and human settlements inclusive, safe, resilient and sustainable</p>	<p>Polyvinyl alcohol provides the raw materials for polyvinyl butyral, which is used for the intermediate films of window glass for vehicles and buildings. It helps prevent fragments of glass from scattering when glass is broken due to an accident or similar.</p>













Processing, Trading & Specialized Services Business





















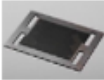









The construction material (corrugated rigid polycarbonate sheets) manufactured by Shin-Etsu Polymer Co., Ltd. is used as an exterior roofing material. Using more than 50% reclaimed raw materials, this product contributes to recycling. In addition, the company's in-vehicle touch input device, which is overwhelmingly lighter than conventional mechanical switches, contributes to improved fuel efficiency in automobiles.

Example ^

Segment	Our Products	Sustainable Development Goals(SDGs)	Solution Example
	 > Input device	 Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Conventional mechanical switches consist of many parts such as buttons and frames, but touch switches are comprised of a sheet of film. This conserves resources and reduces the weight of switches. The use of these for onboard switches leads to a reduction in the overall weight of a car, improving its fuel efficiency.
	 > Wafer Cases	 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	Wafer cases are used for transport between semiconductor silicon manufacturers and device manufactures. Their overall weight is reduced by using a smaller number of parts, and this enables reduction in energy consumption during transport.
		 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	
	 > Plastic tape frame	 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	The weight of these products is half or less than that of the previous metallic ones, thus reducing CO ² emissions during transport.
		 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	
	 > Embossed carrier tapes	 Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns	Embossed carrier tapes are used to transport minimum-chip electronic components. They contribute to resource conservation by reducing the amount of tape used and discarded compared to their predecessor products.

 Office automation roller	 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	Office automation roller are used in laser printers and toner cartridges. Development of rollers with a particularly small external diameter contributes to reducing the power consumption of printers.
	 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	
 HSP	 Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns	HSP is a jig plate used in the electronic component manufacturing process for fixation. The use of slightly adhesive silicones for raw materials eliminates the need for adhesive tapes. In addition, HSP can be used repeatedly.
 Catheters	 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	In some cases, the use of catheters enables treatment and testing without performing surgical operations.
 Shupua	 Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	Shupua consists of glass made from silicon rubber. It can be manufactured using a smaller amount of energy than glass.
	 Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts	
 Wrapping film	 Goal3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	Wrapping films maintain foods, etc., in a sanitary condition when storing them. They also allow them to be preserved over a long period of time.

 <p>> Functionality compounds EXELAST SX series </p>	 <p>Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all</p>	<p>It is used as a glass run channel material for automobile window frames. This product is lighter than the previous rubber glass runs, contributing to lower fuel consumption for vehicles.</p>
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	
	 <p>Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts</p>	
 <p>> PVC pipe </p>	 <p>Goal6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all</p>	<p>The use of highly durable PVC for PVC pipes and joints makes replacement of service water and sewage piping unnecessary for at least 50 years.</p>
	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	
 <p>> Shin-Etsu polycarbonate </p>	 <p>Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns</p>	<p>Materials recycled from polycarbonate are used for at least 50% of the product.</p>
 <p>> Shin-Etsu self lock bandage </p>	 <p>Goal9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<p>If water leaks from water pipes and other pipes, they can be repaired simply by stretching and winding this bandage around the pipe, which makes maintenance easy.</p>

 <p>> Conductive polymer (SEPLEGYDA®) </p>	 <p>Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns</p>	<p>Conductive polymers are used for hybrid electrolytic condensers with aluminum. They help reduce the quantity and area of condensers used compared to electrolytic aluminum condensers.</p>
 <p>Carbon mold separator</p>	 <p>Goal7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all</p>	<p>Carbon mold separators are used as one of clean fuel cells' principal components.</p>
	 <p>Goal13 CLIMATE ACTION Take urgent action to combat climate change and its impacts</p>	
 <p>Biodegradable runner clips</p>	 <p>Goal2 ZERO HUNGER End hunger, achieve food security and improved nutrition and promote sustainable agriculture</p>	<p>Biodegradable runner clips are used to fix agricultural products during agricultural work. They do not need to be collected after use because they are decomposed by microorganisms.</p>
	 <p>Goal12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns</p>	
	 <p>Goal15 LIFE ON LAND Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p>	<p>Biodegradable runner clips are agricultural materials used to fix agricultural products. They do not contaminate soil because they are decomposed by microorganisms in the ground after they are used.</p>
 <p>> Yosaku Sheet (Fumigation Sheets) </p>	 <p>Goal15 LIFE ON LAND Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p>	<p>Yosaku sheets are used to cover damaged pines when they undergo fumigation. Since they are biodegradable, they contribute to environmental protection even after they are used.</p>




Toilet Booth



**Goal11
SUSTAINABLE
CITIES AND
COMMUNITIES**
Make cities and
human settlements
inclusive, safe,
resilient and
sustainable

This toilet booth reduces the risk of a finger being caught in the booth. In addition, if, for example, an accident (such as a sudden illness or other unexpected event) occurs when it is being used, the door can easily be opened from the outside. These functions provide a safe toilet space.



> Shin-Etsu capacitor
films 



**Goal9
INDUSTRY,
INNOVATION AND
INFRASTRUCTURE**
Build resilient
infrastructure,
promote inclusive
and sustainable
industrialization
and foster
innovation

- The use of Shin-Etsu capacitor films makes the replacement of condensers for power transmission networks unnecessary for 30 years.
- They are used for condensers at frequency converter stations (east-west interconnection) to contribute to the stable supply of electricity.

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

The Shin-Etsu Group not only strives to reduce its environmental impact during the product manufacturing stage, but also designs product with a focus on reducing environmental impact, energy usage, and resource usage during product usage. These products are used in a wide range of fields, including industry, daily life, and renewable energy.

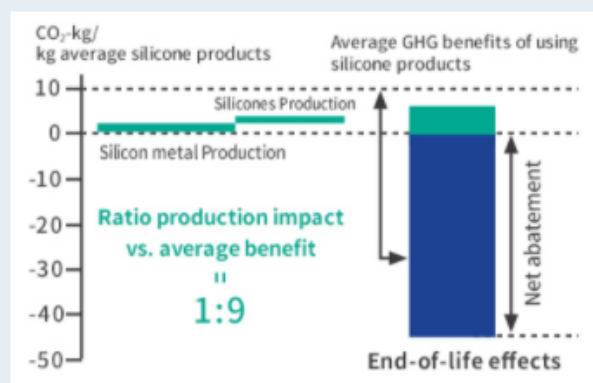
Silicones

The Group produces over 5,000 silicone products, used in familiar products used in daily life, 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.

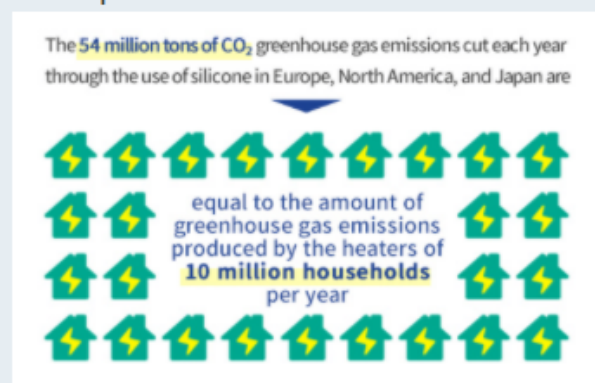
In 2012, we, together with other members of the global silicone industry, carried out a study of the entire silicone market, examining silicone greenhouse gas emissions and how much greenhouse gas emissions are curbed by the use of silicone, in comparison to silicone substitutes and alternative methods. The study found that the amount of greenhouse gas emissions eliminated through the use of silicone was 9 times greater than the amount of greenhouse gasses produced¹ by the manufacture and disposal of silicone. It also found that the use of silicone products in Europe, North America, and Japan has made it possible to reduce greenhouse gas emissions by 54 million tons of CO₂ per year.²

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 improved sustainability.

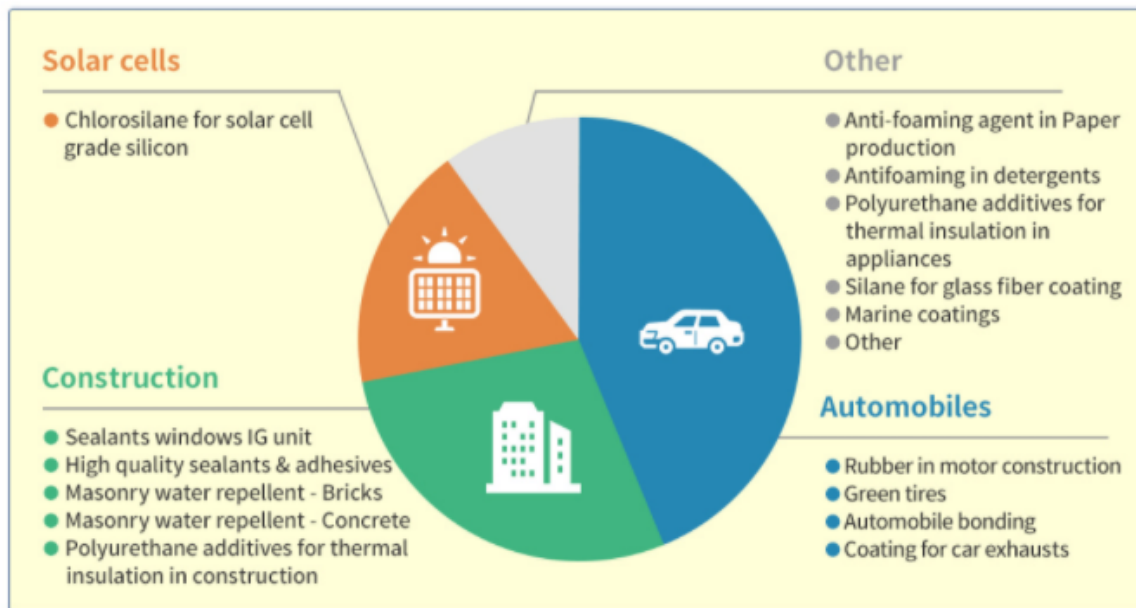
¹ Greenhouse Gas Reduction Effects



² Examples of Greenhouse Gas Reductions



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



**Silicone products reduce greenhouse gas,
thereby greatly reduce energy and material usage**

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

> [Global Silicones Council](#)

> [Silicone Industry Association of Japan](#)

Polyvinyl Chloride

Polyvinyl chloride (PVC) is a general purpose resin that is less dependent than other types of resin on petroleum resources, being composed, by weight, of roughly 40% petroleum and 60% chlorine, which is found in abundance on earth. Its production has less environmental impact than other types of resin, and the production process uses only around 60% of the energy used to produce other general purpose resins. It is highly durable and easily recyclable, leading to its widespread use in construction materials such as PVC windows and water and sewage pipework.

PVC windows have superior insulation properties, and are resistant to fogging, making them mainstays in developed nations 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 pipes¹, PVC pipes have lower total carbon-dioxide emissions² over their lifecycles, contributing to the prevention of global warming.

¹ Ductile cast-iron pipe


Pipes made of spheroidal graphite and iron.

² 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](#) 

Rare Earth Magnets

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 field of renewable energy.

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

The Group is addressing climate change by contributing to the reduction of global greenhouse gas emissions through its business activities.

— Structure of dealing with climate change

In the Group, the ESG Promotion Committee is working together with our business divisions and the entire Group to address climate change.

The ESG Promotion Committee is positioned as one of the "committees for each material management task" in the corporate governance system. The Committee is chaired by the president and consists of about 50 members, including the directors and general managers of divisions of Shin-Etsu Chemical and ESG officers of Group companies. The mission of the committee is to promote ESG activities in an effective and appropriate manner in all aspects of the Group's corporate activities.

Sustainability—Management—ESG Promotion Structure

The Committee held 8 meetings on climate change in FY 2019. At the general meeting of the Committee held in November 2019, we discussed addressing climate change. In addition, the Committee reports on the Group's efforts to deal with climate change at the Managing Directors' Meeting which reviews and makes decisions on the execution of business operations each year, and the contents of its activities are determined.

— Strategies for addressing climate change

The Group aims to develop society and people's daily lives while keeping down environmental impact. To this end, we will contribute to maximizing efficiency through our products and technologies. The specific strategies and implementation methods are as follows.

Strategies

- 1) Reduction of greenhouse gas emissions production intensity 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) Promoting the utilization of renewable energy
- 4) Promoting logistics rationalization

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

①Promotion of efficient manufacturing activity

The G Committee, one of the "committees for each material management task", promotes efficient production activities and works to conserve energy and reduce greenhouse gas emissions. The Committee monitors the progress and results of strategy implementation, and twice a year reports to the Managing Directors' Meeting on the results and specific initiatives.

For many years, the Group has continuously worked to improve production technologies, in order to realize reduction of greenhouse gas emissions per product unit. We are constantly striving to put new production technologies to practical use in order to further raise production efficiency and build a track record.

Examples of the G Committee Initiatives

1. reduce energy and raw material use
2. reduce greenhouse gas emissions
3. enhance productivity

②Reduction of greenhouse gases through capital investment

We are introducing a new high-efficiency gas turbine. In addition, we set greenhouse gas reduction effects as an indispensable issue in the planning of capital investment. Having greenhouse gas emissions reductions in mind at the investment proposal stage helps each to understand that this is an important management issue.

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 is responsible for developing products that meet customer needs. The research centers have the ability to develop new products at an early stage, which contributes to the expansion of the Group's business.

Products that contribute to climate change mitigation	
Product	Applications
PVC resins	PVC pipes that can be used for a long period of time PVC windows frames that contribute to energy conservation
Silicones	Encapsulating materials for solar cell modules Eco-tire materials that contribute to higher fuel efficiency in vehicles
Semiconductor silicon	Semiconductor devices installed in consumer products contribute to the efficient use of energy. Inverters and other electronic devices that enable substantial power savings
Rare earth magnets	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 Compressor motors for energy-saving air conditioners and high-efficiency motors for wind power generators
LED encapsulating materials	Major components of the optical modules of energy-saving, long-life LEDs

➤ Sustainability— The Shin-Etsu Group and SDGs

3) Promoting the utilization of renewable energy

We are working to reduce purchased electricity by introducing renewable energy. This also contributes to reducing scope 2 emissions.

Examples of Renewable Energy Utilization	
Example	Details
Installation of solar panels	Installation on the rooftop of a building in Shin-Etsu Handotai's Shirakawa plant (scheduled for completion in July 2020) Shin-Etsu Chemical's Gunma complex plans to install on the rooftop of the building

4) Reduction of Greenhouse Gas Emissions in Logistics

We are reducing greenhouse gases during product transportation. This will contribute to the reduction of scope 3 emissions of greenhouse gases.

Example of logistics rationalization	
Examples	Scope 3 emissions categories contributing to reductions
Modal shift ¹ in methanol transport (switching from tank truck to railcar)	Category 4: "Emissions from product transport"
Modal shift in silicon wafer transport (switching from aircraft to ocean vessel)	Category 4: "Emissions from product transport"
Promoting the reuse of wafer cases	Category 5 "Waste disposal-related emissions"

¹ Modal shift

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

— Risks and opportunities posed by climate change to our businesses

In the Group, the Risk Management Committee, one of the "committees for each material management task", is responsible for the overall management of business risks, including those arising from climate change. The committee is chaired by a managing director and consists of about 20 members, including directors and general managers of divisions of Shin-Etsu Chemical.

The Committee stipulates the comprehensive risks that the Group considers when conducting its business activities in its Risk Management Regulations. It stipulates specific risks and risk management systems from a long-term perspective, as well as responses to emerging risks. The Committee reports important issues in risk management, including climate change, to the Board of Directors, the Managing Directors' Meeting, and the Audit & Supervisory Board.

Sustainability—Management—Risk Management

In identifying and analyzing the risks and opportunities that climate change poses to our business activities, we have adopted two climate change scenarios which are temperatures increase by 2 degrees Celsius and 4 degrees Celsius respectively from today's level at the end of the 21st century. Currently, we are conducting identification and analysis of the risks and opportunities. Factors that may affect the Group are as follows.

1. Possibility of introduction of strict regulations to reduce greenhouse gas emissions
2. Possibility of introduction of environmental taxes and other new taxes
3. Changes in the supply-demand balance and prices of energy and raw materials
4. Increasing corporate social responsibility for climate change mitigation
5. Greater business opportunities to provide products and technologies that contribute to climate change mitigation

The risks and opportunities identified so far are as follows.

Risks and mitigation measures that climate change will affect our operations		
Factors	Risks	Mitigation measures
1.Introduction of carbon taxes and carbon emissions trading systems	The carbon tax and carbon emissions trading systems are already in place in the EU, where our production bases are located. They may also be introduced in Japan and the U.S.	Through further improvements in production efficiency by the G Committee and the implementation of new production technologies, we are promoting energy savings and reductions in greenhouse gas emissions.
2.Changes in precipitation and precipitation areas	<p>Floods and storms occur all over the world. On the other hand, droughts and water shortages due to the decline in precipitation have occurred in some regions, and it is essential to secure stable water supply there.</p> <p>The group has production bases around the world, including in Asia, where floods and storms frequently occur. While each site implements flood countermeasures, it is possible that floods and storms will far exceed expectations. In either case, there is a possibility that recovery cost for production facilities failure and opportunity costs associated with the shutdown of production activities will occur.</p> <p>In addition, there is a possibility that we may not be able to procure raw materials originating from natural sources or materials whose production areas are concentrated in specific areas.</p>	<p>We are working to diversify production sites and raw material suppliers. In addition, based on past flood records, we have installed plant control rooms and other important facilities in locations with low risk of flooding, as well as have surrounded with waterproof walls. After implementing these measures, the Company buys property and casualty insurance coverage necessary for business continuity.</p> <p>To conserve the water resources, we are actively working to reduce the amount of water intake and promote the water recycling.</p>
3.Loss of reputation	<p>The Group's greenhouse gas emissions per unit of production have declined significantly. However, there is a possibility of concern that the absolute volume of greenhouse gas emissions will increase as the business expands.</p> <p>In addition, it is possible that our stakeholders do not understand that our products are contributing to the reduction of greenhouse gas emissions.</p>	We proactively disclose the Group's initiatives from various perspectives through publications such as sustainability reports and annual reports, as well as case studies from the Keidanren's "Challenge Zero." We also actively engage in dialogue with investors on climate change.

Opportunity that climate change will have for our operations	
Factors	Opportunities
1.Opportunities arising from tighter regulations	<p>Movements to promote energy conservation, such as standards for vehicle fuel efficiency and demand for energy consumption of electrical products, will be strengthened more and more. Our products contribute to energy saving in our customers manufacturing processes and the performance improvement of energy saving can be seen at the use of the end products.</p> <p>For example, rare earth magnets are used for motors in hybrid cars and electric vehicles as well as for motors in energy-saving air conditioners. Silicone resin is used as a packaging material for LED lighting.</p> <p>Shin-Etsu Group Products and Technologies that Contribute to Environmental Conservation</p> <p>Comparison and analysis of greenhouse gas emissions¹ over the life cycle of products using competing products against products using PVC and silicones reveals that products using PVC and silicones emit less and are superior. Semiconductor silicon is also used in home appliances, automobile inverters, and information and communications equipment, contributing significantly to energy conservation.</p>
2.Chances of changing temperature	<p>As greenhouse gas emissions increase, the average temperature rises and the fluctuation range of the temperature changes, and expectations for energy-saving products such as automobiles and home appliances increase.</p> <p>For example, power consumption can be reduced by using rare earth magnets for various motors. Semiconductor silicon is indispensable for electronic devices that manage energy use.</p> <p>In addition, our products, such as PVC resins and silicones, are used and sold in a variety of energy-saving products.</p>
3.Improving the reputation	<p>As greenhouse gas emissions increase, the average temperature rises and the lowest temperatures fluctuate. Demand for energy-saving products is rising, as they are increasingly regarded for health and comfort. Our products, such as PVC resins for plastic windows, silicone resins for LED packaging materials, and rare earth magnets used in hybrid cars and electric vehicles' motors, are used in a variety of energy-saving products. As a result, we expect to increase profits by increasing sales of existing products and expanding opportunities to expand sales of new products.</p> <p>In addition, by deepening investors' understanding of our contribution to energy conservation, better evaluation will be given to us and our shares.</p>

¹ GHG emissions over the entire life cycle

Emissions of greenhouse gases throughout the product lifecycle, from the procurement of raw materials for products and services through disposal and recycling

The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies.

— Basic ESG Policy

The Shin-Etsu Group:

1. Will do our best to increase the Group's corporate value through sustainable growth and make multifaceted contributions to society.
2. Will carry out all of our company activities by making safety always the first priority.
3. Will constantly pursue energy-saving, resources-saving and the reduction of the environmental impact, and seek to help create a sustainable future world in which we all live in harmony with the Earth.
4. Will endeavor to contribute to the prevention of global warming and the conservation of biodiversity by means of our cutting-edge technologies and products.
5. Will strive to respect human rights and assure equality in employment opportunities and support the self-fulfillment of our employees.
6. Will appropriately disclose information in a timely manner.
7. Will carry out healthy, trustworthy, transparent corporate activities based on the integrity of the Group's ethical values.

* In line with the internal promotion structure, we renamed from the Basic CSR Policy to the Basic ESG Policy.

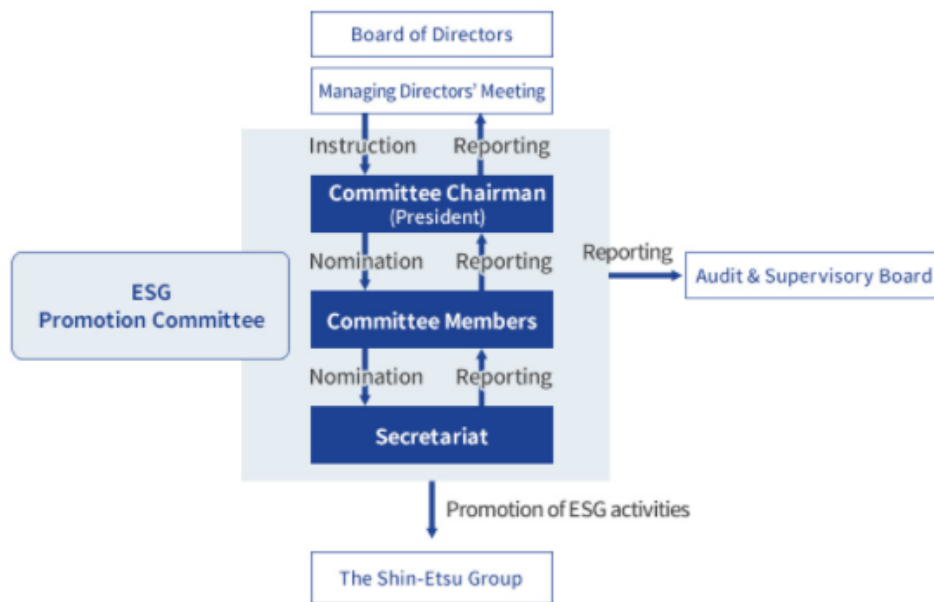
— ESG Promotion Structure

ESG Promotion Initiatives

The Group believes that it is the social responsibility of the Group to contribute to our stakeholders, such as shareholders, investors, customers, suppliers, local communities and employees. To achieve this, we formulated the Basic ESG Policy and internal regulations and are carrying out ESG activities.

In order to promote ESG activities in an effective and appropriate manner at a company wide level in all aspects of corporate activity, we have set up the ESG Promotion Committee chaired by the President, which is comprised of approximately 50 members, including directors and division heads of Shin-Etsu Chemical and ESG officers from group companies.

ESG Organizational Chart



Outline of the Business Principle, Basic ESG Policy, and the Shin-Etsu Group's activities



Issues and progress of ESG promotion

The issues and achievements of ESG promotion in FY 2019 and the activities scheduled for FY 2020 are as follows.



ESG Promotion Committee
general meeting
(November 2019, Shin-Etsu
Chemical Head office)

Issues	Progress in FY 2019	Schedule for FY 2020
Integration of SDGs and management	Set "Contributing to SDGs" as one of the management objectives for fiscal 2019 and promoted internal penetration	Develop and commercialize products that contribute to SDGs together with customers
Human rights due diligence ¹	<ul style="list-style-type: none"> Conducted human rights risk surveys at domestic and overseas Group companies Began construction of a internal grievance mechanism 	<ul style="list-style-type: none"> Identify important human rights risks based on the results of human rights risk surveys Develop human rights awareness and educational programs Construct a grievance mechanism(ongoing)
Response to TCFD ²	<ul style="list-style-type: none"> Conducted a survey of the contribution of greenhouse gas reductions from our products 	<ul style="list-style-type: none"> Identify and analyze the risks and opportunities posed by climate change

¹ Human rights due diligence An activity that 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.

² TCFD (The Task Force on Climate-related Financial Disclosures) It is a special team focusing on climate change disclosure, and was established by the Financial Stability Board (FSB) in December 2015. In July 2017, the TCFD has published a set of recommendations in which it calls for corporations to disclose the impacts of climate change, which was forecasted for mid to long-term, to their financial reports.

— List of executives in charge of ESG initiatives

Position	Name	Current Positions (related to ESG)	Key CSR Issues
Vice Chairman	Fumio Akiya	In charge of Technologies	Key Issue : Product quality improvements and product safety control
President	Yasuhiko Saitoh	Chairman of ESG Promotion Committee	
Managing Director	Toshiya Akimoto	Vice Chairman of ESG Promotion Committee In charge of Public Relations, Legal Affairs and Purchasing 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 : Promoting CSR procurement and the diversification of supply sources Key Issue : Respect for and protection of intellectual property Key Issue : Accurate and timely information disclosure and communication with stakeholders Risk Management

Managing Director	Yukihiro Matsui	In charge of Patents	Key Issue : Respect for and protection of intellectual property
Managing Director	Kenji Ikegami	In charge of General Affairs, Personnel & Labor Relations and Business Auditing	Corporate Governance Key Issue : Respect for human rights, the development of human resources and the promotion of diversity
Director	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 Governance (Fair tax payment, Operation of Group Companies)
Director	Yoshimitsu Takahashi	In charge of Environmental Control & Safety	Key Issue : Employees and contractor health and safety Key Issue : Energy-saving, resource-saving and the reduction of the environmental impact

As of June 26, 2020

— Participant in UN Global Compact

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

In such circumstances, the Group remains firmly committed in its Business Principle to contribute to people's living, society and industry through value creation in materials and technologies, while observing all laws and regulations as well as conducting fair corporate activities. At the same time we ensure a flexible response 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 takes part in subcommittees, such as the Supply Chain and ESG to utilize information on the latest development of ESG, gained from participation, for promoting the Group's ESG. The Group signed a document to support GCNJ's Tokyo Principles for Strengthening Anti-Corruption Practices in February 2018. In September 2019, we participated in the Anti-Corruption Forum 2019 sponsored by GCNJ Anti-Corruption Commission, where we discussed anti-corruption issues with lawyers and other specialists as well as the personnels in charge of anti-corruption at other companies.



Anti-Corruption Forum 2019
(September 2019)

➤ 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 Society

The Company is incorporated in the following ESG index.



2020 CONSTITUENT MSCI JAPAN
ESG SELECT LEADERS INDEX

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— Utilization of Supply Chain CSR Management Systems

The Group utilizes supply chain CSR management systems, such as RBA Online¹, Sedex² and EcoVadis³ to disclose CSR information. Shin-Etsu Silicones Europe, which participates in EcoVadis, received a gold rating in FY2019.

1 RBA Online

An online database organized by non-profit organization the Responsible Business Alliance (Former Electronic Industry Citizenship Coalition) for managing labor, health and safety, environment and ethics in the supply chain. Enterprises in the global electronic industry and others take part in Responsible Business Alliance.

2 Sedex

An online database organized by and named after non-profit organization Sedex, for storing and accessing data regarding ethical and responsible business practices. Enterprises in the global 28 industries, including food, automobile, cosmetics and amenity from 150 countries, have joined Sedex.

3 EcoVadis

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

The Company considers Corporate Governance to be one of the important management tasks, and is focusing on the following points.

- Development of an efficient organization and internal rules
- Ensuring management transparency
- Strengthening internal controls
- Timely and accurate disclosure of information

— Corporate Governance System

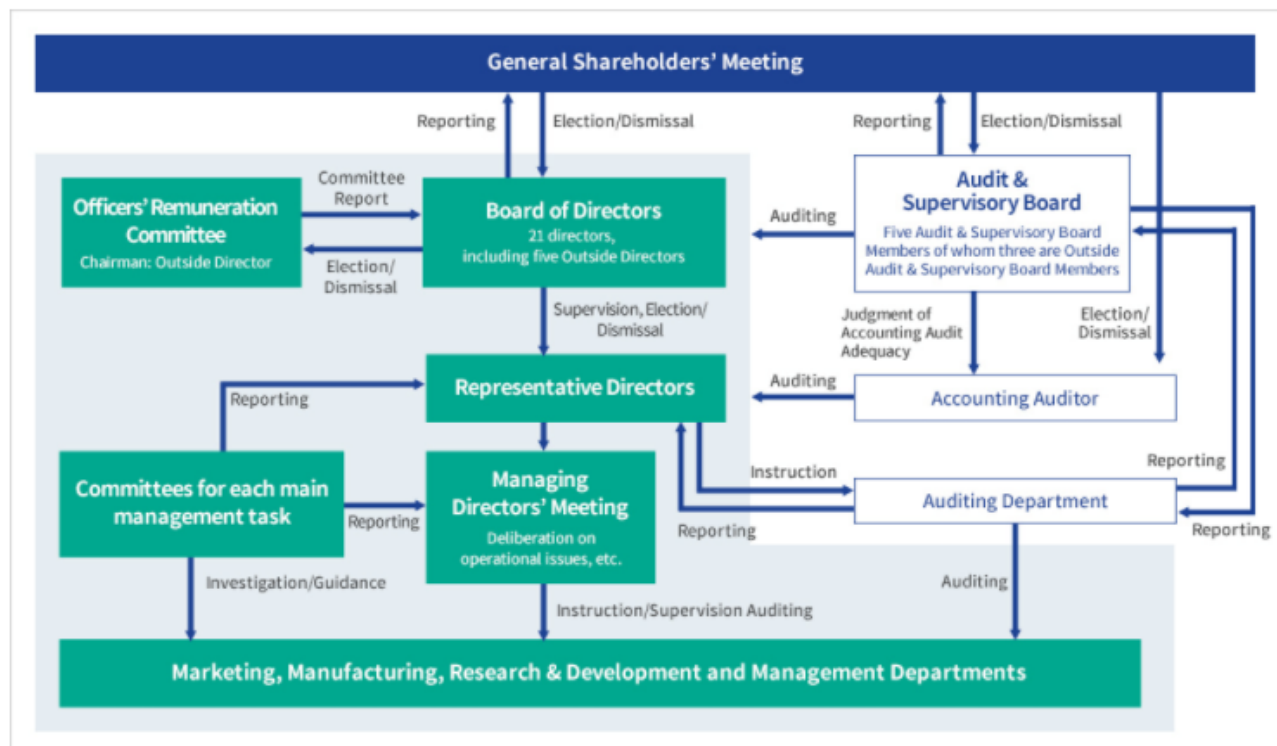
The Board of Directors consists of 21 members, of whom 5 are Outside Directors with a wealth of corporate management experience and exceptional insight.

Two organizations to discuss and decide on the execution of operations: the Board of Directors and the Managing Directors' Meeting, which are each held on one or more times a monthly basis. The Board of Directors sets out the basic principles of the Company and deliberates and makes decisions regarding key aspects of Company operations in accordance with the Companies Act, the Company articles of incorporation, etc. Meanwhile, the Managing Directors' Meeting makes deliberations and decisions on a variety of other operational issues.

In addition, we hear individual opinions from outside directors on the overall effectiveness of the Board of Directors on an annual basis, and the outside directors gave us an evaluation that the effectiveness of our Board of Directors is being ensured. We were able to obtain valuable opinions on sustainable development, such as "future-oriented research and development" and "utilization of human resources." 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 ensure the effectiveness of the Board as a whole, and the Board of Directors fulfills 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 visiting the operation sites and reviewing the reports submitted by the directors and employees on the status of execution of duties. The Audit & Supervisory Board Members also receives reports and explanations on financial audits from the accounting auditors and exchanges 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.

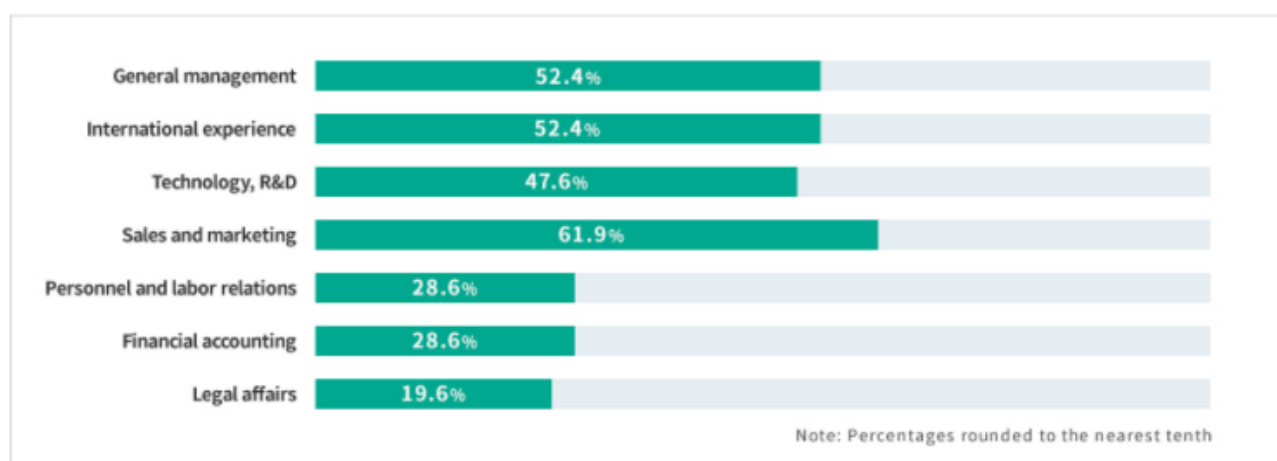
Corporate Governance System at Shin-Etsu Chemical



As of June 26, 2020

> Board of Directors

Director Specialties



— Outside Directors

For the purpose of the fulfilled advisory and supervisory functions of management from an independent position, the Company welcomes 5 Outside Directors. We have received advice on strategy for growth or enhancement of governance from Outside Directors. We believe that these points are extremely important in order to raise corporate value.

Outside Director List

As of June 26, 2020



Frank Peter Popoff

Name Status of significant
other positions held

Former CEO, The Dow Chemical
Company (US)



Tsuyoshi Miyazaki

Name Status of significant
other positions held

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



Toshihiko Fukui

Name Status of significant
other positions held

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



Hiroshi Komiyama

Name Status of significant
other positions held

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



Kuniharu Nakamura

Name Status of significant
other positions held

Representative Director and
Chairman, Sumitomo
Corporation; Outside Director,
NEC Corporation

— Outside Audit & Supervisory Board Members

For the purpose of the fulfilled advisory and supervisory functions on management through an independent position, the Company appoints 3 Outside Audit & Supervisory Board Members. They are auditing the Company's management as experts in their respective fields or from a broad point of view based on corporate management experience. Audits by the outside Audit & Supervisory Board Members are contributing to ensure the Company's compliance system.

Outside Audit & Supervisory Board Member List

As of June 26, 2020



Taku Fukui

Name Status of significant
other positions held

Lawyer Managing Partner,
Kashiwagi Sogo Law Offices;
Professor, Keio University Law
School; Outside Director,
YAMAHA CORPORATION



Yoshihito Kosaka

Name Status of significant
other positions held

Certified Public Accountant;
Certified Public Tax
Accountant; Outside Director,
Star Mica Holdings Co., Ltd.



Kiyoshi Nagano

Name Status of significant
other positions held

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

— Officers' Remuneration Committee

The Company has organized the Officers' Remuneration Committee since 2002 to review and evaluate transparency and validity in the process of determining Directors' remuneration, nominating candidates for Executives, Directors, and Audit & Supervisory Board Members, and others. The committee consists of 5 directors, with Outside Director Frank Peter Popoff as the Chairman.

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 this to the Board of Directors.

— 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 the directors is fully compliant with relevant legislation and the articles of incorporation, and structures to ensure the propriety of business operations within the corporate group consisting of its subsidiaries as well as this corporation and other corporate business", as stipulated by the Companies Act and an Ordinance of the Ministry of Justice. Accordingly, the internal control system is structured and implemented in accordance with the above policy. We review them constantly and endeavor to make the system more appropriate and efficient.

Internal operation audits and assessment of internal controls 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 to strengthen coordination between Auditing Department and Outside Directors and Audit & Supervisory Board Members.

— Tax Policy

In its Business Principle, the Group states that it strictly complies with all laws and regulations and conducts fair business practices. Based on this, each and every one of the Group's personnel is performing his/her daily work duties sincerely. We believe that one of the Group's contributions to society is to pay the appropriate amount of taxes in accordance with local laws and regulations. Total corporate income taxes paid in FY2019 was 107.8 billion yen in consolidated basis.

— Operation of Group Companies

The Company aims for development of the whole Group by supporting and respecting the autonomy of the Group companies. Group companies are managed on the basis of the Shin-Etsu Chemical Group Company Operational Regulations. The 97 consolidated subsidiaries are conducting prior consultation and reporting on the following projects.

(1) Prior Consultation Item Example

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

(2) Reporting Item Example

Operations review
Financial results
Risk information recognized by Group companies
Important information such as deficiencies in internal control

Furthermore, by holding meetings which are attended by the presidents of our main Group companies one or more times each year, we actively promote the sharing and exchange of information among Group companies.

> Corporate Governance Report 

> ESG Data

— 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

(1) Risk factors related to business activities

1. Business risks
2. Research and development risks
3. Production and quality management risks
4. Sales risks
5. Purchasing risks
6. Finance and accounting risks
7. Personnel and labor risks
8. Environment and safety risks
9. Information management risks
10. Intellectual property, contract, and litigation risks
11. Fraud risks
12. Country risks
13. Legal risks
14. Other

(2) Risk factors not related to business activities

1. Risks caused by economic factors
2. Risks caused by social factors
3. Risks caused by political factors
4. Risks caused by scientific and/or technical factors
5. Risks caused by natural environmental factors and/or disasters
6. Other

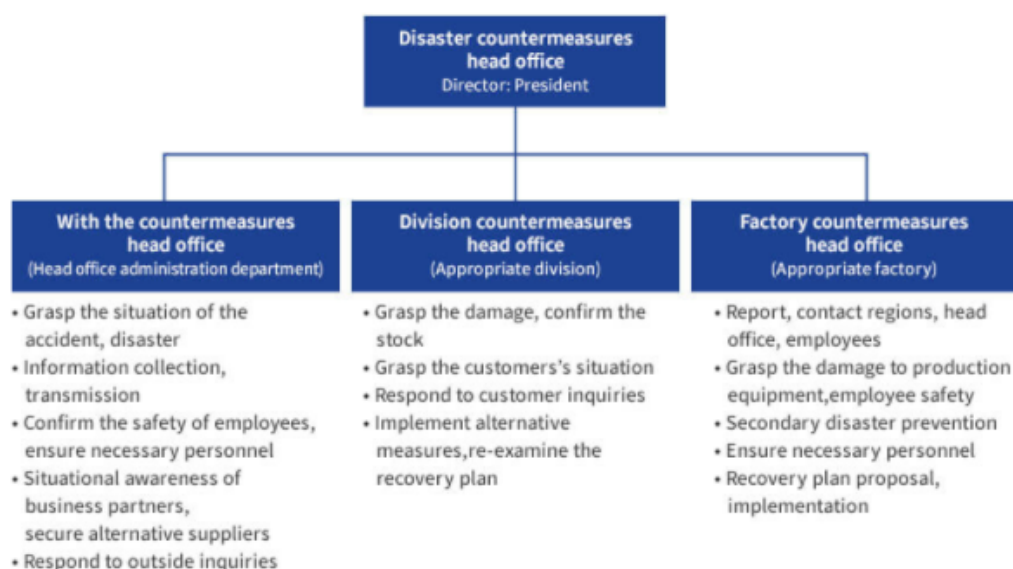
— Risk Management Committee

We have the Risk Management Committee chaired by a managing director of the Company. The committee consists of about twenty members, including directors and general managers of divisions of the Company. 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 2019, in addition to the 4 meetings held by the Committee, secretariat held the meetings every month. At the meeting, the Committee discussed risks about production, quality control, and natural environmental disasters.

— 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



Response training for large-scale earthquakes
(July 2019, Shin-Etsu Chemical Takefu Plant)

— Specifying Shin-Etsu Group Key ESG Issues

In order to practice the Business Principle "The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies," we have been working on a wide variety of activities.

What the Group must address in particular was defined as "Key ESG Issues (former: Key CSR Issues)" through the following procedure in FY 2015.

— Process of Specifying Key ESG Issues

1. Clarifying Key ESG Issues

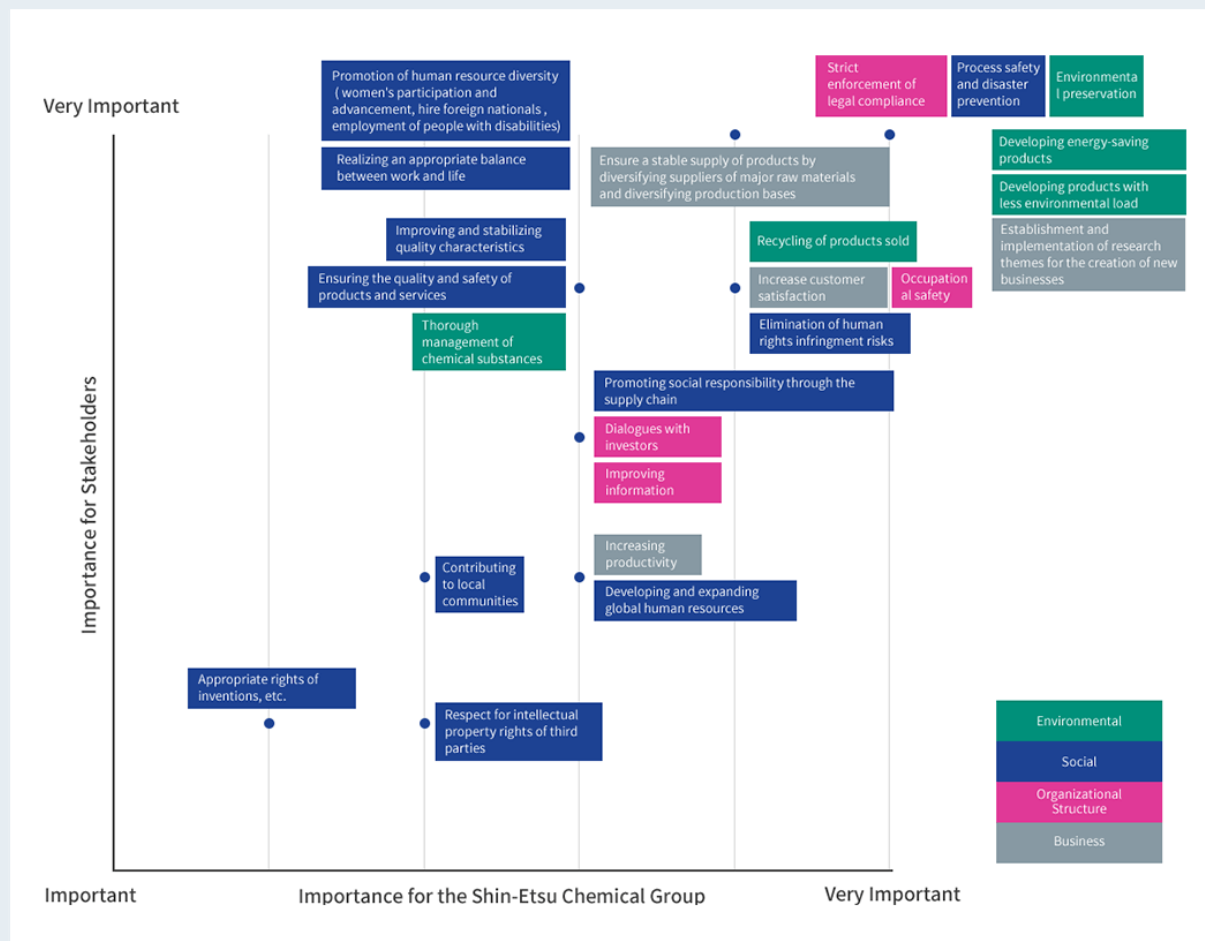
The Committee made investigations into the followings for all of the Company's departments and major domestic Group companies.

- 1.Reconfirm and classify stakeholders of each department and each company.
- 2.List Key ESG Issues in each department and each company referencing to ISO26000 core subjects.
- 3.Score the level of importance of each key issue for the Group as well as for stakeholders.

2. Creating a scatter plot of Key ESG Issues and organizing them

The Committee created a scatter plot of key issues on the basis of the key issues and their scores submitted by each department and each company. The result showed that the majority of key issues were "very important" issues.

The Committee organized the listed key issues and also created a draft of Key ESG Issues with these being reflected in the scatter plot.



3. Interviews with Outside Directors

We had individual interviews with all Outside Directors based on a draft of Key ESG Issues. The followings are the suggestions and opinions provided by the Outside Directors.

1. Compliance with Laws and Regulations should be related to all issues.
2. All of the Key ESG Issues listed are equally important for the Group, and it is difficult to prioritize them.
3. The Group should clarify what we are aiming at as a goal as the Group specify Key ESG Issues.

4.Re-examination in the Committee and approved by the management

Based on the suggestions and opinions from the Outside Directors, the Committee has re-examined key issues. The Managing Directors' Meeting, which is the decision-making institution with all the directors and audit & supervisory board members also examined and has decided the items in the diagram below as the Key ESG Issues of the Group.

In addition, in December 2018, the ESG Promotion Committee discussed the key issues and their materiality that had been reviewed by all departments of the Company and major Group companies in Japan, and decided to continue to address the key issues identified in 2015.

The Group will work equally on all of these Key ESG Issues without priority.

— Shin-Etsu Group Key ESG Issues

The foundation of all activities legal compliance, fair corporate activities >	
Employees and contractor health and safety >	Energy-saving, resource-saving and the 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 >

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

— Awareness of Issues

The Group's Business Principle is "The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies." Compliance with laws and regulations and fair corporate activities are the foundation of all of our corporate activities. We recognize that the long-term development of a company depends not only on legal compliance, but also on the efforts of each employee to engage in daily work with a high sense of ethics as a code of conduct.

— Major Risks and Opportunities

Risks

- Impact of legal violations and improprieties on corporate management.
- Damage to corporate value due to loss of trust from society.

Opportunities

- Ensuring thorough legal compliance and fair corporate activities leads to:
 - ① Formation of the foundation of corporate value
 - ② Elimination of risks
 - ③ Building customer trust and expanding business opportunities
 - ④ Hiring and retaining excellent human resources

— Shin-Etsu Group approach

■ Policy

The Group will make all-out efforts for compliance and to conduct business fairly.

Basic approach

- Raising compliance awareness among officers and employees through training, etc.
- Ensuring thorough prevention of the provision of unfair benefits or unfair demands in order to aim at preventing corruption
- Cutting ties with Anti-social Forces

— Performance and Outcome

Compliance

— 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 our corporate activities thoroughly complying with Laws and Regulations.

In the event of promulgation of or amendments to legislation pertaining to corporate activities, the Legal Department serves in a central role by issuing internal bulletins and disseminating knowledge of these changes.

In addition, in order to promote understanding of important laws and regulations, we posted explanatory articles on important laws and regulations in our company newsletter, and invited outside lecturers to give lectures to our employee.

All of the officers and employees submit a Compliance Pledge to the Company. For the eventuality of inappropriate action occurring, disciplinary measures are available.

Furthermore, officers and employees can consult with and report to the Compliance Consultation Office if they discover a violation of a law, regulations, ethical codes, or the Company's regulations, including the Anti-Bribery Regulations, or if they experience acts of harassment. The Office then carries out a detailed investigation in response to the information received, and will take necessary corrective actions. Confidentiality will be maintained for consulters and whistleblowers. There is no unfavorable treatment as a reason for consulting and reporting.



Lecture meeting regarding compliance with the Antitrust law
(July 2019, Shin-Etsu Chemical Head office)

— Employee Initiatives



Shin-Etsu Chemical Head office

Mr. A, Legal Department

Compliance with laws and regulations that form the basis of corporate activities

1. Please tell us about your job.

I review contracts requested by business divisions and respond to consultations. In addition, as the Secretariat of the Security Export Control Committee, I am responsible for conducting trade reviews and internal audits related to exports. In FY 2019, I also worked on the creation of important point explanatory laws and regulations in a series of articles in the company newsletter.

2. How does the Legal Department disseminate, thoroughly enforce, and educate employees about legal compliance?

The following methods are used to disseminate, thoroughly enforce, and educate employees about legal compliance.

- Implementation of in-house training (rank-based training, etc.)
- Notification of revisions to laws and regulations and posting on the Intranet
- Publication of articles related to laws and regulations in company newsletters
- Implementation of online lecture
- Regular internal lecture by the lawyers

3. Please tell us about the internal lecture by the lawyer.

The themes of the lectures are the Anti-Monopoly Act and the Anti-Unfair Competition Act. Latest, on July 10, 2019, we held an internal lecture on the topic of "Corporate Activities and Compliance with the Antitrust Act (focusing on unfair trading practices)." The lecture was attended by 171 people, including those from group companies.

4. What are your thoughts on legal compliance in the future?

For example, antitrust laws apply universally to all divisions, unlike business laws that apply only to certain business divisions. In addition to sales divisions, it involves in a variety of corporate activities, including purchasing, R & D, and business combinations¹. In order to comply with these regulations, it is important to share the content of the regulations throughout the company. I will continue to disseminate important laws and regulations throughout the company.

¹ Business combinations

Organizational restructuring activities such as mergers, corporate splits, share exchanges, and share transfers

— Initiatives Aimed at Preventing Corruption



The Company has created the Anti-Bribery Regulations and prohibits actions that involve unfair transfer of profit from or to parties and has received Compliance Pledges from all of the officers and employees. Simultaneously, we assuredly prevent the provision of unfair benefits or unfair demands in respect to our customers, domestic or foreign government officials and suppliers. Also, the status of compliance with ethical standards is one item included in personal evaluations. Furthermore, 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 "observe all laws and regulations as well as conducting fair corporate activities," and we are working to prevent corruption, including bribery. Since 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, we immediately decided to support them and became a signatory to them in February 2018.

We will continue to make it a 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 Japanese available)



GCNJ's "Anti-Corruption Annual Forum 2019"
(September 2019)

— Export Control

From the viewpoint of maintaining world peace and security, the Company has created the "Control Program on Security Control" to comply with the Foreign Exchange and Foreign Trade Act and other export related legislation. The followings are our initiatives based on this program.

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

— Cutting Ties with Anti-social Forces

The Group declares in its the Basic Policy on Internal Controls that the Group shall adopt a consistently resolute attitude towards anti-social forces and shall take 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 promoting the signing of memorandums and letters of confirmation regarding the exclusion of anti-social forces with customers and business partners.

In addition, we are working closely with external specialized agencies.

Related Information

➤ ESG Data

Awareness of Issues

The Group places top priority on safety. At the same time, we have created a work environment in which employees can work comfortably. We recognize that operation in the absence of accidents and disasters protects employees, fulfills our responsibilities as a supplier to customers, and leads to the sustainable development of the company. In recent years, many natural disasters have occurred, and we are addressing these as an important issue.

Major Risks and Opportunities

Risks

- Impact of accidents and environmental problems on local communities and employees.
- Damage to equipment caused by typhoons, earthquakes, or other natural disasters.
- Impact of an infectious disease outbreak on operations.

Opportunities

- Measures to prevent accidents and the development of new processes enable stable production and improved productivity.
- Hiring and retaining excellent human resources.
- Continuing operations, shutting down operations, and resuming operations safely by designing the plant in anticipation of a natural disaster and taking measures against risks.
- Promote employee health and realize a work-life balance. Cultivating a sense of motivation and fulfillment in work.

Shin-Etsu Group approach

Policy

The Group will work to create a comfortable and safe workplace whose goals are to achieve "zero serious accident" and "zero lost time accident."

Basic approach

- Safety education for employees through disaster prevention drills and workshops
- Environmental Control and Safety Audits
- Improvement of the workplace environment and to promotion of employees health

Activity highlights

Item	Priority Issues (Target)	Implementation Status for Fiscal 2019	Evaluation	Planned Implementation Items for Fiscal 2020
Management System	1. Continuous improvement and implementation of the health and safety management system	<ul style="list-style-type: none"> • Communication by the plant manager and division heads of their commitment and active involvement • Appropriate implementation of the PDCA cycle¹ based on the health and safety management system • Promotion of effective safety activities through substantial internal audits (audit the effectiveness of PDCA cycle and safety activities) 	◎	<ul style="list-style-type: none"> • Communication by the president, the plant manager and division heads of their commitment and active involvement • Development of good PDCA cycles for the health and safety management system and promotion of effective activities
	2. Qualitative improvement of environmental safety audits	<ul style="list-style-type: none"> • Appropriate follow-up on the matters pointed out during environmental safety audits • Qualitative improvement of environmental safety audits at affiliated companies in the plant area • Active involvement at overseas manufacturing bases through guidance and auditing 	◎	<ul style="list-style-type: none"> • Qualitative improvement of environmental safety audits at affiliated companies in the plant area (ongoing) • Active involvement at overseas manufacturing bases as a mother plant through guidance and auditing (ongoing)
	3. Thorough change management	<ul style="list-style-type: none"> • Confirmation of application of MOC² rules at the plants and thorough compliance with them • Risk assessment at the time of 4M³ change 	◎	<ul style="list-style-type: none"> • Establishment of regulations and standards for MOC rules • Confirmation of application of MOC rules at the plants and thorough compliance with them (ongoing)
	1. Zero serious accident	<ul style="list-style-type: none"> • Achieved target of zero serious accident 	◎	<ul style="list-style-type: none"> • Zero serious accident
	2. Facility and process safety improvement	<ul style="list-style-type: none"> • Implementation of planned process risk assessment • Safety measures for non-routine work and unsafe operations, as well as continuing to consider accident trouble cases • Maintenance and utilization of safety basic information • Proper operation of alarms and interlocks 	○	<ul style="list-style-type: none"> • Continue and enhance the process risk assessment (Limited to facilities and chemical plants where accidents due to explosion fires, or chemical reactions are anticipated) • Safety measures for non-routine work and unsafe operations, as well as continuing to consider accident trouble cases (ongoing) • Maintenance and utilization of safety basic information(ongoing) • Proper operation of alarms and interlocks(ongoing)

Process Safety and Prevention Plan	3. Improvement of facilities and maintenance management	<ul style="list-style-type: none"> • Thorough investigation of equipment trouble causes, recurrence prevention and design technology improvement • Improvement of equipment maintenance (Construction of function maintenance and management method of safety equipment and safety system and planned repair of old pipes and equipment) 	○	<ul style="list-style-type: none"> • Thorough investigation of equipment trouble causes, recurrence prevention and design technology improvement (ongoing) • Improvement of equipment maintenance (ongoing)
	4. Predictions and reliable responses to emergencies	<ul style="list-style-type: none"> • Consider estimating and minimizing damage if the worst situations such as serious accidents and massive earthquakes occur • Maintenance of emergency-response criteria / manuals • Review and implement business continuity planning training 	○	<ul style="list-style-type: none"> • Consider estimating and minimizing damage if the worst situations such as serious accidents and massive earthquakes occur(ongoing) • Preparation of emergency-response criteria manuals (including troubles, accidents and natural disasters) (ongoing)
	5. Plant security enhancement	<ul style="list-style-type: none"> • Strengthen prevention measures against external intruders • Provide visitors to the plants with risk information and inform them of evacuation methods if an accident or disaster occurs 	○	<ul style="list-style-type: none"> • Strengthen prevention measures against external intruders (ongoing) • Provide visitors to the plants with risk information and inform them of evacuation methods if an accident or disaster occurs(ongoing)
	1. Achieve zero labor accidents requiring an absence of a day or more	<ul style="list-style-type: none"> • The Shin-Etsu Group: 8 people • Shin-Etsu Chemical: 0 people 	△	<ul style="list-style-type: none"> • Achieve zero labor accidents requiring an absence of a day or more
	2. Rate of labor accidents not accompanied by an of absence a day or more: 0.5 or less	<ul style="list-style-type: none"> • The Shin-Etsu Group achieved its goal with a rate of 0.77 • Shin-Etsu Chemical: 0.49 	△	<ul style="list-style-type: none"> • Rate of labor accidents not accompanied by an absence of a day or more: 0.5 or less
	3. Human error reduction	<ul style="list-style-type: none"> • Prevention of accidents and disasters due to human errors 	○	<ul style="list-style-type: none"> • Prevention of accidents and disasters due to human errors (ongoing)

Occupational
Safety

4. Improve work safety	<ul style="list-style-type: none"> • Promoting “zero accident” activities (practiced Hazard prediction activities, pointing and calling, and 5S4 activities) • Activation and promotion of close-call incident proposals and improvement proposals (set promotion goals) • Implemented assured horizontal expansion of accident examples of the Group companies • Cultivate a safety culture in which rules and manuals are followed 	◎	<ul style="list-style-type: none"> • Promoting of safety activities (practiced Hazard prediction activities, pointing and calling, and 5S activities) (ongoing) • Active improvement of work methods and work environment (ongoing) • Implement application of similar process and examination of accident in the Group and other companies (ongoing) • Preventing Accidents and Disasters among Middle-Aged and Elderly People • Measures to prevent accidents by contacting dangerous areas, equipment etc. • Review of factory standards for protective equipment and protective clothing for dangerous or harmful work
5. Review and reorganize work manuals and ensure strict compliance	<ul style="list-style-type: none"> • Implement of planned review and content enhancement of work manual maintenance (routine, non-routine, emergency response etc.) • Confirm the compliance of work manuals 	◎	<ul style="list-style-type: none"> • Implement of planned review and content enhancement of work manual maintenance (ongoing) • Confirm the compliance of work manuals (ongoing) • Creation of a safe culture that complies with rules and manuals (ongoing)
6. Work risk assessment	<ul style="list-style-type: none"> • Implement work risk assessment based on plans(Central Labor Accident Prevention Association⁵ method or procedure HAZOP⁶) Risk assessment as stipulated in the Industrial Safety and Health Act Risk assessment for dangerous and non-routine work at one's workplace 	○	<ul style="list-style-type: none"> • Implement work risk assessment based on plans(Central Labor Accident Prevention Association⁵ method or procedure HAZOP⁶) Risk assessment as stipulated in the Industrial Safety and Health Act Risk assessment for dangerous and non-routine work at one's workplace
7. Safety measures of construction and non-routine work	<ul style="list-style-type: none"> • Clarify work instructions and procedures and implement hazard prediction activities • Clarification and solid performance of implementation matters such as construction start permission, safety management during construction, delivery, completion confirmation, etc. • Providing safety information to construction contractors, thorough education of plant rules, etc. 	○	<ul style="list-style-type: none"> • Clarification and solid performance of implementation matters such as construction start permission, safety management during construction, delivery, completion confirmation, etc. (ongoing) • Providing safety information in writing to construction contractors, thorough education of plant rules, etc. (ongoing) • Clarify work instructions and procedures and implement hazard prediction activities for non-routine work (ongoing)

	8. Training and drill promotion	<ul style="list-style-type: none"> Plan promotion of education and training Promote acquisition of qualifications Active introduction of awards and prize systems for voluntary safety activities 	○	<ul style="list-style-type: none"> Plan promotion of education and training (ongoing) Promote acquisition of qualifications (ongoing) Active introduction of awards and prize systems for voluntary safety activities (ongoing) Implementation of planned training to acquire important safety skills
	9. Ensuring subcontracting safety	<ul style="list-style-type: none"> Active involvement in safety management at companies to which, as a manufacturer, the Company outsources its operations Implementation of sufficient safety education 	○	<ul style="list-style-type: none"> Active involvement in safety management at companies to which, as a manufacturer, the Company outsources its operations (ongoing) Implementation of sufficient safety education for temporary and contract employees (ongoing)
Occupational health	1. Create and maintain a comfortable workplace environment	<ul style="list-style-type: none"> Implemented working environment measurements and promote working environment improvements based on the results Implement chemical substance handling education and strict wearing of chemical protective equipment as well as confirmation of compliance status for wearing protective equipment Appropriate implementation under the Industrial Safety and Health Law Appropriate reporting, communication, and consultation, as well as promotion of good communication 	◎	<ul style="list-style-type: none"> Realization of comfortable working environment Ensuring an appropriate and safe working environment Implementation of appropriate health management Appropriate reporting, communication, and consultation, as well as promotion of good communication(ongoing)
	2. Promote physical and mental health wellbeing	<ul style="list-style-type: none"> Implement concrete guidance, etc. and effective utilization of health check results Appropriate compliance with additional inspection criteria due to regulatory amendments Promotion of specific activities to build mental and physical health 	○	<ul style="list-style-type: none"> Implement concrete guidance, etc. and effective utilization of health check results (ongoing) Appropriate compliance with additional inspection criteria due to regulatory amendments of Industrial Safety and Health Law, etc. (ongoing) Promotion of specific activities to build mental and physical health (ongoing)

1 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).

2 MOC

Management of change

3 4M

It is the first letter "M" of four words for man, machines, media and management.

4 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).

5 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.

6 HAZOP

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

* Evaluation standards

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

— Performance and Outcome

Occupational Safety Management

— Occupational Safety

Close-calls Incidents Topics

2020.07.31 Updated of Close-Call (Hiyari-Hatto) Incidents
2020.01.31 Updated of Close-Call (Hiyari-Hatto) Incidents
2019.07.31 Updated of Close-Call (Hiyari-Hatto) Incidents
2019.01.31 Updated of Close-Call (Hiyari-Hatto) Incidents
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2017.07.31 Updated of Close-Call (Hiyari-Hatto) Incidents
2017.01.31 Updated of Close-Call (Hiyari-Hatto) Incidents
2016.07.29 Updated of Close-Call (Hiyari-Hatto) Incidents

We annually create the Shin-Etsu Group Environmental Safety Management Plan in accordance with the Responsible Care Codes¹ and set goals using numerical numbers.

Each of Group's plant clarifies every single possibility that could cause any kind of injury or illness and works hard to mitigate those risks.

To reduce risks in the workplace, we take various safety measures such as providing workers with individual protective tools, posting safety signs in dangerous areas, and locking out² and tagging out³. We also take measures including safety devices to machinery and equipment, fail-safe⁴, foolproof⁵, interlocking⁶ and protective walls. In addition, we practice KY⁷ hazard prediction activities e.g. pointing and calling prior to work and reconfirm safety.

Furthermore, the workers are taking measures against unsafe areas by regularly collecting "close calls and other incidents of concern" from case examples of workers who have experienced close-call incidents and matters of concern. At the same time, we share our risk information and prevent similar accidents by disclosing this risk information internally and externally.

1 Responsible Care Codes

Six principle areas are addressed when implementing Responsible Care: environmental preservation, process safety (and disaster prevention), occupational health and safety, distribution safety, chemical and product safety, and social dialogue (with the public). The codes initiatives in these areas, together with the Management System Codes required for operating all the above.

2 Lock out

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

3 Tag out

Attaching tags to areas where machinery and equipment are locked out. This means that operating the machinery and equipment is prohibited until the tags are removed.

4 Fail-safe

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

5 Foolproof

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

6 Interlock

One of the concepts for safety devices and mechanisms in which machinery and equipment do not work unless certain conditions are met.

7 KY

Hazard prediction activities. Workers learn safe working methods prior to getting into workplace in order to prevent the occurrence of possible disease or injuries.

— Process Safety and Disaster Prevention Plan

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 against dangerous places identified through process risk assessments, and pipes and equipment that have become obsolete are maintained and managed, mainly through scheduled maintenance.

Since FY2013 we have worked to enhance safety management by performing risk assessment and by implementing effective safety measures, particularly of envisaged abnormal plant conditions.

The Company has been participating in the Japan Safety Competency Center since its inauguration in FY2012. Each plant uses the Center's "Safety Evaluation System" to further improve the situation and works even harder on the Process Safety and Prevention Plan.



Risk assessment workshop
(December 2019, Shinano Electric
Refining Co., Ltd.)

Results of safety management activities(Shin-Etsu Chemical)

	FY2016	FY2017	FY2018	FY2019
Number of improvements	4,313	4,651	8,909	10,966

— Education and drills

To keep plant operation constantly safe, it is important for each workers working on our Group's operation sites to improve his /her skills and knowledge and be aware of danger.

For that purpose we provide safety education on the risks of handling materials and processes and possible dangers involving processes as well as simulating possible dangers for employees and contractors. In addition, we work on handing down operation at skills for manufacturing equipment. Furthermore, we are working to foster an awareness of safety 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 or fires.



Plant General Disaster Prevention Drill
(November 2019, Shin-Etsu Chemical
Naoetsu Plant)



Experience-based safety education
training
(November 2019, Shin-Etsu Chemical
Gunma Complex)



Fire fighting ceremony
(January 2020, Shin-Etsu Chemical
Takefu Plant)

— Environmental Control and Safety Audits

In order to confirm that activities such as environmental conservation, occupational safety and health, process safety and prevention plan are carried out as planned, the Group conducts an internal audit at domestic and overseas operation sites. In FY 2019, audits were conducted at 22 domestic and overseas operation sites. The results of audits are also reported to top management.

In referring to cases from other companies in FY2013, we communicated revisions to "Nonroutine Work Safety Measures" within the company.

As in FY2018, their implementation status in FY2019 was chosen as a special audit theme.



Development training on environmental
and safety audit
(April 2019, Shin-Etsu Silicone Korea
Co.,Ltd.)

— Health Considerations

We are working to prevent possible diseases through encouraging employees to take health checks, offering health counseling on life style diseases as well as promoting measures on mental health and activities for health promotion and fitness. In addition, we are conducting prevention of and raising awareness toward infectious diseases including new strains of influenza.

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

Furthermore, we have set up Family Health Consultation with our health insurance union and an insurance company. It is available 24 hours a day. This consultation can also be used by the family members of employees.



Health lecture
(June 2019, Naoetsu Electronics)



Mental health training
(June 2019, Shin-Etsu Chemical Gunma Complex)

— Employee Initiatives



Shin-Etsu Chemical
Takefu plant Ms. Y,
public health nurse

I am watching to ensure that all employees can work in good health.

1.What are the actions being taken at the plant's medical office?

The operations of the medical office include emergency response, first-aid, medical interviews, various medical check-ups including explanations of the results, and immunization. The Shin-Etsu Chemical Takefu Plant has two nurses in the medical office. There is a nurse at the hospital in the region to which the industrial physician belongs, and an industrial physician visits the plant once a week for conducting examinations. In addition, a psychosomatic doctor comes twice a month to provide mental consultation.

2.Please tell us about your business.

At the medical office of the Shin-Etsu Chemical Takefu Plant, I am in charge of the health management of employees of this plant and group companies in the neighborhood. It is to follow-up surveys of reexaminations after medical checkups, health guidance, health education, interviews with overtime workers, and mental consultations. In particular, follow-up checks for reexamination continue until the results are reported. I am also in charge of health education and fitness classes for new employees. In FY 2019, four classes on practical skills were held by fitness instructors under the theme of "Relaxation and Aerobic Exercise." To prevent illness, I distribute leaflets regarding exercise, rest and non-smoking, and also work with nutritionists to determine seasonal themes to post on the company cafeteria tables providing health information to raise awareness of health management. In addition, we are responsible for raising awareness about the COVID-19, such as hand washing, disinfection, cough etiquette, ventilation, as well as for interviewing persons with high fever.

3.Please tell us about future issues related to employee health management and your plans to focus on these issues.

To ensure that our employees can work energetically, I am considering to enhance our disease prevention classes, nutrition, fitness, and smoking cessation activities. In FY 2020, we plan to hold four lectures on the theme of lifestyle-related diseases and arteriosclerosis as a measure to prevent sudden death. I would like to work closely with each and every employee so that they can continue to treat illness.

— Measures to the COVID-19

We implemented a variety of measures to protect employees and their families from the COVID-19. In February 2020, the organization to take measures against the COVID-19, headed by the president was established at the Shin-Etsu Chemical Headquarter, and a series of measures to prevent infectious diseases in response to ever-changing conditions were sent throughout the company. In each region, we established the local organizations to take measures against the COVID-19 and implemented measures to prevent infection and to maintain operations in accordance with each region, based on the notification from the Shin-Etsu Chemical Headquarter. As a company-wide measure, we conducted thorough measurement of body temperature before going to work, wearing masks during commuting and work, disinfecting fingers, prohibiting business trips, utilizing telephone conferences and Web conferences, and checking the body temperature of visitors etc. In addition, we promoted working from home to reduce the attendance rate by 80% for employees working in headquarters and sales offices in response to the request of the national government. Each plants takes measures to ensure thorough disinfection, staggering commuting hours for the office workers, using the cafeteria and the break rooms at the different time to each other, and securing the distance when using them.




Partition in the cafeteria
(May 2020, Naoetsu Plant)



Vinyl curtains in office operations
(May 2020, Takefu Plant)

— Targets and Results

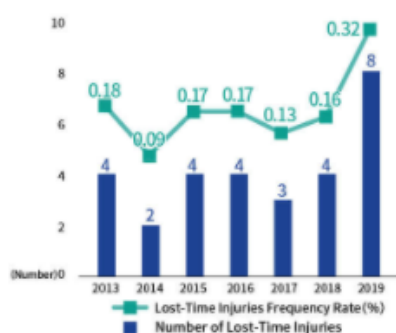
Every fiscal year, the Group creates environmental and safety management plans based on Responsible Care Code. The entire Group works on key issues such as the prevention of major disasters including explosions and fires and industrial accidents according to the management plan prepared.

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

— Reporting of accidents and lost time accident

In FY2019, there were no serious accidents but eight lost-time injuries in the Group companies in Japan. We have analyzed causes for each accident, eliminated hazardous operations and also secured equipment safety, and have implemented appropriate safety measures. Also, revising the operation manuals and working to prevent re-occurrence of the accidents, we are preventing work-related accidents.

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



Number of Lost-Time accident and
Changes in Frequency Rates
(Group companies in Japan※)

※Because the definition of occupational accidents differs between Japan and overseas, we do not disclose overseas Group companies' accident statistics. If definition of occupational accident is internationally unified, we consider disclosing.

Related Information

➤ ESG Data

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

Awareness of Issues

We recognize that specific measures to combat climate change, the efficient use of limited resources, and the Circular Economy¹ are key issues facing companies.

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 and effectively use resources and reduce the environmental impact of our manufacturing processes.

¹ Circular Economy

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

Major Risks and Opportunities

Risks

- Additional costs of tightening greenhouse gas regulations.
- Prices increase and difficulty in procurement of necessary quantities on raw materials.
- Increased water risks, such as water depletion and flooding.

Opportunities

- "Manufacturing power" nurtured by the challenge of continuous technological innovation.
- Strengthen competitiveness by conserving energy and resources, reducing environmental loads, and improving productivity.
- Expansion of demand for products that contribute to the environment.
- Development of technologies that recycle water contributes to business continuity.

Shin-Etsu Group approach

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.

Basic approach

- | | | |
|--|--|-----------------|
| • Promoting the Reduction of Environmental Impact | • Waste Reduction | • Pollutant |
| • Response to Climate Change | • Resource recycling | Countermeasures |
| • Water Resource Conservation, Water Pollutant Elimination | • Conservation of Biodiversity Initiatives | |

Activity highlights

Item	Priority Issues (Target)	Implementation Status for Fiscal 2019	Evaluation	Planned Implementation Items for Fiscal 2020
Management System	1. Continuous improvement and implementation of the environmental management system	<ul style="list-style-type: none"> Set qualitative plans to meet environmental challenges Implement plans and achieve goals without fail through activities leveled throughout the year Conduct substantial internal audits 	◎	<ul style="list-style-type: none"> Implement plans and achieve goals without fail through activities leveled throughout the year (ongoing) Conduct substantial internal audits (ongoing) Appropriate responses to the findings of head office audits and plant internal audits, and reliable follow-up
	2. Qualitative improvement of environmental safety audits	<ul style="list-style-type: none"> Appropriate follow-up on the matters pointed out during environmental safety audits Qualitative improvement of environmental safety audits for affiliated companies at the plant area Active involvement at overseas manufacturing bases through guidance and auditing 	◎	<ul style="list-style-type: none"> Qualitative improvement of environmental safety audits for affiliated companies at the plant area (ongoing) Active involvement at overseas manufacturing bases as a mother plant through guidance and auditing (ongoing)
Environmental conservation	1. Zero environmental accidents	<ul style="list-style-type: none"> Achieved target of zero environmental accidents 	◎	<ul style="list-style-type: none"> Zero environmental accidents
	2. Thorough environmental management	<ul style="list-style-type: none"> Continued appropriate compliance with environmental laws and regulations 	◎	<ul style="list-style-type: none"> Appropriate compliance with environmental laws and regulations (ongoing)
	3. Promotion of energy savings (Reduce energy consumption by an average annual rate of 1% per unit production)	<ul style="list-style-type: none"> The Shin-Etsu Group: Reduced by 0.3% annually on average Shin-Etsu Chemical: Reduced by 1.1% annually on average 	○	<ul style="list-style-type: none"> Reduce energy consumption by an average annual rate of 1% production intensity
	4. Reducing greenhouse gas emissions (Intensity reduction to 54% of 1990 level by fiscal 2025)	<ul style="list-style-type: none"> The Group reduced to 54.1% and the Company 49.5% compared to fiscal 1990 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 	△	<ul style="list-style-type: none"> Reduction to 45% of 1990 level in intensity by fiscal 2025 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)
	5. Reduce waste (Achieve zero waste emissions (waste to landfill ratio to 1% or less))	<ul style="list-style-type: none"> The Shin-Etsu Group: Landfill waste to total waste ratio of 1.4% Shin-Etsu Chemical: Landfill waste to total waste ratio of 1.3% 	○	<ul style="list-style-type: none"> Promote achievement of zero waste emissions (waste to landfill ratio to 1% or less) Promotion of waste generation reduction through intensity unit

	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"> Reduced at an annualized rate of 2.9% for BOD¹ Increased at an annualized rate of 45.1% for soot Reduced at an annualized rate of 0.6% for SOx 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 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 	△	<ul style="list-style-type: none"> 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) 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)
	7. Reduction in water withdrawals (Reduction in intensity at an annualized rate of 1%)	<ul style="list-style-type: none"> The Shin-Etsu Group: reduced at an annualized rate of 6.7% Shin-Etsu Chemical: reduced at an annualized rate of 5.9% 	◎	<ul style="list-style-type: none"> Reduction in intensity at an annualized rate of 1% Plan and implement measures for improving recycling water ratio
Chemical substance management	1. Thorough new chemical substance management	<ul style="list-style-type: none"> Thorough management of permitted production volumes (confirmed) and production results Communicated reporting of harmful substance information, etc., at the time of acquisition 	◎	<ul style="list-style-type: none"> Thorough management of permitted production volumes (confirmed) and production results (ongoing) Communicated reporting of harmful substance information, etc., at the time of acquisition (ongoing)
	2. Compliance with legal and other requirements for chemical substance control	<ul style="list-style-type: none"> Responded to revisions and strict compliance with the Chemical Substances Control Law², Industrial Safety and Health Act, PRTR Law³, and Poisonous and Deleterious Substances Control Act Strict compliance with overseas laws and regulations Implement control of PCB waste and dispose required by the deadline (Deadline: 2022) 	◎	<ul style="list-style-type: none"> 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) Compliance with overseas laws and regulations (ongoing) Implement control of PCB waste and dispose required by the deadline (Deadline: 2022)
	3. Information disclosure on the harmfulness of chemical substances	<ul style="list-style-type: none"> Information disclosure and awareness raising of substances handled by contractors and subcontractors 	○	<ul style="list-style-type: none"> Confirmation of well-known situations and information provision related to substances handled by contractors and subcontractors (ongoing)

¹BOD (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.

²Chemical 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.

³PRTR 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 fiscal 2016 to fiscal 2019

* Evaluation standards

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

— Performance and Outcome

Environment Management

— Environment Management System

Environment Management

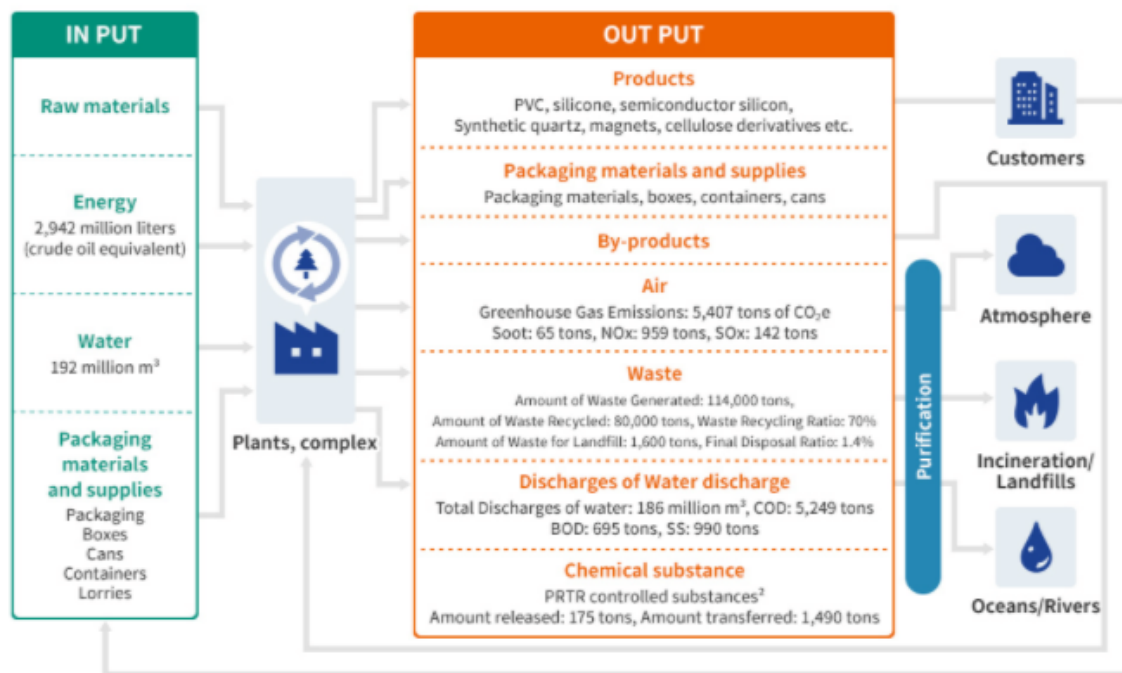
The Group works on energy savings, waste reduction and chemical substance management as important issues. We annually create the Shin-Etsu Group Environmental Safety Management Plan in accordance with the Responsible Care Codes¹ and set goals using numerical numbers. The Company and all the plant of our Group companies set goals annually according to this plan and working to achieve them. Annual activity results are reported to the director in charge of the environment control at the Group Environmental Protection Conference.

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

Promoting the Reduction of Environmental Impact

The Group constantly works to promote the reduction of environmental impact during 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. Research, Manufacturing and Sales divisions are united to develop such products. These well-examined products are used in various fields including manufacturing industry, our daily lives as well as renewable energy industry.

Reducing the Environmental Impact of Business Activities



1 Responsible Care Codes

Six principle areas are addressed when implementing Responsible Care: environmental preservation, process safety (and disaster prevention), occupational health and safety, distribution safety, chemical and product safety, and social dialogue (with the public). The codes initiatives in these areas, together with the Management System Codes required for operating all the above.

2 PRTR controlled substances

462 substances designated as Class I designated chemical substances from the "Pollutant Release and Transfer Register in the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management."

※ In order to clearly define the power consumption reduction efforts, the average power-CO₂ conversion factor from 2000 to 2009 is used.

※ Waste standards and PRTR controlled substances differs from country to country, the figures for the Company and Group companies in Japan were counted.

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

※ Final disposal ratio indicates the ratio of an amount of landfill waste to total waste generated.

Targets and Results

The following are Targets and Results for environmental protection and chemical substance management for FY2019 as well as Targets for FY2020.

➤ Target, Implementation Status, Evaluation, and Planned Implementation Items

Environmental Certification

In 1996, Shin-Etsu Chemical's Gunma Complex obtained ISO 14001 certification, becoming the first facility of a major chemical company in Japan to achieve such certification. The Group has continued to obtain ISO 14001 certification, the international standard for environmental management systems.

➤ ISO 14001 Certification of the Shin-Etsu Group

➤ ESG Data

— Environmental Accounting

In FY2019, the Company referring calculated to the Environmental Accounting Guidelines 2005 prepared by the Ministry of the Environment in Japan calculated the investments and expenditures involved in the reduction of the environmental impact of air pollution, water pollution, environmental release of chemical substances, etc.; energy-saving measures to conserve the global environment; and waste reduction and recycling to improve reuse of resources.

Environmental Conservation Costs in FY2019

million yen

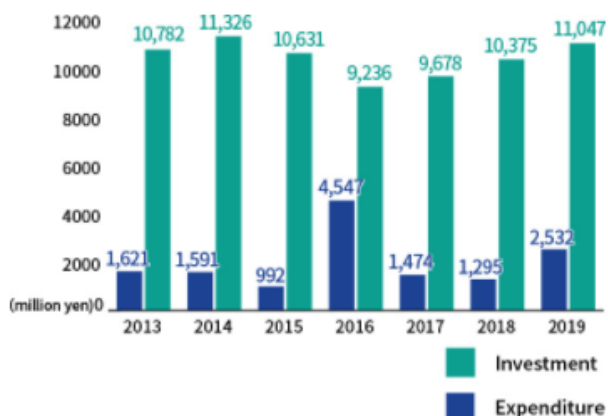
Category	Details	Investment	Expenditure
Plant area costs		2,456	9,115
(1) Pollution prevention costs	Prevention measures for air, water, noise and other type of pollution	498	3,566
(2) Global environmental conservation costs	Energy saving and global warming mitigation measures	1,132	3,358
(3) Resource recycling costs	Waste reduction, recycling and other measures	826	2,191
Upstream and downstream costs	Green purchasing and container and packaging measures	24	45
Administration costs	Environmental management, environmental impact monitoring and environmental education measures	42	360
Research and development costs	Research and development of environmentally conscious products and processes	0	1,407
Social engagement costs	Donations and contributions to environmental saving	10	80
Environmental remediation costs	Assessment, handling and other costs related to environmental pollution	0	39
Total		2,532	11,047

Economic Benefits of Environmental Accounting in FY2019

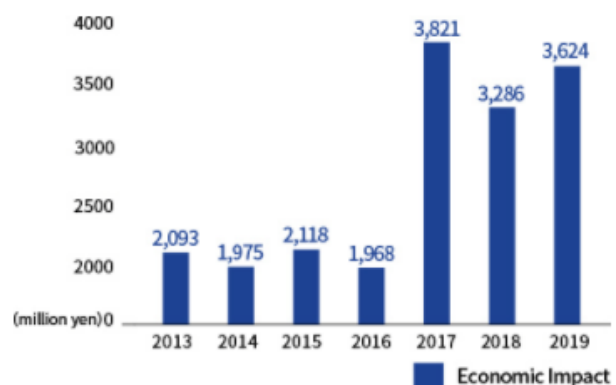
million yen

Details of benefits	Economic benefit
Energy saving	135
Improved production efficiency	3,546
(1) Production process	3,303
(2) Secondary materials costs	243
Reduction in waste treatment costs	-153
Profit from sale of valuable resources	96
Total	3,624

Cost of Environmental Conservation: Investment and Expenditure



Economic Impact



Mid-term target

Reduce the greenhouse gas emissions in production intensity to 45% of the 1990 level by 2025.

Results and evaluation in FY2019

The achievement was 54.1% at the Shin-Etsu Group and 49.5% at Shin-Etsu Chemical.

FY2019

Target : Reduce energy consumption in production intensity at an annualized rate of 1%

Results : The annualized reduction rate from FY2016 to FY2019 was 0.3% for Shin-Etsu Chemical and 1.1% for the Shin-Etsu Group.

Evaluation : Shin-Etsu Chemical achieved the target.

FY2020

Target : Reduce energy consumption in production intensity at an annualized rate of 1%

— Results

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

Starting from FY2010, the Group has implemented energy savings and installation of a cogeneration system in addition to introducing innovative technologies, in order to achieve the mid-term goal which is "Reduce the greenhouse gas emission per production unit to 50% of the 1990 level by 2015". Furthermore, in FY2016, we set a new mid-term target of "Reduce the greenhouse gas emissions in production intensity to 45% of the 1990 level by 2025", and we have been working towards that goal. In FY2019 we started reducing power consumption by deploying cogeneration systems with gas turbines as well as improving electrolytic cells with high-performance ion-exchange membranes, among other initiatives.

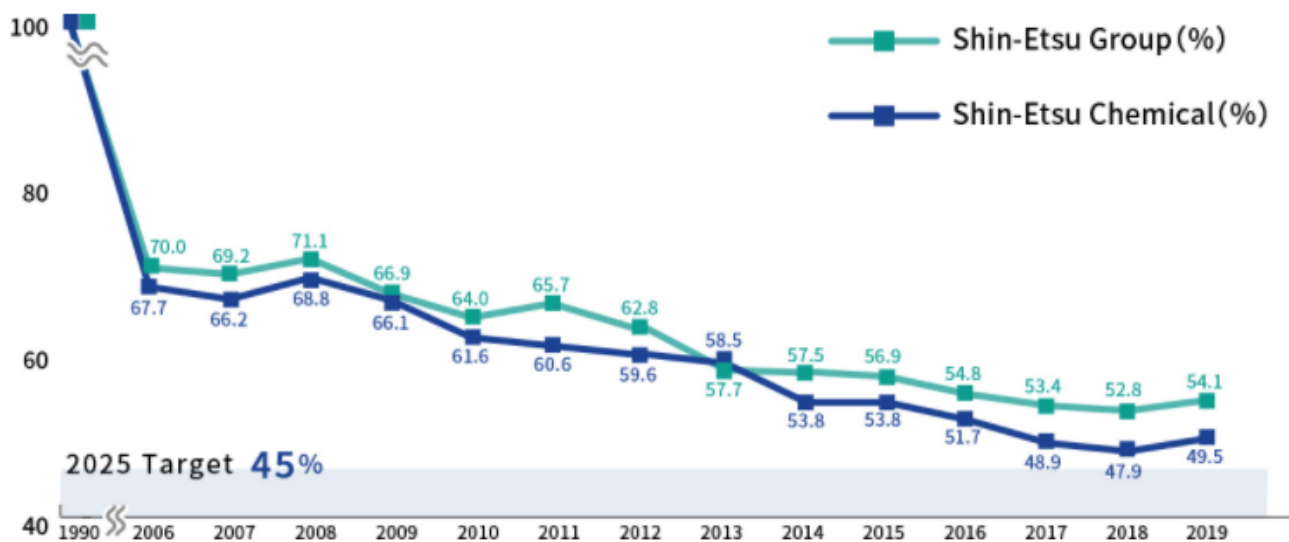
Regarding the greenhouse gas emissions intensity for FY2019, the Group and the Company achieved 54.1% and 49.5% of the 1990 level respectively.

Also in May 2019, The Shin-Etsu Group announced our support for the recommendations from the TCFD¹. We also participated in the TCFD Consortium of Japan². We will continue to disclose information regarding climate change in line with the TCFD recommendations.

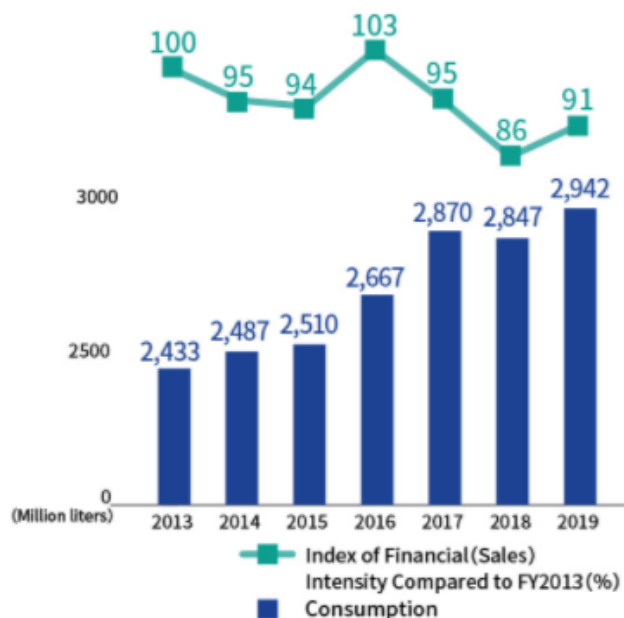
Related Information

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

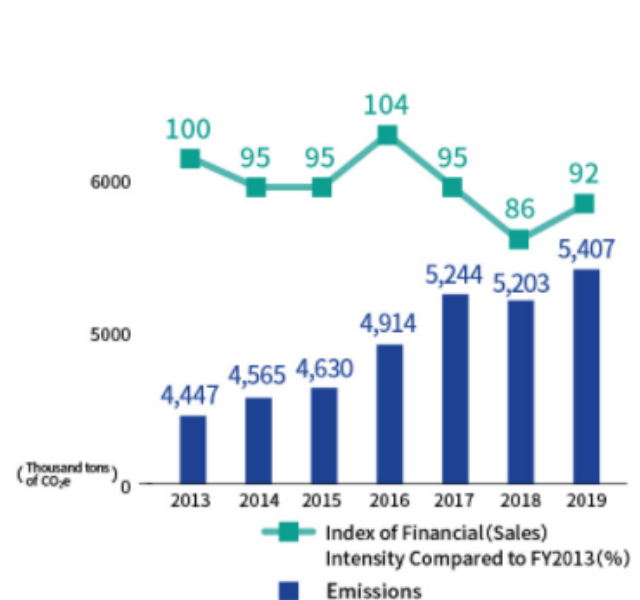
Changes in Greenhouse Gas Emissions in Production Intensity Relative to FY1990 Level



Energy Consumption (crude oil equivalent)



Greenhouse Gas Emission Volume Trends



Greenhouse Gas Emission Volume Trends(sales intensity)



* Sales Intensity=emission(CO₂-tons) / Consolidated or non-consolidated sales(million yen)

* Scope of aggregation of greenhouse gas emissions Shin-Etsu Group: Group companies include nonconsolidation Five chemical companies(except Shin-Etsu Group): 3 consolidated, 1 major group companies, 1 non-consolidated



1 TCFD

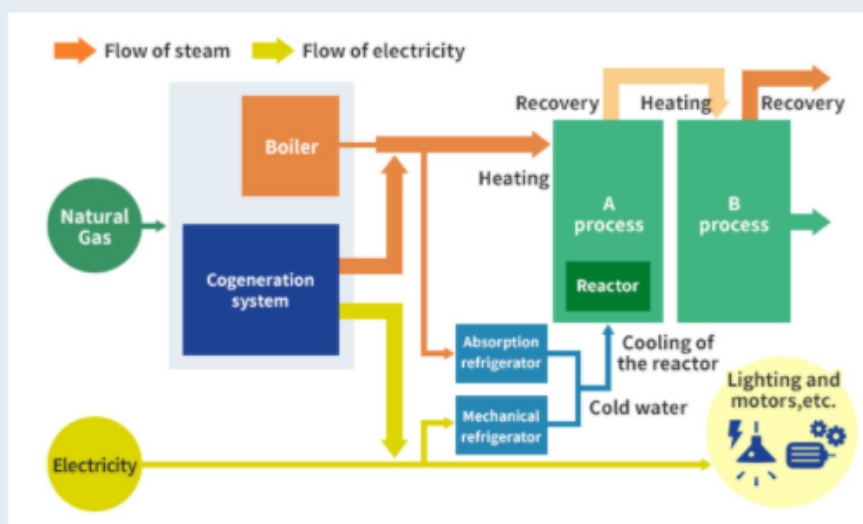
TCFD (The Task Force on Climate-related Financial Disclosures) It is a special team focusing on climate change disclosure, and was established by the Financial Stability Board (FSB) in September 2015. In July 2017, the TCFD has published a set of recommendations in which it calls for corporations to disclose the impacts of climate change ,which was forecasted for mid to long-term, to their financial reports.

2 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 Environment in May 2019. Companies and financial institutions who 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 or any other investors.

Thermal energy recycling initiatives

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



Flow of steam and electricity at the plant

■ Introducing Cogeneration

Steam and electricity are produced in a plant using a cogeneration system¹. Electricity made with the cogeneration system is supporting the operation of manufacturing. In addition, steam is being used for heating and thermal insulation for manufacturing equipment. Steam used for heating will not be emitted but will be reused for manufacturing equipment in which steam with lower temperature can be used. The steam is finally changed 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 mainly collected as steam to make cold water in the absorption refrigerator. This chilled water is used for cooling the manufacturing equipment, etc.

¹ 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 heat which would be generated.

Scope 3 Greenhouse Gas Emissions

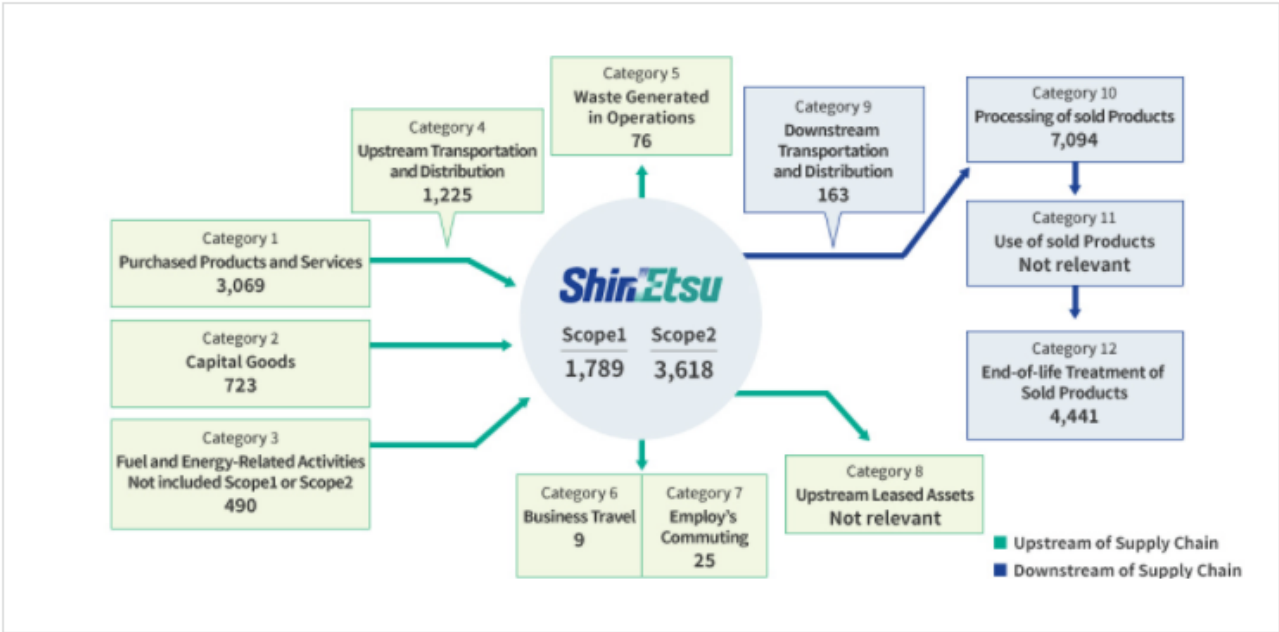
The Group's Scope 3 greenhouse gas emissions for FY2019 were 17,315 thousand tons of CO₂, amounting to 76% in the supply chain¹.

1 Supply chain
All stages of a product from raw material production until it reaches the final customer.

Related Information

> Environmental Data 

Scope 3 Emissions by Category in FY2019 (unit: thousand of tons CO₂e)



* Greenhouse Gas Emission Calculation Range
SCOPE 1: Direct emissions from facilities it owns or governs (example: emissions during combustion of materials such as heavy oil and natural gas).
SCOPE 2: Emissions during production of purchased energy (example: emissions during power generation of purchased power).
SCOPE 3: Emissions from the supply chain.

Shin-Etsu Chemical's products that contribute to actions to combat climate change



The Group's products are contributing to actions to combat climate change, as they are used for a wide range of final products worldwide. This helps achieve Goal 7 of the Sustainable Development Goals (SDGs), "Affordable and clean energy," and Goal 13 of the SDGs, "Climate action." Sales in FY2019 of products that contributed to these two goals were 186 billion yen.

Related Information

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

Conserving Resources

— Water Resource Conservation, Water Pollutant Elimination



FY2019

Target : Achieve 1% reduction of water withdrawal in intensity at an annualized rate
Achieve 1% reduction of water pollutant discharge in intensity at an annualized rate

Results : The annualized reduction rate from FY2016 to FY2019 was 6.7% in the water withdrawal volume and increased 2.9% in the BOD emissions amount

Evaluation : The water withdrawal volume achieved the target.

FY2020

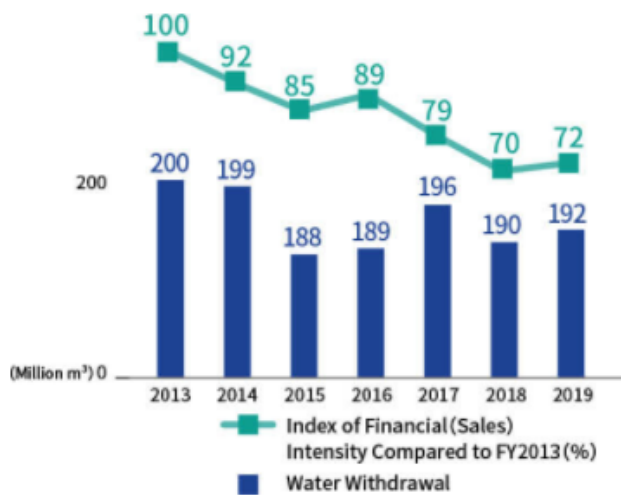
Target : Achieve 1% reduction of water withdrawal in intensity at an annualized rate
Achieve 1% reduction of water pollutant discharge in intensity at an annualized rate

— Result

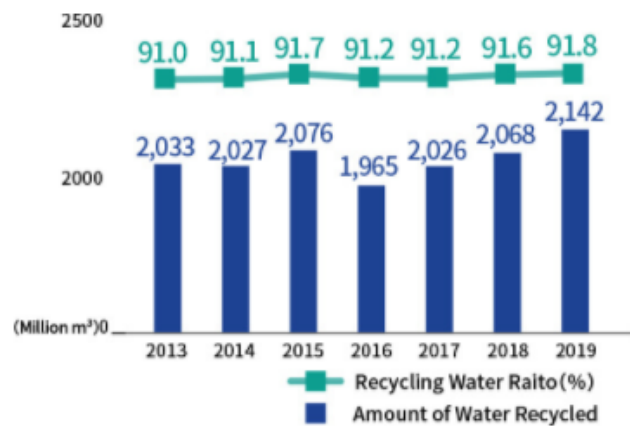
The Shin-Etsu Group's major manufacturing plants are located where clean water is abundant. However, due to the scarcity of water in many regions of the world, the United Nations Environment Program (UNEP) has predicted that water scarcity in some regions will become serious by the year 2025.

The Group carries out water risk assessments and works proactively to conserve water resources on a routine basis by reducing water withdrawal, ensuring water is recycled, and implementing thorough wastewater purification and water quality management. We also comply with regulations concerning water contaminants in emitting water, and check the water quality ourselves for verification.

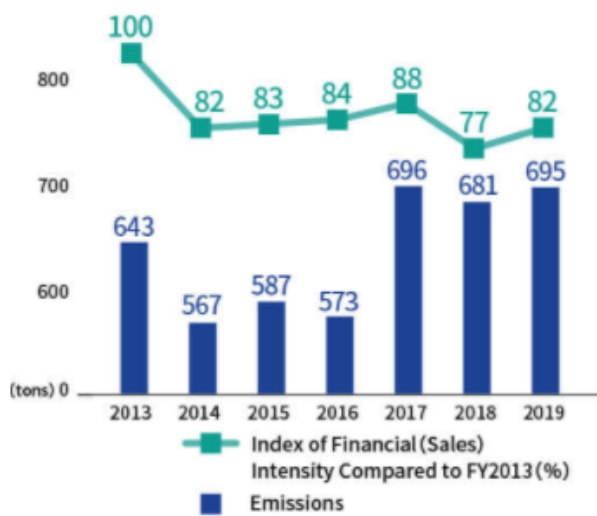
Water Withdrawals Trends



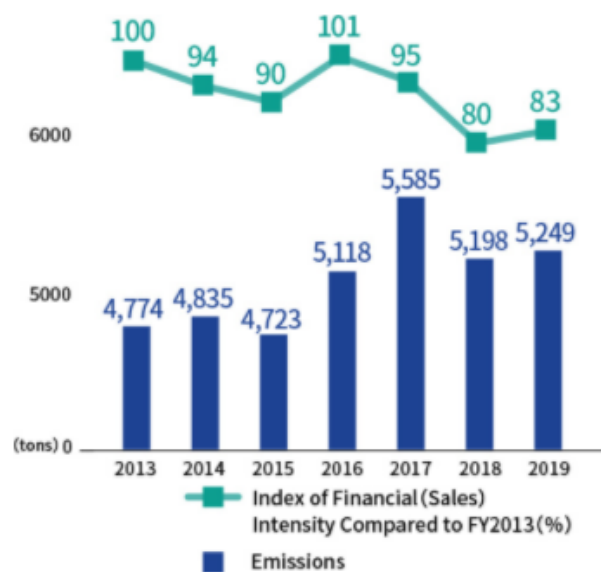
Amount of Water Recycled Trends



BOD Emission Volume Trends



COD Emission Volume Trends



Related Information

> ESG Data

> Environmental Data 

— Employee Initiatives



Shin-Etsu Chemical
Naoetsu Plant Mr.S,
Environment and Safety
Department

I manage various emissions from our plants appropriately.

1.Please tell us about your business.

Many substances are discharged from the production processes of the Group's plants, but we are actively working to improve the environment, not merely complying with laws and regulations. The main issue facing the plant is to reduce the risk of releasing waste water from the production process to the outside of the plant. Examples include optimizing the drainage system, separating drainage from production processes and rainwater, and improving the quality of discharged water.

2.How is the Naoetsu Plant working to reduce BOD and SS?

At this plant, wastewater, including high-concentration BOD and SS¹ generated in the production process, is treated and adjusted to below emission standards for biological treatment facilities (anaerobic and aerobic treatments) and sedimentation treatment facilities before being released into rivers. Currently, we are working to reduce the risk of releasing BOD and SS into rivers by improving the efficiency of biological treatment, increasing treatment capacity, and reviewing and optimizing wastewater systems. To reduce the risk of environmental pollution through early detection of irregularities, we are expanding our lineup of measuring and monitoring instruments, such as TOC², turbidity³, and pH⁴, at each site of the plant's drainage grooves. As the total amount of wastewater discharged from plants is large, even a small reduction in BOD emissions would result in a significant reduction in the annual amount of BOD emissions. It is difficult to optimize how to treat wastewater at the optimal location while satisfying the requirements of many related laws, such as site conditions and layout regulations, taking into account feasibility. However, achieving SDGs target of 12 "Responsible Consumption And Production" is linked to the achievement of environmental impact reduction even when facilities are being expanded in order to develop new businesses and new products.

1 SS (Suspended Solids)

A generic term for insoluble substances with a particle size of 2mm or less suspended in water. One of the water quality indicators.

2 TOC(Total Organic Carbon)

The amount of carbon contained in organic matter in water. It is used as an indicator of organic pollution.

3 Turbidity

An indicator of the degree of water turbidity.

4 pH

Potential of hydrogen. Represents the degree of acidity, alkalinity of the solution.

Water Resource Conservation Efforts by the Shin-Etsu Chemical Gunma Complex

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

The Gunma Complex is situated in a rich natural environment. Downstream from the nearby rivers sits the Tokyo metropolitan area where these rivers sustain the daily lives of its residents as well as 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** water and **ensuring there is no water leakage outside of the Complex**.

Besides **purifying** the water before return 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, they separate rainwater to prevent inflow of rainwater during heavy downpours as a measure to protect their treatment facilities from being damaged by natural disaster. In addition, since 2014 they have been carrying out seismic strengthening works assuming large-scale earthquakes.

By effectively utilizing limited water resources, the Gunma Complex will continue to fulfill its responsibility as an upstream located production base.



Water Flow at the Shin-Etsu Chemical Gunma Complex (FY2019)

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 plentiful 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 fire fighting in the event of an emergency. It also supplies Group company Shin-Etsu Silicones Thailand and its nearby partners with rainwater for uses such as industrial water.



— Waste reduction



FY2019

Target : Achieve zero waste emissions (landfill waste 1% or less of the final amount of all waste generated)

Promotion of reduction of waste generation in intensity

Results : The final waste landfill disposal rate was 1.41% in the Shin-Etsu Group and 1.31% in Shin-Etsu Chemical

Evaluation : The target was not achieved

FY2020

Target : Achieve zero waste emissions

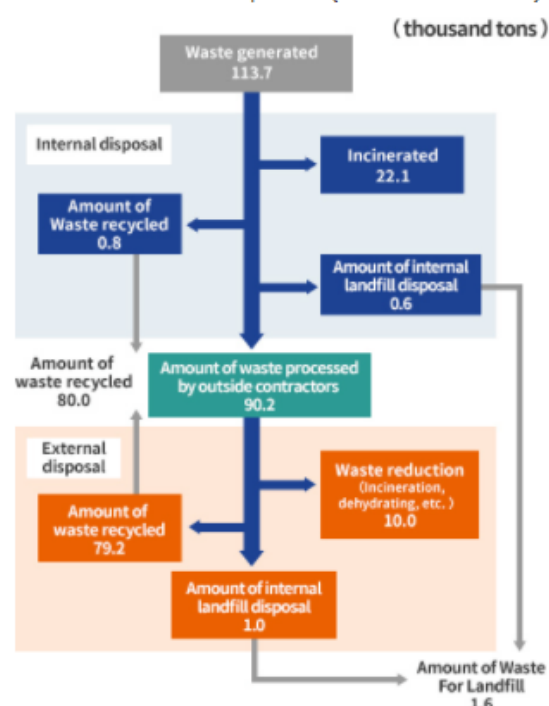
Promotion of reduction of waste generation in intensity

— Results

Although the production volume in FY2019 increased compared to FY2018, the amount of waste generated, the amount of waste recycled, and the amount of waste for landfills decreased. In FY 2019, we endeavored to reduce waste sulfuric acid by refining and recycling it, and reduce wastewater sludge by readjusting polymer coagulants and neutralizing agents.

We have external contractors to handle our disposals. We check to confirm that the contractor properly handles disposals by regularly inspecting their operation.

Flow of Waste Disposal (thousand tons)

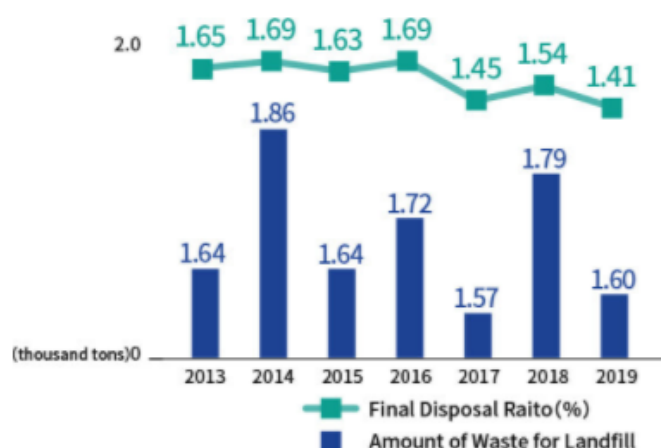


*The figures are aggregated only for Shin-Etsu Chemical and group companies in Japan because waste standards differ from country to country.

Amount of Waste Recycled



Amount of Waste for Landfill



Related Information

> Environmental Data

Waste Recycling at Overseas Group Companies



Drew Harris General
Manager - Production

Simcoa's Waste Utilization

As an environmental initiative, Simcoa in Australia, manufactures and sells silicon metal, is committed to waste utilization. The waste utilization not only reduces environmental impact but also results in waste materials becoming a valuable resource by treating them as a by-product, and as such, the company is positively working towards reuse.

Charcoal is one example of a way in which waste materials are utilized. Wood from forest clearing for a bauxite mining operation is processed to produce charcoal. Previously, the wood from the forest clearing operations was partially burnt, however, in 2004 the company began producing charcoal for incineration with the goal of effectively using the resource as a by-product.

Currently, Simcoa uses 100,000 tons of wood to produce 25,000 tons of charcoal each year. The source for the wood is felled trees from the bauxite mining operation, plantation wood, waste from sawmill and so on.


Other examples of waste utilization in addition to charcoal are listed below. We hope these example initiatives help to demonstrate our commitment to the environment and waste utilization.

Silica fume	Amorphous silica fume is a by-product of silicon metal. Initially when Simcoa began operations, there was no market for silica fume and the waste had to be buried in an on-site landfill. Simcoa developed a market in Australia for silica fume as an additive to increase the strength of cement, and has sold its silica fume for the past 25 years.
Charcoal fines	Fine charcoal is screened off from the lump charcoal because it cannot be used in the silicon metal furnaces and is sold for the production of barbecue briquettes.
Dross	A certain amount of slag ¹ is generated as a by-product during the manufacturing process of silicon metal. Slag is treated as a waste product by most silicon smelters, however, Simcoa sells this slag as a resource for producers of steel for deoxidization.
Sawdust and wood mulch	Sawdust and wood mulch are generated during cutting timber. It is sold for use in soil improvement. Investigations are underway into the potential use of this by-product for biomass energy generation in the future.
Undersized quartz	As some of the quartz rock recovered from the quartz mine is too small for use in the silicon metal furnaces, it is sold as flux materials for use in metallurgical operations and as decorative stone for use with concrete.

¹ Slag

Slag is a waste produced when molten metal is separated into fractions during metal smelting.

Related Information

> [Simcoa Operations](#) 

— 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 through reuse of resources.

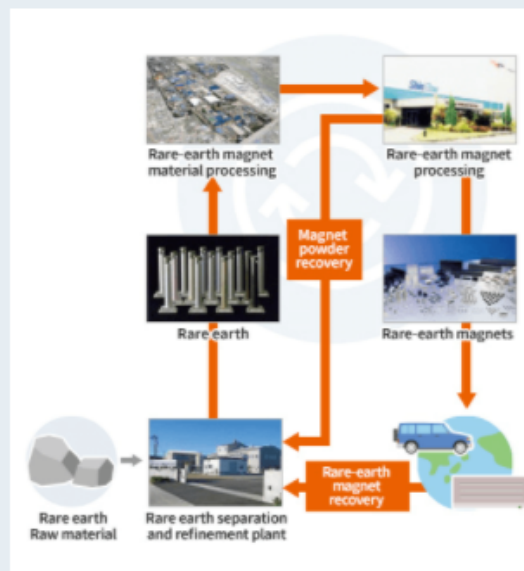
Rare Earth Magnet Resource Recycling

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

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

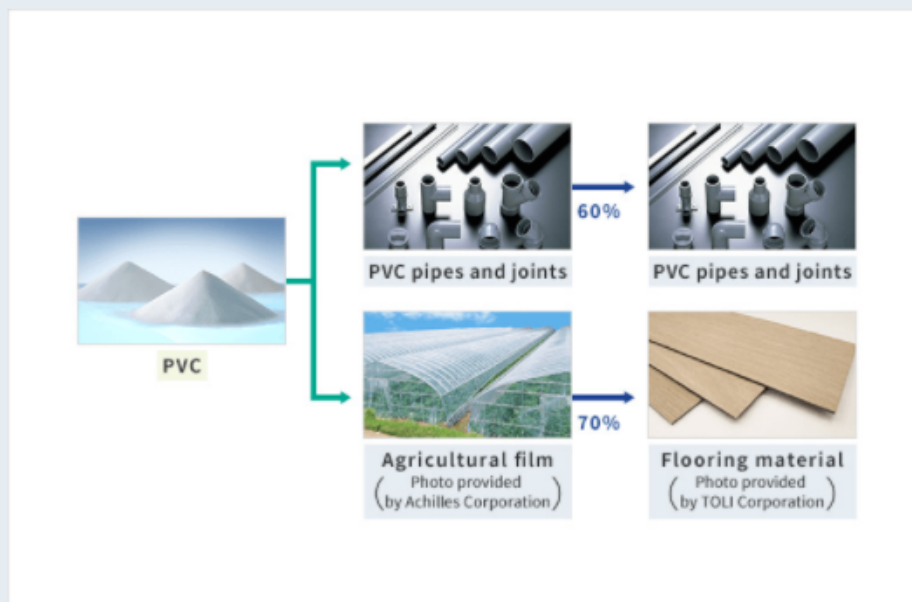


Recycling of PVC Products

Initiatives for the recycling of 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 of PVC Products



Related Information

> Vinyl Environmental Council 

Recycling 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 at a frozen states to stabilize 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 replaced packaging with newly developed 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 taking on the challenge for the Group. Our group is working on this issue together with the Japan Initiative for Marine Environment¹.

¹ 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 as the whole chemical industry.

— Conservation of Biodiversity

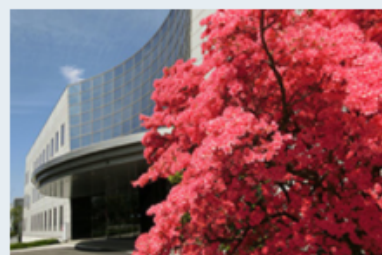
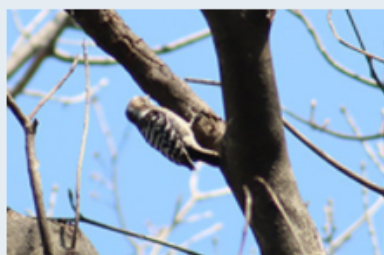
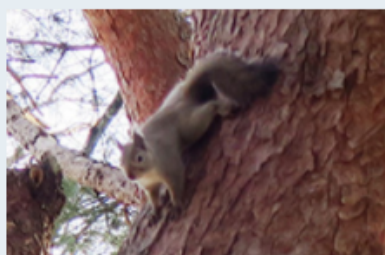


The Shin-Etsu Group aims for environmentally considerate product design starting already from the product development stage. At the same time, we are also meeting our responsibilities as a chemical company by working actively to ensure strict control of chemical substances, mitigate global warming, reduce energy consumption, reduce the amount of waste generated, prevent water pollution, and make other environmental contributions. We are also engaged in activities such as tree planting in our plant site in compliance with the Factory Location Act (Japanese law) and voluntary river cleaning in areas neighboring 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 2019, Shin-Etsu Chemical Takefu Plant)



Animals and plants that live and grow in the plant site (From the left, squirrels, Japanese pigmy woodpeckers, and Kirishima azaleas/Shin-Etsu Handotai Shirakawa Plant)

Pulp suppliers' biodiversity conservation efforts

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

— Release of Chemical Substance



The Group strictly manage the discharge of chemical substances required. The Group works on reducing chemical release with proper manufacturing processes as well as establishing the proper operation conditions of pollutant treatment facilities. In addition, the Group reports the amount of chemical substance released and moved in natural environment according to the PRTR system¹ in the PRTR Law².

The Group does not use or produce substances that fall under the Stockholm Convention on Persistent Organic Pollutants³

¹ 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."

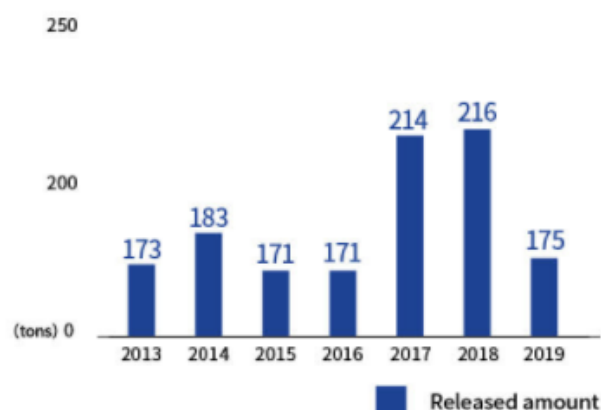
² PRTR Law

Short for "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof." 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.

³ 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: Total Release Trends



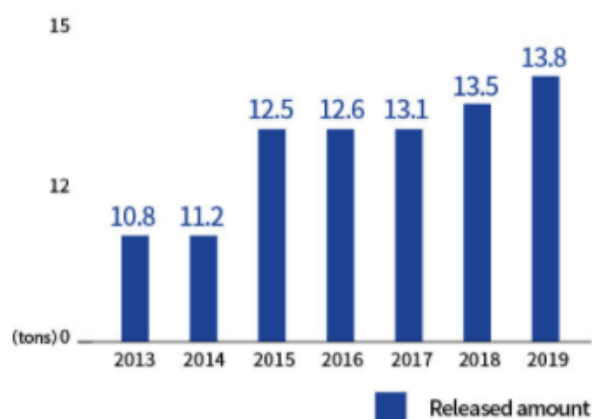
PRTR Controlled Substance: Total Amount Transferred Trends



PRTR Controlled Substance: Chloromethane Release Trends



PRTR Controlled Substance: Chloroethylene Release Trends



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

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

Related Information

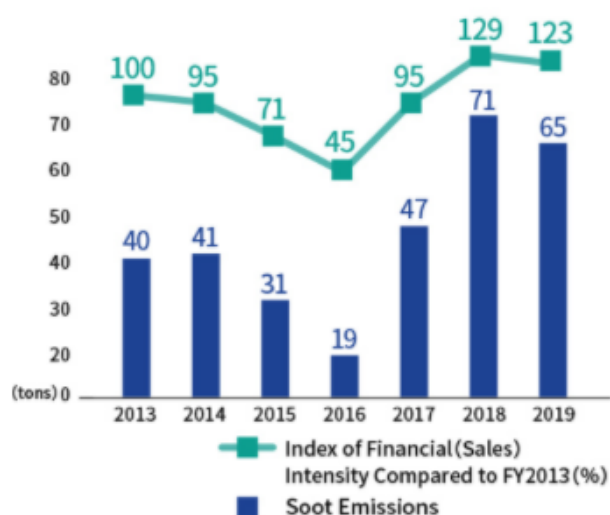
> Environmental Data 

— Prevention of Air Pollution

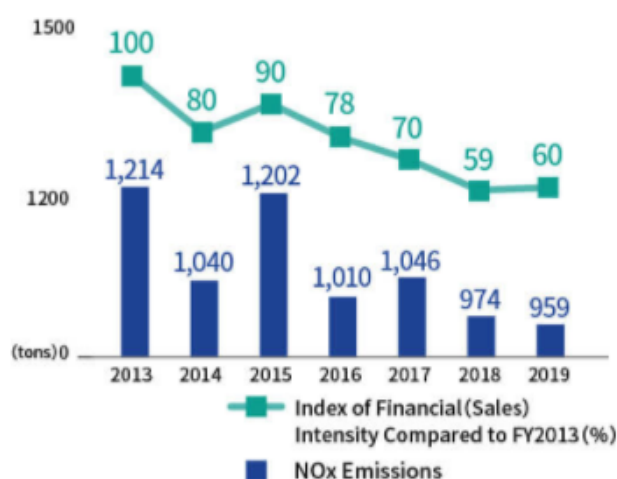


The Group is working to reduce emissions of air pollutants by setting emission reduction targets at each of our Group companies and by converting to fuel components with less sulfur. Each group company carried out regular investigations on emitted gas to confirm compliance with laws and regulations. In FY2019, production volume increased, but Soot, NOx and SOx emissions decreased.

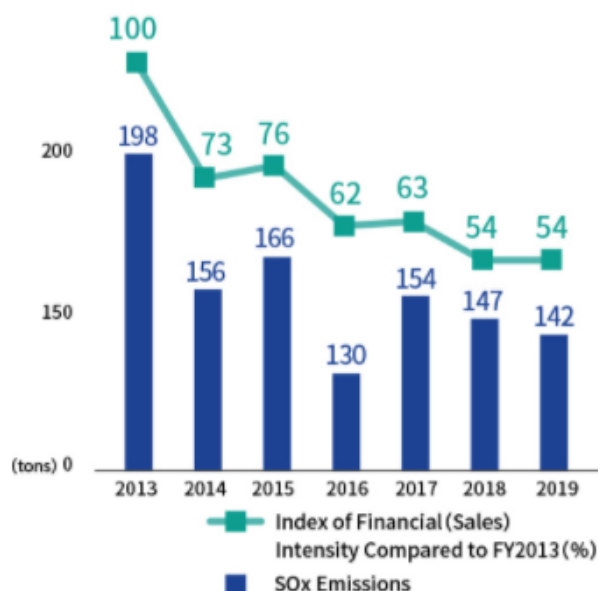
Soot Emissions Trends



NOx Emissions Trends



SOx Emissions Trends



Related Information

> ESG Data

> Environmental Data

— Prevention of Soil Pollution



Groundwater and soil monitoring at each plant is being carried out in accordance with the Soil Contamination Countermeasures Act, and we make sure that we are in compliance with laws and regulations. In FY2019, at its plant sites, the Company monitored groundwater and soil as total of 195.

— Product quality improvements and product safety control —

— Awareness of issues

The superior quality of general-purpose products as well as high-value-added products will lead to price competitiveness and leading to a high level of advantage. 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, we recognize that product quality is an important factor not only in terms of characteristics, but also in terms of environmental and health safety. The Group is working to achieve “zero quality problem”.

— Major Risks and Opportunities

Risks

- Loss of trust due to product quality issues.
- Direct or indirect impacts on product safety.

Opportunities

- Earn the trust of customers based on our track record of delivering products of promised quality on time.
- Efforts to ensure product safety lead to trust from customers and society.

— Shin-Etsu Group approach

■ Policy

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

Basic approach

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

— Performance and Outcome

Quality/Product Safety

— Quality control

The Group is making a continuous effort on stable supply of the high quality products for customers. We have established a robust internal quality management system to strictly carry out quality control, and are continuously striving to improve quality, stability and efficiency.

Customer requests are promptly and accurately informed to the research centers and production departments through the sales department, and utilized for research and development of new products and improvement of existing products.

The products are delivered to customers after final inspections, taking into account the characteristics of the products and the applications on customer's end.

Each the Company's division and/or Group companies sales department, research and development department, manufacturing department and quality assurance department cooperate in roles as in the following in order to meet the requests of our customers.

Sales department

Listen to the customer requests, and promptly and accurately share such information with our research and development departments as well as the production departments.

Research and development department as well as the production department

Utilize the customer requests for the improvement of existing products and research and development of new products.

Also actively promoting automation of the manufacturing processes in order to improve quality stability.

Quality assurance department


Make a final confirmation on product taking into account the product characteristics and the customers use. We have enhanced the accuracy of quality measurement by advancing the automation of measurement processes to eliminate variations derived from quality measurement personnel, sample preparation, and measurement procedures. In addition, measurement results are stored in the database and utilized to prevent typing errors when creating inspection tables and labels.

Almost all of the Group's manufacturing bases, both domestic and overseas, have obtained certification of the quality control systems such as ISO 9001, IATF16949¹, etc. We have also established a strict rule to respond to all quality inquiries from customers within 2 business days of receipt.

¹ IATF16949

It is a quality management system for automotive industry.

Related Information

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

— Employee Initiatives



Shin-Etsu Chemical
Gunma Complex Mr.I,
Inspection Group,
Quality Assurance
Department

IT training provided insights for utilizing AI in quality inspections

1.Please tell us about your job.

In my department, we inspect the products of silicone and organic materials. My main work is to consider, propose, and execute the introduction of inspection facilities and equipment, including the introduction of automated inspection equipment and the construction of inspection systems.

2.Why did you wish to participate in IT training?

Many product inspections rely on human feelings to determine whether a product is acceptable or not, and therefore automatic discrimination that is not influenced by human subjectivity has been desirable. In recent years, AI-based image analysis technology has been rapidly developed and popularized. I took an IT training course because I hoped that I could deepen my knowledge of AI and apply the technology to inspection operations such as visual inspection.

3.Among what you learned at IT training, what do you expect to be put to practical use?

First, in the AI lecture, I learned how to handle big data and how to treat various algorithms of AI. We were then divided into several people to obtain practical knowledge and experience by conducting case studies and discussions based on past AI analysis examples. I believe that this has enabled us to quickly utilize AI in the workplace. Product inspections involve enormous quantities of inspection data.

By comprehensively analyzing this data in AI, we believe that it is possible to detect defective products with a higher level of precision, in addition to the experience and judgment of individuals. In addition, I believe that we can achieve even higher quality control if we can achieve stable inspection decisions that are not based on human subjectivity by implementing the AI image analysis technologies described in the previous section, especially the appearance inspections of products using deep learning.

— Quality Audits and Support

Since 2000, to improve quality and customer service we have conducted quality audits annually. Quality control activities are evaluated according to two different viewpoints, which are the customers' viewpoint and quality cost viewpoint. We work to find the root cause of quality issues and to make an effort toward the recurrence prevention.

In the quality audit in 2019, the following items were audited as priority items.

- ① Automation of manufacturing processes to prevent careless human errors caused by workers' assumptions and misunderstanding
- ② Enhanced the accuracy of quality measurement by advancing the automation of measurement processes to eliminate variations derived from quality measurement personnel, sample preparation, and measurement procedures.
- ③ In order to prevent typing errors when creating inspection reports and labels, we have established a system for automatically incorporating inspection data into a database.

Furthermore, Six Sigma¹ programs are deployed on a company-wide basis in order to improve the quality level.



Quality audit
(August 2019, Shin-Etsu Chemical
Kashima Plant)



The 20th debrief session of the results of
Shin-Etsu Six Sigma
(February 2020, Shin-Etsu Chemical
Head office)

¹ Six Sigma programs

Quality improvement method developed by Motorola in the 1980s. Focused on processes where quality variation appears, it is designed to minimize variation within the processes and thereby reduce the incidence of quality defects. This approach has been adopted across the Group.

— Product Safety Control

Product safety is being managed from product development to delivery based on internal regulations. Regarding the safety of new chemical substances, risk assessment and confirmation for environment and health is performed at the development stage. Regarding the development of new chemical substances, we focus on products as well as their manufacturing technologies which do not use hazardous substances that have been designated by the Industrial Health and Safety Law and Chemical Substances Control Law¹, as well as the EU RoHS risk assessment Directive². Furthermore, we ensure to submit necessary notifications and reports according to laws and regulations.

We offer customers information such as product hazards and risks in the form of SDS³ in order to ensure proper transmission of information to the value chain.

In addition, we request customers to handle products safely by complying with laws and regulations, installing abatement equipment, wearing protective equipment, etc through SDS.

As a product transportation safety measure, we issue Yellow Cards⁴ and/or Container Yellow Cards⁵ that are affixed to containers. In accordance with the Industrial Safety and Health Act, we also implemented pictorial indication of hazard and harm in accordance with GHS⁶ on product containers and packaging.

1 Chemical Substances Control Law

Short for "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.

2 RoHS (Restriction of the Use of Certain Hazardous Substances)

Directive EU directive on restricting the use of certain hazardous substances in electrical and electronic equipment.

3 SDS (Safety Data Sheet)

SDS lists the physical and chemical properties of the chemical substance together with 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 at the point of sales or shipment.

4 Yellow Cards

The yellow cards are cards on which all relevant information on treatment required in case of an accident during transportation of chemical substances is described. The cards are handed to the transport contractor to be brought by tanker lorry or other means at the time of transportation.

5 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 safety information such as UN number of chemical name and emergency response procedure number.

6 GHS (The Globally Harmonized System of Classification and Labeling of Chemicals)

Internationally standardized system of classification and labeling of chemicals.

Related Information

➤ ESG Data

Promoting CSR procurement and the diversification of supply sources

— Awareness of issues

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

— Major Risks and Opportunities

Risks

- Impact of inability to procure raw materials, such as discontinuation of manufacture and shipment delay to customers.
- Problems arising in the supply chain.

Opportunities

- Procurement of raw materials at optimal prices through multiple supply sources.
- Earn the trust from customers and society by thoroughly implementing CSR procurement.

— Shin-Etsu Group approach

■ Policy

The Group will take measures to ensure stable procurement of raw materials based on fair procurement.

Basic approach

- Revision of Shin-Etsu Group CSR Procurement Guidelines
- Compliance with subcontracting law through attendance of seminars and internal audit
- Initiatives Aimed at Eliminating the Use of Conflict Minerals
- Implementation of Supplier CSR Procurement Survey

— Performance and Outcome

Promoting CSR procurement, Diversification of supply sources



This policy is ensured in the Group and posted on the website. We ask suppliers to understand the Basic Procurement Policy and the CSR Procurement Guidelines, and to incorporate the content of the Policy into their supply contracts. We held explanatory meetings of the guidelines for suppliers in July 2017 and January 2018. It was to ask suppliers for understanding and cooperation to our promotion of CSR procurement. We have also familiarized this guidelines to all employees of the group through the internal bulletins.

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 (CHAIRA).

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



Shin-Etsu Chemical
Headoffice
Mr. A, Mr. S, Purchasing
Department

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 were the motivations for the development of 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 Guidelines to explain the Basic Procurement Policy more specifically and to disseminate it both inside and outside the company.

The Guidelines were developed based on the 5.0 version of the EICC (now RBA)¹ Code of Conduct, which was then the industry-standard. We added our own items, such as business continuity planning, to it. Through the development of the guidelines, we have clarified what we should keep in mind on CSR procurement as the procurement department and what we need to request to our suppliers.

3. What was the focus of the 2019 revisions?

The revised RBA Code of Conduct 6 in 2018 incorporated changes in the Guidelines. At the same time, specific examples of business continuity plans were provided to make the plan 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 of the guideline, more suppliers will be informed of the guidelines, which will lead to stable, fair and impartial procurement.

¹ EICC (currently RBA)

A CSR Alliance for electronics industries. In 2018, it renamed to the current Responsible Business Alliance (RBA). It sets standards for ensuring that the work environment is safe, treating workers with respect and dignity, and carrying out environmental responsibilities, as well as ethical business practices, in industries with electronic or electronic components and in their supply chains.

— 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 the Act. We also conduct regular internal audits of subcontracting transactions to ensure full compliance with the Subcontract Act. In addition, we make sure that all the 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.



Internal auditing for compliance with the
Act against Delay in Payment of
Subcontract Proceeds, Etc. to
Subcontractors
(December 2019, Shin-Etsu Chemical
Kashima Plant)

— Responsible Sourcing of Minerals

In our Basic Procurement Policy, the Group has declared our dedication to eliminating minerals, that are clearly involved in conflicts and human rights infringement in conflict-affected and high-risk areas (CAHRA), from 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 smeltery level.

— Procurement Audit

By asking business partners to reply to 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. This meeting is not only for reporting material procurement but also for training purchasing department personnel according to the Guidelines for CSR Procurement and checking the status of CSR procurement as well as learning the latest examples of CSR Procurement inside and outside the Company.



Procurement conference (September 2019, Shin-Etsu Chemical Head office)

— Control of Chemical Substances Used as Raw Materials

The Group checks the ISO 14001 acquisition status of business partners and considers giving a priority to do business with suppliers that have ISO certification so as to purchase materials of lower environmental impact. On making contracts on specifications for raw material supply, we work to confirm the following.

- The suppliers' use of chemical substances that impact the environment in products and packaging, compliance with the relevant laws and regulations
- Compliance with the RoHS Directive
- Substance management using SDS / chemSHERPA

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

— Awareness of Issues

The Group recognizes respect for human rights as the basis for all business activities. Amid rising global interest in human rights, we recognize that 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.

— Major Risks and Opportunities

Risks

- The occurrence of human rights infringements in the Group's business activities and supply chain.
- The effectiveness of human resource development through on-the-job training varies by division.
- Performance-based and human resource diversity are affinity, but the negative impacts of performance-based theory arise.

Opportunities

- Recruitment and stable employment of talented people through business activities based on respect for human rights.
- Train employees with excellent practical skills through on-the-job training.
- The vitality provided by a corporate culture in which employees set their own goals and take on the challenge of achieving them.
- Equal opportunity and performance-based evaluation systems enable the recruitment, development, and selection of capable personnel, leading to business growth and the cultivation of new businesses.

— Shin-Etsu Group approach

■ Policy

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

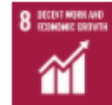
Basic approach

- Supporting employee growth through a training system
- Improving employees motivation through performance-based personnel evaluation systems and equal opportunities
- Promotion of Diversity
- Enhancement of work-life balance system
- Implementation of human rights due diligence

— Performance and Outcome

Respect for human rights

— Establishment of The Shin-Etsu Group Human Rights Policy



The Shin-Etsu Group has been engaged in business activities based on an 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 to be painstakingly implemented 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 contributes to people's daily lives as well as to the advance of industry and society by creating value 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 ESG Promotion 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 human rights policies, 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 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 compile a human rights enlightenment motto to coincide with our annual human rights week in December.

Furthermore, the Company has been a member of both the Tokyo Industrial Federation for Human Rights and the Osaka Dowa / Human Rights Issues Industrial Federation and participates proactively in events held by both federations as well as training sessions held by administrative organizations



Human rights awareness training
(January 2020, Shin-Etsu Chemical
Osaka Branch)

— 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 human rights due diligence in line with the UN Guiding Principles on Business and Human Rights. Henceforth, we will identify and address outstanding human rights risks in the Group based on the survey's result.

— Consulting and reporting on human rights

Our group responds through the following 3 contact points.

• [Compliance Consultation Office](#)

Officers, employees, staff members, advisors, contractors can report by email or phone.

• [Dial Shin-Etsu](#)

Our domestic group employees, staff members, advisors, contractors can consult anonymously by phone.

• [Supplier Hotline](#)

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

Human resource development/Promotion of diversity

— Education/Training and Personal Development

Shin-Etsu Group supports employees to grow through various training systems. The training system has training for different staff grades, global communication training, auditing student system, environmental education, safety education and mental health education.

Global communication training

The Group is expanding its business activities throughout the world. Competency to communicate in foreign languages 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

Auditing student system for employees

In 1962, Shin-Etsu Chemical established an auditing student system for employees. Under the learning system with the goal of improving the workforce, up to about ten operators at manufacturing sites of the Group each year are chosen and sent to study at universities for one year. In the 56 years since the system was introduced, a total of 536 employees have completed the program and are now functioning in various workplaces.

Training system list

	Training for different staff grades		Specialized education	General education	Special education	Environment and safety education	Quality control education	Six Sigma education	
General manager level	Advanced management training	S staff group/ M staff group training	<ul style="list-style-type: none">• Patent training• Training for adaptation to internationalization English language training, meeting skills course I/II English language training, presentation skills course I/II Chinese conversation Classes Intercultural communication training	Mental health seminars Human rights awareness training		Specialized education in environmental control and safety		Black belt training	Green belt training
Section manager level	Middle management training				Course for management development training (external training)		QC ¹ master course		
Junior manager level	Line management	Staff management				QC intermediate course			
	Leader training				Auditing student system (1 year)	Supervisor education			
Regular employees	Junior leader training				Safety education Special education Basic education	QC basic course			
	New employee second-phase training								
	New employee induction training				New recruit education				

— Continuing Chinese languages classes Du Yan, lecturer in Chinese

I have been in charge of Chinese-language classes at Shin-Etsu Chemical since about 20 years ago. At first, these classes were like an association of those who liked to study the language, and I taught language useful for travel and other things, such as about the history and culture of China and the disposition of Chinese people. But since four years ago, I have emphasized students' efforts to pursue their studies and reviewed the content of classes so that the language could be used for daily operations.

The students are enthusiastic about learning Chinese, and some of them have passed the Chinese Proficiency Test. Recently, one student reported, "I was able to exchange emails with business partners in Chinese," and another said, "I was able to talk directly with people at the company I visited on a business trip, and the negotiations went well." I am very happy to receive such reports.

I will strive to teach Chinese in an easy-to-understand way so that students can use it effectively.



Chinese languages classes
(May 2019, Shin-Etsu Chemical Head Office)

— Performance-based Personnel Evaluation Systems

The Group has introduced an employee evaluation system that emphasizes employee ability and work performance. This system is working for improving employees' motivation, as their treatment reflects their performance, attitude, and evaluations of how they meet their challenges to achieve higher goals.

To operate 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 in a fair way.

Transparency is increased by making evaluation standards available and disclosing the results. In addition, there is a system of interviews between an evaluator and the person who is evaluated to ensure that they can communicate successfully.

During interviews, each staff member and his/her immediate supervisor are using Communication Sheets to ensure mutual awareness of the supervisor's expectations and are setting half-year goals. Furthermore, feedback on progress is given for further ability development.

— 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 has set a goal of 5 years from FY 2016 and is working on it. In FY2018, we achieved the target number of female managers.

Goals to promote women's participation and advancement

In the next five years from FY2016, the Company will target that:

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

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

April 2017	April 2018	April 2019	April 2020
Approx.150%	Approx.170%	Approx.220%	Approx.230%

Employment Rate of Persons with Disabilities



Wheelchair Ramps (Shiin-Etsu Chemical Gunma Complex)

*The legally mandated employment rate has been 2.2% since April 2018.

— Employee Initiatives



Shin-Etsu Chemical
Gunma Complex,
Ms.N, Silicone-
Electronics Materials
Research Center

Working as a manager considering the entire organization Shin-Etsu Chemical

1. Please tell us about your background and your job.

After joining the company, I was involved in research and development at the Silicone-Electronics Materials Research Center. Subsequently, my work was changed to legal management of chemical substances, and which is the position to help the researchers. I am currently the leader of the team.

2. What did you think when your supervisor mentioned your promotion to a manager?

I have had many years of experience in this work, so I thought that it would be time for it to come. Also, when my immediate superior was transferred a few years ago, I think I was almost prepared to succeed the team leader.

3. Have you changed as a manager?

The biggest change is that I have a subordinate. Moreover, since becoming a team leader, I have come to think about the organization as a whole compared to before, and I think that my attitude toward work and sense of responsibility have changed.

4. Within our various personnel systems, what kind of systems are being utilized for your work-life balance?

I used the childcare support system twice. Currently, 2 female subordinates are using the short-time work system. I think this is a good system that enables women to continue their work without abandoning their careers through childbirth and childcare.

I also believe that the flex-time system and the half-day vacation system are useful to all generations, regardless of the child-rearing generation. I also use this system to enrich my personal time.

5. What kind of career do you want to take in the future?

Every year, outstanding women join the workplace to which I belong. I hope I could be a role model for them.

6. Please give a message to all the working women to come.

As you are well aware, Japan cannot be called a society in which women play an active role compared to other countries. The government is advocating the promotion of women's participation in the workplace, but I think that it is not making much progress. While there are still barriers to awareness and inadequacies in systems around us, let's work together.

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 system at a major Japanese chemical company. After age 60, 80% of salary at age 59 will be paid. In addition, raising and promotion based on personnel evaluation will also be implemented. By adjusting the employment environment after the age of 60, skilled workers at manufacturing sites will be able to pass on the technology and experience to the next generation.

※Personnel subject to Human resource development/Promotion of diversity in the Group are the employees of and loaned employees from Shin-Etsu Chemical.

> ESG data

— System for work-life balance

Childcare support system

The Group supports employees having and raising children. The Company has published the Childbirth and Child Care Guidebook, which summarizes the governmental systems and procedures related to childbirth and child care. Employees can use the Company's childcare leave system for children up to three years old. About 40 employees on average use the childcare leave system in the Company and consolidated companies in Japan. In addition, employees can use the teleworking system and shorter working hour system, which shorten their working hours for a maximum of two hours a day. This system can be used until children graduate from elementary school.

Furthermore, five days of paid leave are granted when a spouse delivers a child.

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		

*Since October 2017, employees can take child care leave until their child becomes aged two, if they meet certain conditions.

Number of Employees Who have Taken Childcare Leave

	FY2015		FY2016		FY2017		FY2018		FY2019	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Shin-Etsu Chemical (Non-consolidated)	0	6	0	9	0	8	0	11	1	8
Consolidated in Japan	2	42	0	44	0	39	1	35	2	26
Consolidated	44	73	68	72	77	69	90	100	71	91

*The length of childcare leave differs from country to country, as the program is based on local law.

— 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 the necessary information on our nursing care system and care insurance is provided. Furthermore, we started "health care and nursing support" services in FY2014 and provide counseling by external experts.

Main system for the care system (Shin-Etsu Chemical)

	93 days	One year
Care leave		
	* Legally 93 days	
Measures such as short-time work, etc. *		
	* Legally 93 days	
Time off for nursing care	Five days per year when having one person to be cared for 10 days per year when having two persons to be cared for	
	* As per the legal requirements	
* Flextime system, measures to start/finish early or late		
Legal	Progressive measures at Shin-Etsu Chemical	

Number of people obtaining nursing care leave

	FY2015	FY2016	FY2017	FY2018	FY2019
Consolidated in Japan	3	1	2	0	3

— Welfare and Benefits

Saved paid leave system

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

Counseling hot line for employees

As a counseling service for trouble with 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 counselor, the counselor will contact the Personnel and Labor Relations Department to discuss possible solutions.

Shinkansen commuting allowance system

Since 1989, the Group has allowed commuting by Shinkansen at company expense. This system is promoting more employees to own houses. It also enables personnel who are reassigned to head office from plants and other business sites in Gunma or Fukushima prefectures to transfer to jobs in Tokyo without changing their lifestyles. As of March 2020, 77 employees use this system.

Other systems

The Dr. Kanagawa scholarship was established in June 2012 for employees to study at St. Clark State College in Washington, USA for one year. This scholarship was enabled due to the trusting relationship which 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 a mutual aid society to provide support for weddings, childbirth, and sudden hospitalization of family members.

Welfare and benefits facilities

We have dormitories and company housing near the head office and plants for employees who live outside the commuting area. We also 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 attended by top management. They engage in thorough discussions with labor union regarding subjects such as management policy, and outline information about individual businesses, and the personnel system. Also, each business site 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 carry out speedy responses to the changing business environment.

* Personnel subject to "Creating a comfortable working environment" in the Group are the employees of and loaned employees from Shin-Etsu Chemical.

[> ESG Data](#)

— Awareness of Issues

The Group believes that intellectual property, including products and technologies developed in-house, is an important information asset and that strict control is necessary. At the same time, we recognize the importance of respecting the intellectual property of others.

We properly manage information possessed by the Group, including intellectual property, sales information, and technical information, and we are working to prevent information leaks and cyber attacks while paying careful attention to them.

— Major Risks and Opportunities

Risks

- The adverse effect on product sales due to infringement of our intellectual property.
- Restrictions on our product sales and business by patents of others.
- Impact of cyber attacks on production, sales, and research activities.
- Loss of trust in the Company due to information leakage.

Opportunities

- Promote product development and unique manufacturing methods by protecting and utilizing our intellectual property.
- Contributing to the development of industry and society by publishing inventions.
- Implement technology innovation and operational reforms by utilizing digital technologies while thoroughly protecting and managing information assets and taking measures against cyber attacks.

— Shin-Etsu Group approach

■ Policy

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

Basic approach

- Intellectual property management
- Initiatives for information asset management
- Protection of personal information
- Initiatives for cyber security

— Performance and Outcome

Intellectual Property Management

— Intellectual Property Management

The Company has established the Basic Regulations for Intellectual Property which has set regulations regarding acquisition, management, and utilization of intellectual property. On the basis of these regulations, we acquire useful intellectual property with high originality and we protect such intellectual property from infringement by third parties. These regulations also require respect for the rights regarding all intellectual property of third parties.

Moreover, information in forms such as an annual report is disclosed to allow all persons involved with Shin-Etsu Chemical Group to have a precise collection of the status of the Group's intellectual property assets.

In addition, employees who have devised useful inventions, improvements and devices in business have been awarded in systems such as the following.

- **Actual compensation awards**

A system to recognize and award employees who 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 who have acquired a large number of patent rights in the Company

➤ ESG Data

— Employee Initiatives



Shin-Etsu Chemical,
Head Office Mr.Y, Patent
Department

I am working to protect the intellectual property of both ourselves and third parties.

1. Please tell us about your job.

I am mainly responsible for acquiring patent rights of the intellectual property such as inventions, which are the result of our R&D activities and for examining the content of third-party intellectual property rights.

2.How do you protect our intellectual property?

We protect intellectual property, such as inventions obtained through research and development, from third party's infringement by principally acquiring a patent right. As our technologies are being developed worldwide, we are promoting the acquisition of rights not only in Japan but also in other countries around the world. In addition, if the intellectual property obtained is not something that should be disclosed, the Group strives to protect the intellectual property in a manner that it deems appropriate, such as concealing it as the know-how.

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

First, I examine publicly disclosed patent releases of third parties related to our operations and new businesses. Then we hold regular review meetings with relevant divisions to closely examine the content of such information and share knowledge with the participants of the meetings. Through these measures, R&D activities can be promoted to protect and respect the intellectual property of third parties. This way, we can determine the way to move forward without infringing and take application procedures to the Patent Office where necessary.

— Selected as a "Derwent Top 100 Global Innovator™" for the ninth consecutive year

For the ninth 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 and patent trends based on its patent data— to the world's leading companies and organizations engaged in protecting original inventions with intellectual property rights, and successfully commercializing them.



From the left: Clarivate Analytics Japan Co., Ltd. Representative of IT Solutions Japan, Takashi Kojima, Company director in charge of patent relations Toshio Shiohara, Company General Manager of Patent Department: Toru Kubota (March 2020, Shin-Etsu Chemical head office)

— 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 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 case of emergencies, by preventing its expansion and effects on other operations, we must 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 set details concerning, handling, management, retention period and discarding of all the information concerning 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 carry out training and implementation related to the Information Asset Management Department, regularly conduct checks on the status of compliance with the Information Asset Management Regulations and other regulations, and perform internal audits.

— Employee Initiatives



Mr. K & Mr. O, Skyward
Information System
Head Office

We are working on increasing employee awareness of network attacks.

1. Please tell us about your job.

We are in charge of security management of the Shin-Etsu Group's networks and servers.

2. How are you conducting targeted email attack training?

Training is conducted each year to recognize the dangers of e-mail and to improve overall awareness of network security. We send e-mails simulating the targeted attack method four times per e-mail address during a predetermined training period. After the training is completed, explanatory materials for targeted attack emails are distributed to all participants. The rate of opening training email is around 5%. Employees who have opened 2 or more e-mails receive additional training individually.

As e-mail attacks will not disappear in the future, we will continue to conduct training to raise awareness among users. In addition, we will incorporate the content and methods of popular e-mails attacks so that we can conduct highly effective training.

— 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 our Privacy Policy, which is available on our website.

Moreover, we have been providing education on law and regulations and holding lectures regarding personal information protection in trainings for each staff grade 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)¹, which came into force in May 2018.

¹ 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 have received security diagnoses from outside contractors, and continue to take necessary security measures.

We have also deployed a system for preventing 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 security awareness of employees while establishing a system to respond to possible incidents.

— Awareness of issues

In addition to the understanding of local communities, we recognize the importance of developing together with local communities in order to conduct business activities, including production at plants. To this end, we are conducting social contribution activities, such as volunteer activities, at our plants and offices around the world.

At the same time, the Group recognizes that it has an important role to play in helping companies resolve global issues that cannot be addressed by the Group alone, such as by providing ongoing donations for the UN's refugee support activities.

— Major Risks and Opportunities

Risks

- Loss of trust from local communities due to social contribution activities not meeting local needs.
- Impact on the world economy of the delay in achieving a sustainable world aimed at by the SDGs.

Opportunities

- Stable employment and tax payment due to business stability.
- Build relationships of trust with local community through dialogue and continuous activities.
- Contribute to a better world by addressing SDGs issues through business operations.

— Shin-Etsu Group approach

■ Policy

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

Basic approach

- Fundraising for U.N. World Refugee Day
- Summer School for Elementary School Student
- Traffic post guard activities
- Donation of protective clothing and antiseptic solution to the community
- Contribution to Society Activities at Overseas Group Company

— Performance and Outcome

Contribution to industry and social initiatives

— Fundraising for U.N. World Refugee Day



Japan

UNHCR (Office of the United Nations High Commissioner for Refugees) supports world refugees who are driven out of their homes by conflict, persecution and disaster. Since 2006, the Group have supported world refugees through the collection of donations in the company for World Refugee Day (June 20), which was established by The United Nations, and we have donated them to the UNHCR through the Japan Association for UNHCR. Furthermore, we have implemented matching gift programs since 2012.



— Summer School for Elementary School Student (Naoetsu)



Japan

The Naoetsu Plant has held an annual summer school, organized mainly by new employees, for local children in the upper grades of elementary school since 1975. The program is a two-hour program, with the first half learning and the second half recreational.

— Traffic post guard activities (Shirakawa Plant)

Japan

The Shirakawa Plant conducts traffic post guard activities in conjunction with the Spring National Traffic Safety Campaign every year. It was held at two entrances to the plant, and in 2019, 39 people participated in total, greeting employees with commuting and children going to school, and calling for traffic safety.



— Donation of protective clothing and antiseptic solution to the community (Shin-Etsu Handotai, Shin-Etsu Chemical Naoetsu, etc.)



Japan

Shin-Etsu Handotai's domestic plants, Naoetsu Electronics Co., Ltd., Nagano Electronics Industrial Co., Ltd., and Mimasu Semiconductor Industry Co., Ltd. donated approximately 1700 protective clothing, dustproof clothing, dustproof hood, dustproof shoes to local medical institutions. Shin-Etsu Handotai and others use these for work in clean rooms and have a certain level of inventory. We have donated these to medical institutions through prefectural offices and medical associations in order to help them make use of the COVID-19 in the healthcare field where they are struggling to measure infectious diseases.

In addition, Shin-Etsu Chemical Naoetsu donated 10 tons of sodium hypochlorite solution, which is manufactured at the plant, to Joetsu City, Niigata Prefecture. Sodium hypochlorite is used for disruption to prevent the outbreak of a COVID-19, and has been distributed to daycare centers, kindergartens, elementary and junior high schools, and public facilities in Joetsu City.

— Contribution to Society Activities at Overseas Group Company



Rick Gros
Site Services Manager, Shintech Louisiana, LLC

Shintech Inc. Contribution to society activities

Since startup of the Shintech addis plant in Louisiana in 2000, the company has been actively involved in organizations, sponsorships, leadership development, and civic activities that further the development and success of the communities in which we live and work. Several Shintech employees and contractors participates in "Safety Town" for the ninth year in a row. "Safety Town" is a safety program designed for kindergartners to help educate them in the proper way to cross streets, ride bikes, handle emergencies (such as home fires) and other safety related issues.

Furthermore, the employees of Shintech Louisiana, LLC, SE Tylose LA, LLC and many of the plant contractors have collected toys during the Christmas holidays to benefit 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 where stocked with enough games, toys, and electronic equipment for children of all ages to enjoy.

Community involvement is important to the longterm 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 recognized good neighbor, it is our privilege to be located in our community, and we work hard to support those around us.



— Employee Initiatives



Skyward Information
System, Mr.K
Isobe branch

Together with local residents, we are enlivening the "The Annaka Festival"

1.Please tell us about "The Annaka Festival".

In Annaka City, Gunma Prefecture, where the Shin-Etsu Chemical Gunma Complex is located, the "Annaka Festival" is held every other year in mid-October. This is a large festival where Ohayashi instruments players and parade floats from six districts of Annaka City parade through the town for two days. On the first day, floats parade through each district, and on the second day, floats from all districts gather for festivals and ceremonies. Stage events include the Japanese drum performances and dance performances by local high school students. And in the end, powerful fireworks will beautifully color the night sky. Six people from the Shin-Etsu Chemical Gunma Complex participate in the management of the Annaka Festival. Many employees from the Group companies in this area participate in the management of the festival as well. I belong to the Festival Committee. We start preparation work about two months before the festival. We do many things such as lanterning, putting up posters, and preparing the equipment to be used at the festival. On the day of the festival, we will guide general vehicles so that the floats will run smoothly. Since there are many elementary school students who play Ohayashi instrument on the float and small children who pull the float, ensuring safety around the float is also an important task for the Festival Committee members.

2.How do you feel about participating in the festival as a management side?

I was also participating as a member of Ohayashi instrument players in this "Annaka Festival" when I was an elementary school student. Now as an adult participating in this festival as the management side, I was able to understand the difficulty of management, and I was able to experience more fun than ever. Participation in festivals helps unite local residents, companies like us, and a variety of organizations. I can also be involved in passing down traditional festivals and communicating the splendors of the area while revitalizing the area. By having employees of all ages participate in these local festivals, I believe that we can share the desire and heartfelt smile and excitement of people of all ages to make the festival a success, and that a solid "bond" will be formed. We participate not only in festivals but also in local activities such as cleaning and garbage picking. These efforts have also led to the revitalization of local communities. As a member of the local community, I would like to continue social contribution activities.

Accurate and timely information disclosure and communication with stakeholders

— Awareness of issues

The Group recognizes that it is important to gain an accurate understanding of the Group's business and management through information disclosure and dialogue with stakeholders. At the same time, we also recognize 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.

— Major Risks and Opportunities

Risks

- The impairment of corporate value through the non-disclosure and inadequate disclosure of information.
- Loss of trust from stakeholders and society due to failure to fulfill accountability.

Opportunities

- Create the fair market evaluation and improve corporate value.
- Earn the trust of stakeholders and society.

— Shin-Etsu Group approach

■ Policy

The Group will deepen mutual understanding through timely and appropriate information disclosure and dialogue with stakeholders.

Basic approach

- Appropriate and timely disclosure of company information
- Dialogue with stakeholders

— Performance and Outcome

Information disclosure and communication with stakeholders

— Information Disclosure

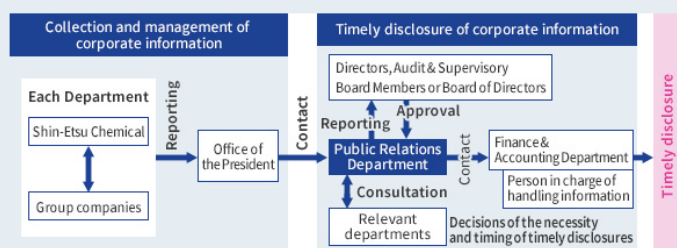
The Group believes the appropriate and timely disclosure of company information promotes of stakeholders' understanding, and also leads to the fair market evaluation.

In accordance with the Financial Instruments and Exchange Act and the regulations regarding information disclosure set by the stock exchange, the Company has disclosed financial information.

Regarding 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 Regulation of Insider Trading. We have announced these regulations to all of the departments in the Company and Group companies to promote smooth and timely disclosure.

For non-financial information, we are actively making voluntary disclosures such as posting information on the Company's website, publicizing through the news media, the Annual Report, financial statements and other reports.

State of the internal system for timely disclosure



Financial results briefing (April 2019, Shin-Etsu Chemical Head Office)

— Communication with Stakeholders

The Group is carrying out an active Communication with stakeholders through a variety of methods and opportunities. We believe that this effort contributes to a sustainable growth of the Group and increases corporate value.

Major communication method and opportunity

Shareholders and Investors

General Shareholders' Meeting
Earnings presentations and conference call for analysts and institutional investors (4 times a year)
Plant tour for analysts and institutional investors (once a year)
One-on-one meetings with analysts (about 280 times a year)
Small meetings for investors hosted by securities companies (5 times: FY2019)
Presentations to individual investors. (4 times : FY2019)
Information provided by the homepage, Annual Report, etc.

Customers

Day-to-day communications by sales representatives
Information provided by the homepage, exhibitions, etc.

Suppliers

Day-to-day communications by the Purchasing Department
Supplier Hotline

Local communities

Communication with bodies such as local governments
Participation in local events

Employees

Communication and consultation with Labor Unions
Information provided by the company magazine and intranet



Plant tour for securities analysts and institutional investors
(October 2019, Shin-Etsu Chemical Gunma Complex)



Customer-sponsored Responsible Care Seminar
(May 2019)



Technology exhibition of people and cars 2019
Yokohama
(May 2019, Shin-Etsu Chemical Headoffice)

— Employee Initiatives



Shin-Etsu Chemical
Headoffice Mr.M,
Silicone Division

Communicating the benefits of silicones to customers through communication.

1. Please tell us about your job.

I am in charge of sales promotion of silicone products. I mainly plan and operate exhibitions, and produces product catalogs and PR videos.

2. What are your thoughts on spreading our silicone throughout the world?

I use illustrations, structured diagrams, images, and other tools to explain silicone's usage and application in an easy-to-understand manner. I also visit our customers' research centers to hold exhibitions in order to deepen relationship with customers.

3. What do you value in your communication with customers?

It is important for me to listen carefully to our customers and understand the issues they are facing now and future development themes.

4. Please tell us if you have any episodes with customers who have an interest in silicones as a result of sales promotion activities.

We produced a PR video of a new silicone product at an exhibition in Taiwan. When I showed it there, a large number of visitors gathered in front of the video monitor, which gave a significant response. As the person in charge of creating the video, it was a very pleasant event.

— Corporate Governance

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
Number of Board Directors	Directors	Non-consolidated	Persons	22	21	21
	Outside directors	Non-consolidated	Persons	4	4	5
	Women on the board	Non-consolidated	Persons	0	0	0
Number of Audit & Supervisory Boards	Audit & Supervisory Boards	Non-consolidated	Persons	5	5	5
	Outside Audit & Supervisory Boards	Non-consolidated	Persons	3	3	3
	Women on the Audit & Supervisory Boards	Non-consolidated	Persons	0	0	0
Structure of Officers' Remuneration Committee	Independent outside directors ratio	Non-consolidated	%	20	20	20
Remuneration of directors	Excluding outside directors	Non-consolidated	Millions of yen	1,615	1,635	1,696
Remuneration of Audit & Supervisory Boards	Excluding the Audit & Supervisory Boards	Non-consolidated	Millions of yen	40	40	36
Remuneration of Outside directors and the Audit & Supervisory Boards		Non-consolidated	Millions of yen	149	149	149
Payments of income taxes		Consolidated in Japan	Millions of yen	49,987	69,274	78,493
		Consolidated in overseas	Millions of yen	24,804	52,314	29,331
Amount of political contributions		Non-consolidated	Millions of yen	2	2	0

*Please refer to IR information for details on financial information.

— The cornerstone of all activities: legal compliance, fair corporate activities

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
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 contractor health and safety

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
Management	OHSAS18001 certification ratio ¹ (Employees)	Consolidated manufacturing companies	%	38	39	36
Occupational health and safety	Number participants in safety training (Total number of persons)	Non-consolidated	Persons	9,751	11,774	19,411
		Consolidated	Persons	24,829	28,013	39,328
	Lost-time incident rate ²	Group companies in Japan ³		0.13	0.16	0.32
		Industry average (JCIA)		0.36	0.30	0.42
	Rate of accidents not accompanied by an of absence a day ²	Group companies in Japan ³		0.50	0.74	0.77
	Lost-time injuries severity rate ²	Non-consolidated		0.00	0.01	0.00
		Industry average (JCIA)		0.035	0.026	0.010
	Number of work-related employee fatalities	Consolidated	Persons	0	0	0

1 OHSAS18001 certification ratio

The plants which does not have OHSAS18001 certification has a occupational health and safety management system the same level as OHSAS18001.

2 Lost-time incident rate and Rate of accidents not accompanied by an of absence a day and Lost-time injuries severity rate These were calculated in calendar year.

3 Group companies in Japan

This is subject to consolidated companies and some companies which are exempt from consolidation in Japan.

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

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
Management	ISO14001 certification ratio ¹ (Plants)	Non-consolidated	%	100	100	100
		Consolidated plants	%	67	70	64
	Total costs of environmental fines and penalties	Shin-Etsu Chemical	Yen	0	0	0
		Consolidated in Japan	Yen	0	0	0
Response to climate change	GHG Scope1 emissions	The Gourp ²	Thousand tons of CO ₂ e	1,734	1,696	1,789
	GHG Scope2 emissions	The Gourp	Thousand tons of CO ₂ e	3,510	3,507	3,618
	GHG Scope3 emissions ³	The Gourp	Thousand tons of CO ₂ e	16,754	16,892	17,315

Water resource conservation	Water use ⁴	Non-consolidated	Million m ³	429	436	444
		The Group	Million m ³	2,222	2,258	2,333
	Water withdrawals	Non-consolidated	Million m ³	20	19	21
		The Group	Million m ³	196	190	192
	Water recycle	Non-consolidated	Million m ³	410	416	423
		The Group	Million m ³	2,026	2,068	2,142
	Water recycle ratio	Non-consolidated	%	95	96	95
		The Group	%	91	92	92
	Water discharge	Non-consolidated	Million m ³	20	20	21
		The Group	Million m ³	187	182	186
Air emissions	Soot	Non-consolidated	t	13	18	17
		The Group	t	47	71	65
	NO _x	Non-consolidated	t	541	508	476
		The Group	t	1,046	974	959
	SO _x	Non-consolidated	t	30	24	26
		The Group	t	154	147	142
	VOC ⁵	Non-consolidated	t	268	293	258
		The Group	t	268	293	258

1 ISO14001 certification ratio

The plants which does not have ISO14001 certification has a occupational health and safety management system the same level as ISO14001

2 The Group

This is subject to consolidated companies and some companies which are exempt from consolidation.

3 GHG Scope3 emissions

The total GHG Scope 3 emissions has considerably increased because the Group has started disclosing GHG emissions in the downstream supply chain from FY2016.

4 Water use

Amount of water withdrawals and water recycle

5 VOC

VOC emissions increased since revised estimated object substance from FY2017.

*Please refer to the [Environmental Data](#) for more details on environmental data.

— Product quality improvements and product safety control

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
Product safety training	Number participants (Total number of persons)	Non-consolidated	Persons	9,751	11,774	19,441
		Consolidated	Persons	19,593	21,170	31,445

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

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
Employees	Number of employees by region	Japan	Persons	8,160	8,381	8,665
		Asia/Oceania	Persons	7,623	8,689	9,203
		Latin America	Persons	0	0	0
		United States	Persons	2,916	3,149	3,361
		Europe	Persons	1,456	1,516	1,554
		Consolidated	Persons	20,155	21,735	22,783
	Number of employees (male)	Consolidated	Persons	14,695	15,770	16,356
	Number of employees (female)	Consolidated	Persons	5,460	5,965	6,427
	Turnover rates	Non-consolidated	%	0.6	0.9	0.7
		Consolidated	%	11.1	13.0	11.0
	Voluntary turnover rates	Non-consolidated	%	0.4	0.7	0.7
		Consolidated	%	10.6	12.7	10.8
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	Non-consolidated	%	2.08	2.13	2.23
	The number of women in managerial positions including junior manager level	Non-consolidated	Persons	33	41	43
		Consolidated	Persons	324	392	433
	Number of employees who have taken childcare leave ¹ (female)	Non-consolidated	Persons	8	11	8
		Consolidated	Persons	69	100	91
		Consolidated in Japan	Persons	39	35	26
		Consolidated in overseas	Persons	30	65	65

Work-life balance	Number of employees who have taken childcare leave (male)	Non-consolidated	Persons	0	0	1
		Consolidated	Persons	77	90	71
		Consolidated in Japan	Persons	0	1	2
		Consolidated in overseas	Persons	77	89	69
	Number of people obtaining nursing care leave	Consolidated in Japan	Persons	2	0	3

1 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	FY2017	FY2018	FY2019
Patents acquired	Japan	Main group companies ¹	Number of patents	591	577	544
	Overseas	Main group companies	Number of patents	1,591	1,202	1,348
	Asia/Oceania	Main group companies	Number of patents	724	543	594
	North America	Main group companies	Number of patents	265	220	205
	Europe	Main group companies	Number of patents	595	435	539
	Other	Main group companies	Number of patents	7	4	10
	Total	Main group companies	Number of patents	2,182	1,779	1,892
Patents held	Japan	Main group companies	Number of patents	7,562	7,702	7,847
	Overseas	Main group companies	Number of patents	12,007	12,671	13,414
	Asia/Oceania	Main group companies	Number of patents	5,314	5,707	6,137
	North America	Main group companies	Number of patents	3,077	3,162	3,190
	Europe	Main group companies	Number of patents	3,578	3,755	4,029
	Other	Main group companies	Number of patents	38	47	58
	Total	Main group companies	Number of patents	19,569	20,373	21,261

¹ Main group companies

This is subject to main manufacturing companies and some manufacturing companies which are exempt from consolidation.

— Contribution to industry and social initiatives

Aspect	Classification	Scope	Unit	FY2017	FY2018	FY2019
Total Amount of donations		Consolidated	Millions of yen	82	118	91



「信越化学サステナビリティレポート2020」

第三者検証 意見書

2020年6月25日

信越化学工業株式会社

代表取締役社長 斉藤 恭彦 殿

一般社団法人 日本化学工業協会
レスポンスブル・ケア検証センター長

永松 茂樹



■ 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2020」(以後、報告書と略す)に記載された下記の事項について、レスポンスブル・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) レスポンスブル・ケア活動(以後RCと略す)及びESG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。
- ・ 群馬事業所の検証は、本社と群馬事業所を繋いだ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
 - ・ 本社および群馬事業所では換算係数等を組込んだ、また転記しない自動集計システムを採用しています。さらに、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ESG活動の内容について
 - ・ 社長のリーダーシップでCSR推進委員会を発展させ、ESG推進委員会とすることを決定し、社長自らが委員長に就任されたことを評価します。今後の重要な課題である気候変動への対処体制として、ESG推進委員会が中心となり取組みの戦略及びその実行内容を決め、また事業に影響するリスク分析を行い取組んでいることを評価します。
 - ・ 安全管理活動ではリスクアセスメントやヒヤリハット・気掛かり作業などに対し、ハード対策・ソフト対策の確実な実施を推進していること、重大事故や大地震などで最悪の事故が発災した際の被害想定と被害最小化のため、他社の事故事例を踏まえ、網羅的に設備改善を進めていることを評価します。
 - ・ 群馬事業所ではプロセスや非常常作業のリスクアセスメントの実施・安全対策の検討を行い、事業所の委員会で確認のうえ確実に対策を実施していること、また他社・自社の事故災害事例を所内に水平展開のうえ設備改善を実施していることを評価します。
- 4) 報告書の特徴について
 - ・ 環境に貢献するグループ企業の製品と技術を紹介し、製品の温室効果ガス削減の数値を記載していることを評価します。今後、社会全体が温室効果ガス発生が少ない製品を積極的に使用していくことを期待しています。

-以上-



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