Shin-Etsu Polymer

Sustainability Report 2017

Shin-Etsu Polymer Group

Corporate Mission Statement

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 providing key materials and technologies.

The Shin-Etsu Group places safety and fairness first in its business and targets becoming a group of companies that develops together with society.

Corporate Action Policy

Unlimited challenges and growth! We work to become a company full of creativity and vitality by realizing hopes and visions toward the future.

1 We serve as a strong and reliable partner with companies challenging to grow in their markets through innovative products and services.
2 We always consider and make proposals from the viewpoint of our customers and globally provide products and services that contribute to their value creation and growth.
3 We assume our corporate responsibilities toward shareholders, customers, employees, communities, and the global environment.

About the symbol mark

The symbol mark expresses our feeling of "creating our brilliant value in a 'green environment'" with the green leaf and bright morning-dew.

The combination of indigo water, green trees and blue sky symbolizeour commitment to "continuouslydevelop vitality," while the Shin-Etsu colors provides an imageof the development of Shin-Etsu Polymer.

Corporate Action Policy

1 We have pride and awareness as employees of Shin-Etsu Polymer Co., Ltd. and its Group companies and do our best to become a company trusted by society by always maintaining a law-abiding spirit, complying with laws, regulations, internal codes and rules and conducting fair and highly transparent corporate activities.
2 We disclose a comprehensive range of corporate information where necessary and appropriate and promote communication with society as well as stockholders, investors, customers, and communities as an "open company."
3 We respect the histories, cultures, customs, etc. of individual countries and regions, work at developing business based on mutual trust, and make efforts to coexist with communities.
4 We recognize global environmental preservation as one of our first priority challenges and, by fulfilling social responsibilities required, actively participate in the establishment of a recyclingoriented economic society aiming for sustainable development.
5 Through business activities, we try to develop and manufacture environmentally friendly products with high per formance,contribute to an af f luent society and preser vation of theenvironment. Furthermore, we implement green procurement, properly control chemical substances, and comply with regulationson substances contained in products.
6 We commit ourselves to meet the requirements of customers and consumers and make efforts to provide attractive, safe, and quality products and services that are highly satisfactory. Furthermore, we carefully handle personal information associated with customer's privacy and strictly control such information sogthat no information leakage or illegal use should occur.
7 We respect the principle of free competition and always promote fair trade. We also build transparent, fair, and healthy relations with customers and consumers.
8 We respect human rights, personality, and diversity of employees, realize fair treatment, and establish a working environment where they can exert their abilities, skills, and vitality. We comply with occupational laws and regulations and conduct no inhumane labor practice such as child or forced labor.
9 We maintain healthy and normal relations with governments and their administrations.
10 We confront antisocial groups and organizations that threaten social order and security with a resolute attitude.
11 We, as "good corporate citizens" carry our social action programs in a positive manner.

Editorial Policy

The Shin-Etsu Polymer Group started publishing its "Sustainability Report" in 2001. The editorial principles of the 2017 Version are as follows:

1 This Report conforms to the "Environmental Reporting Guidelines (Fiscal Year 2012 Version)" of the Ministry of the Environment in its reporting.
2 Along with an introduction of various products from each segment, we also cover the framework of our basic technologies and core products, in addition to "thin film manufacturing technologies and products" and related products in special feature.
3 The CSR Report sums up the group's organization and activities in relation to engagement with "corporate governance," "customers," "employees," "communities," "environment" in a configuration that is easy to read and understand.
4 The information in this Report (including the English Version) and details of environmental data are all disclosed on our website. We also provide additional information on our website.
5 We received third-party comments from Mr. Kozuma, Professor of Sophia University, as was the case with previous editions, and
Website URL: http://www.shinpoly.co.jp/english/environment/report/

- **Period subject to report**
  April 2016–March 2017
- **Issued**
  September 2017 (Next issue: September 2018 (Scheduled))
- **Organizations subject to report**
  Shin-Etsu Polymer Group
  *For further detail, please refer to page 6.
- **Field of reporting**
  This Report covers the fields of environmental conservation and social activities. For the overview of our business, please refer to our Corporate Profile.
- **Contact**
  Office of the President, Shin-Etsu Polymer Co., Ltd.
  Sotetsu Kandasudacho Building 1-9 Kanda-Sudacho, Chiyoda-ku,
  Tokyo 101-0041 Japan
  TEL: 81-3-5289-3714 FAX: 81-3-5289-3707
  URL http://www.shinpoly.co.jp/english/

About the design

The Shin-Etsu Polymer Group is striving to take action to a sustainable society with the community a reality. In the design of the Sustainability Report, endangered species are in a circle, a metaphor for the Earth, and S for Shin-Etsu encompassing the Earth. The fundamental key word of "Prefecture flower" series (2005–2008), "Prefecture tree" series (2009–2012), "Prefecture bird" series (2013–2016) and "World endangered species" series (2017–) is biodiversity.

Contents

Top Commitment

Aiming for sustainable growth in any economic environment by improving collective strength

President
Yoshiaki Ono

To keep contributing to the growth of society

Shin-Etsu Polymer was established in 1960 as a processing company of Shin-Etsu Chemical Co., Ltd. and has developed raw materials with Shin-Etsu Chemical Group and provided high value-added products for silicone rubber and various plastics. In addition, we have manufacturing and sales offices around the world to meet a wide range of customers' needs such as automobiles, information devices, office automation equipment, semi-conductor related products, life materials and housing related products.

We aim to provide products that contribute to society by developing new technology with our basic technologies to solve customer issues and meet their needs.

We are always aware of our contribution to global environment conservation as a processing company. Thus, we have worked actively on Green Activities, company-wide unique activities, since 2001 to save energy and resources, and reduce our environmental burden. We will contribute to the creation of a circulating economic society through Green Activities.

Management based on CSR

•Enhancement of corporate governance

- •Conducting basic policy
- •Securing transparency in our management activities
- •Strengthening risk management and internal controls

We will appropriately disclose important information to stakeholders while consolidating organizations and systems.

Contents: Corporate governance
Refer to p16-19

•Thorough quality control

- •Emphasis on customer satisfaction of a quality assurance system
- •Improving services
- •Creation of quality assurance system

We take full care of personnel management in our group while expanding our business around the world.

Contents: Together with employees
Refer to p22-24

•Respect for human rights

- •Prohibition of enforced labor and child labor
- •Prohibition of discrimination
- •Observation of appropriate wage and work time

We take full care of personnel management in our group while expanding our business around the world.

Contents: Together with employees
Refer to p22-24

•Safety first

- •Improvement of safety awareness through KYT activities etc.
- •Obeying operational procedures
- •Conducting risk assessments

Employee safety is one of the most important management issues. We unite as one to eliminate risks in our workplace and achieve zero accidents.

Contents: Together with employees
Refer to p25

•Contributing to global environmental preservation

- •Measure against global warming: CO_2 emissions per basic unit
- •Efficient use of resources: the basic unit of waste emissions

We set the mid-term goal for Green Activity, a company-wide activity, every three years. 2016 is the second year of the 5th mid-term goal. We are actively working to accomplish the goal.

Contents: Together with environment
Refer to p30-31

Some important issues have been mentioned above. The details of these will be explained in this report along with the targets and results of our Key Performance Indicators (KPI).

We would very much appreciate any feedback, opinions or comments from our stakeholders. We received third-party comments from Mr. Yoshinao Kozuma, Professor of Economics Department, Sophia University, as was the case with previous editions, and we shall take advantage of them for our future efforts and initiatives.

Our group will actively promote efforts and initiatives to contribute to the realization of a sustainable, safe and secure society. We do appreciate your further guidance and support.

Business overview of Shin-Etsu Polymer Group

•Company profile

Trading name: Shin-Etsu Polymer Co., Ltd.

Founded: September 15, 1960

Headquarters address: Sotetsu Kandasudacho Building 1-9
Kanda-Sudacho, Chiyoda-ku, Tokyo
101-0041 Japan

Paid-in capital: 11,635,950,000 yen

Employees: Total for all group companies:
4,144 (1,742 male employees, 2,402 female employees)
Independent:
607 (498 male employees, 109 female employees)
(as of March 31, 2017)

Domestic production bases: Tokyo Plant, Nanyo Plant,
Kodama Plant

Consolidated subsidiaries: 18 companies

Domestic production bases

Shinano Polymer Co., Ltd.
Urawa Polymer Co., Ltd.
Niigata Polymer Co., Ltd.
SAN-ACE Co., Ltd.

Domestic non-production bases

Shin-Etsu Finetech Co., Ltd.

Overseas production bases

Suzhou Shin-Etsu Polymer Co., Ltd.
Dongguan Shin-Etsu Polymer Co., Ltd.
Shin-Etsu Polymer (Malaysia) Sdn.Bhd.
PT. Shin-Etsu Polymer Indonesia
Shin-Etsu Polymer India Pvt. Ltd.
Shin-Etsu Polymer Hungary Kft.

Overseas non-production bases

Shin-Etsu Polymer Shanghai Co. Ltd.
Shin-Etsu Polymer Hong Kong Co., Ltd.
Shin-Etsu Polymer (Thailand) Ltd.
Shin-Etsu Polymer Singapore Pte. Ltd.
Shin-Etsu Polymer America, Inc.
Shin-Etsu Polymer Europe B.V.
Shin-Etsu Polymer Vietnam Co., Ltd.

*As of April 1, 2017, four subsidiaries of the Domestic production site were merged into Shin-Etsu Polymer Co., Ltd.

•Main Business Activities

We were established as a polyvinyl chloride (PVC) processing manufacturer in 1960 and have continued to work on the development and application of basic technologies, such as materials and composition, design, manufacturing processes, and evaluation and analysis, of various resins including silicone rubber.

We support various customer needs in a comprehensive range of fields from automobiles and information equipment to semiconductors and construction.

Electronic devices business

- Input devices
  Automobile key switch, laptop PC touch pad, remote control input device, electronic home appliance switch
- Display-related devices
  Electronic device connector, privacy filters prevention film for ATMs / PCs
- Component-related products
  Waterproof products for smartphones, parts inspection connectors, wiper blades

Precision molding products business

- OA equipment parts
  Various rollers for printers, faxes, and PPCs
- Silicone rubber molded products
  Medical catheter, silicone plug, adhesive plate, fire-proof gasket
- Semiconductor-related containers
  Wafer case, Semiconductor-related containers
- Carrier tape-related products
  Emboss carrier tape, top cover tape

Living environment and life-related materials business

- Wrapping films
  Wrapping film for fresh food, self-adhesive film
- Functional compounds
  Items for various electrical cables (communication cable, robot cable etc.), interior and exterior equipment for automobiles
- PVC pipe-related products
  Water supply and sewerage piping, general drain piping, agricultural piping, piping joints
- Exterior material-related products
  PVC / PolyCarbonate corrugated sheets

Others

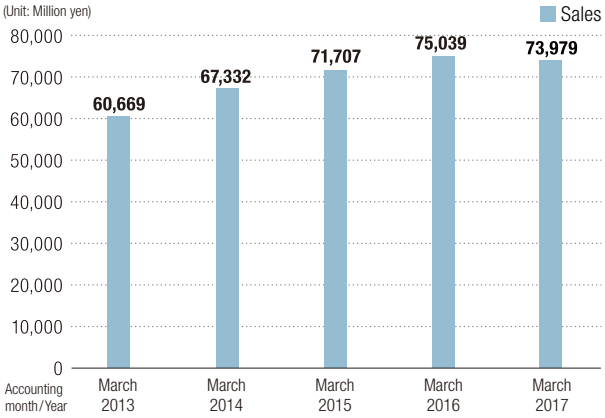
- Construction
  Commercial facilities, interior and exterior design and construction of bathrooms, etc.
- Packaging materials
  Industrial trays, packaging for fruits, agricultural materials, shopping bags, container washing

Summary of Key Performance Indicators

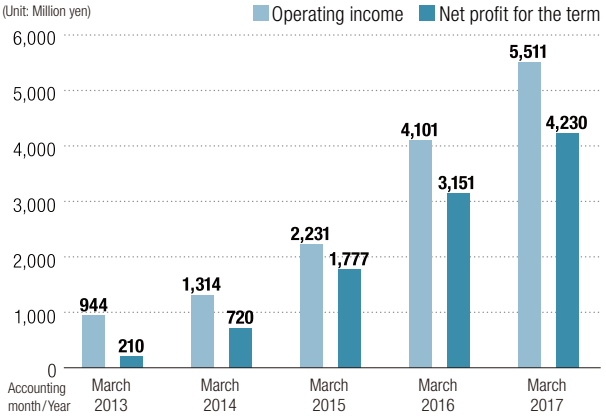
Regarding the business environment surrounding our group in recent years, production for automobile-related fields has remained stable around the world and demand for semi-conductor related fields has continued to stay at a high level.

Under these circumstances, in terms of sales, we have continued domestic and international development of sales activities that focus on expanding the sales volumes of growth products. We also actively made capital investments to improve our capacity, efficiency and quality including extension of production bases. The Development Unit and Production Unit were reorganized at the beginning of the term. They manage business in cooperation with the Sales Unit and make efforts to respond to changes in the business environment.

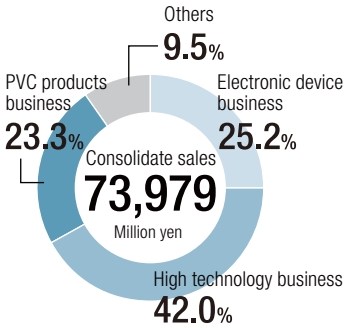
Changes in sales (Consolidated)



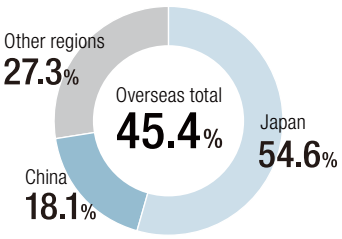
Changes in operating income and net profit (Consolidated)



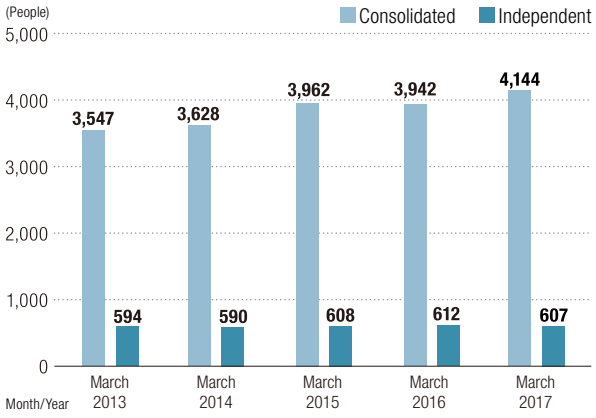
Distribution of consolidated sales by business segment



Distribution of consolidated overseas sales



Changes in the number of employees



*For a split by male and female employees see page 22.

Changes in key indicators

Period (Fiscal year end)	53rd Period (Ending in March 2013)	54th Period (Ending in March 2014)	55th Period (Ending in March 2015)	56th Period (Ending in March 2016)	57th Period (Ending in March 2017)
Net sales (Million yen)	60,669	67,332	71,707	75,039	73,979
Operating income (Million yen)	944	1,314	2,231	4,101	5,511
Total assets (Million yen)	81,342	88,644	93,889	92,845	96,061
ROE (%)	0.3	1.1	2.6	4.4	5.9
Domestic basic units of CO_2 emissions against produced weight (t-CO_2/t)	0.7413	0.7063	0.7061	0.6887	0.6833
Overseas basic units of CO_2 emissions against produced weight (t-CO_2/t)	6.518	6.835	7.038	6.729	7.054
Emission rate (%)	0.24	0.22	0.29	0.39	1.03
Number of accidents (Including number of lost time accidents)	14(6)	8(3)	11(1)	6(4)	17(9)

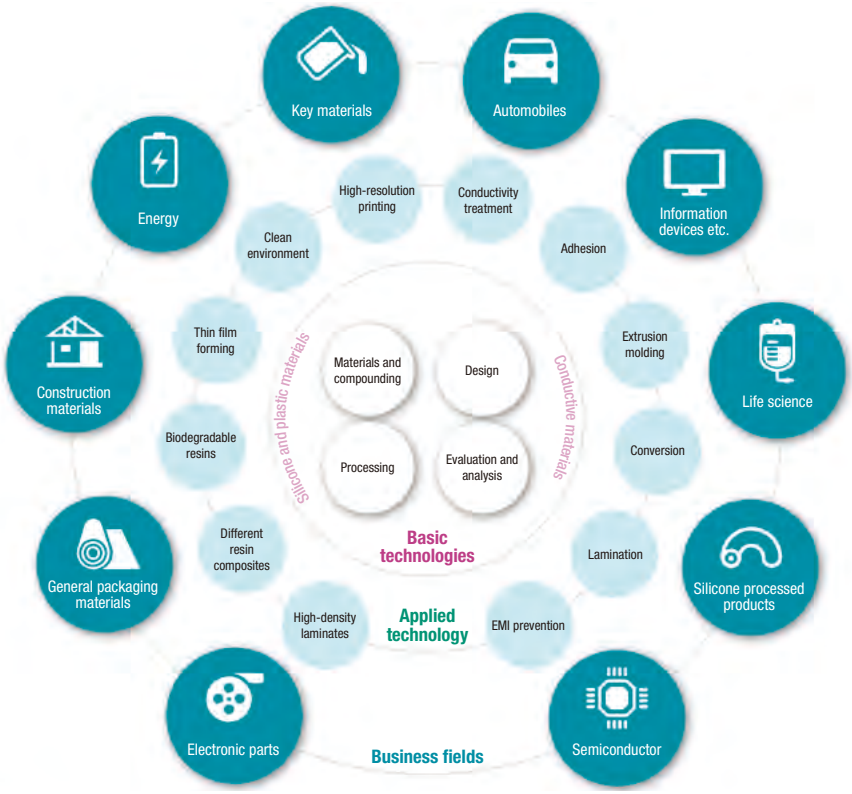
*Sales do not include consumption tax.
*For other key management indicators etc., please refer to our financial report.
*Emission rates refer to domestic production sites of the group.
*The accident frequency ratios refer to domestic and overseas production sites of our group in a calendar year.
*Figures of domestic basic units of CO_2 emissions against produced weight and overseas basic units of CO_2 emissions against produced weight before 56th period on this report are different from previous figure because the CO_2 emissions factor was changed.

Product Introduction

The basic technologies that are the core of technological developments for Shin-Etsu Polymer are materials and composition, design and manufacturing processes, in addition to evaluation and analysis, using key materials such as silicone rubber, various plastics and conductive materials.

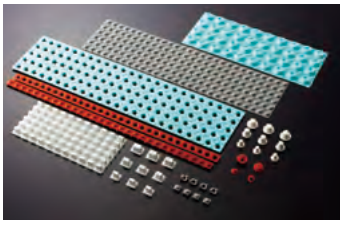
We offer high value-added products that can meet the diverse needs of our customers in a wide range of fields by applying and integrating these basic technologies across multiple approaches.

Basic technologies and core products



Electronic devices business

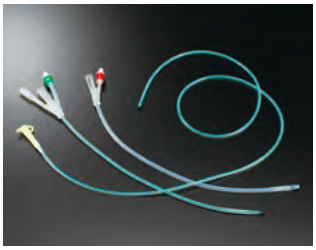
This business segment is developing business by focusing on electronics industries such as input devices for automobile electric components and information equipment, while leading overseas businesses in the whole company by developing overseas sales and production from the early stage.

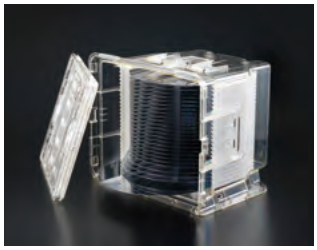
	Key switches	Touch switches	View angle control films
Automobiles	 Remote keyless entry systems	 For consoles	 Reflection preventive films for navigation
Information equipment	 Key switches	 For electric home appliances	 Privacy filters prevention films for ATMs

Precision molding products business

We sell precision molding products taking advantage of our unique technologies within and outside Japan, including OA equipment parts and medical equipment parts made of silicone rubber, shipping / carrying cases for semiconductor silicon wafer, and automatic mounting materials for electronic devices.


Rollers for OA equipment


Medical silicone rubber products


Semiconductor silicon wafer shipping / carrying cases


Mounting materials for electronic devices

Living environment and life-related materials business

We are developing wide-range business with molded products made of vinyl chloride resin, such as residential construction materials, food packaging materials, as well as Compound, an in-process material for molding process. Compound is one of the growing products that is incrementally used for the automobile industry, and we aim for steady profits with this product.


Compound


Compound for electric wire


Conductive polymers "SEPLEGYDA®"


Wrapping film


Vinyl chloride pipes


"Polymer Wrap"

Others

We operate construction-related business including the renovation of commercial facilities, and develop and sell industrial and food packaging materials. In our construction related business, we offer comprehensive services under consistently responsible construction structures, from store launch planning, design, construction to after-sales care of supermarkets, restaurants and other facilities. In our development / sales business, we develop and sell industrial trays that convey industrial parts and products, fruit packaging materials and agricultural materials.

Store launch planning, design and construction of supermarkets

Part 1

Further innovation of thin film technology, VCF®

Group IV
Development Department I
Development Unit
Susumu Iwama

Group II
Sales & Marketing Division I
Sales Unit
Kazuhiko Aoki

Group IV
Development Department I
Development Unit
Naoya Takizawa

VCF® is composed of minute black silicone rubber louvers sandwiched by polycarbonate films. It is used in a number of different industries thanks to its excellent environmental properties and custom-made specifications including viewing and louver angles according to customer applications and requests.

Supports wide range of view angle specifications VCF® (View Control Film)

Silicone rubber, one of the basic materials we work with, is processed into thin films. A block constructed by thousands of layers of two types of thin film silicone rubber, highly transparent and black, is cut to a certain thickness. Two polycarbonate films are layered on the outer surface of the block to complete a view control film, VCF.

It is currently used in applications such as computers, bank ATMs and for tempered cell phone screen protectors.

Aoki: "We have been engaged in the improvement of silicone rubber processing technology for many years. It is now one of our basic technologies. To manufacture VCF, we combine technologies that handle thin film sheets, such as coating silicone rubber with dozens of microns, lamination of thin film sheets and high-precision cutting. These technologies are also applied to zebra connectors in addition to VCF."

Takizawa: "The VCF structure is composed of highly transparent silicone rubber sheets and light-shielding black silicone rubber sheets placed alternately. Depending on the viewing angle, the black silicone sheet sections function as micro-louvers to alter transparency. Additionally, as a key feature, VCF provides the possibility for fine adjustments of viewing angles."

Iwama: "What is different about VCF is that its material is silicone rubber, which has excellent heat, cold and oil resistance as well as electric insulation and low environmental impact. Also, as our competitors commercialize

products with fixed viewing angles, we have a greater advantage in terms of design flexibility."

Responding to flexible technological development capabilities

Thanks to positive evaluations in conventional applications, inquiries from customers in other industries are on the increase, which in turn has expanded the range of required specifications. This extension of custom specifications according to demand is a result of technological innovation carried out by the Development Unit. Behind the scenes of this high level of flexibility is an untiring exploration of the technology.

Takizawa: "Actually, processing silicone rubber into thin films is not that difficult. The most difficult issues we faced were handling and layering very thin silicone rubber sheets with a degree of flexibility and not be able to use conventional technology to handle the adhesion of polycarbonate films."

Aoki: "There was a certain limit to the range of specifications we could support."

Iwama: "Regarding the technique to adhere silicone rubber to polycarbonate, where a silicone rubber sheet is thinned to reduce rigidity, the impact of the difference in their coefficients of thermal expansion is more prominent and in the early stages caused warps and major contortions. They didn't look like what we could call a product."

Takizawa: "We solved this problem after much trial and error, which included changing molding temperatures from low to high and the types of adhesives. The result was a method to reconcile the difference in the coefficients of thermal expansion. For adhesives to adhere to silicone rubbers we also independently developed adhesives responding to the thinness of the sheets. It took some time to be able to handle such thin silicone sheets without any problems, but I think we were able to make it a success through an accumulation of technologies on silicone materials and new technological developments."

Inquiries from different industries generated from flexibility in specifications

With a widened range of specification adjustments, we have increasingly received inquiries for car-mounted and optical sensor-related applications.

Iwama: "Regarding inquiries for car-mounted applications, VCF is attached to a car navigation system, information display and speedometer so that the screens are not reflected on the windshield and door windows. Based on each customer's requirements, we explore the most effective angles from the driver's seat while ensuring no reflections. Such angles are known as viewing and louver angles and they need to be adjusted for inquiries of car-mounted applications."

Aoki: "As this function is associated with car safety, we believe our fine-tunable VCF is significantly different from any competing products."

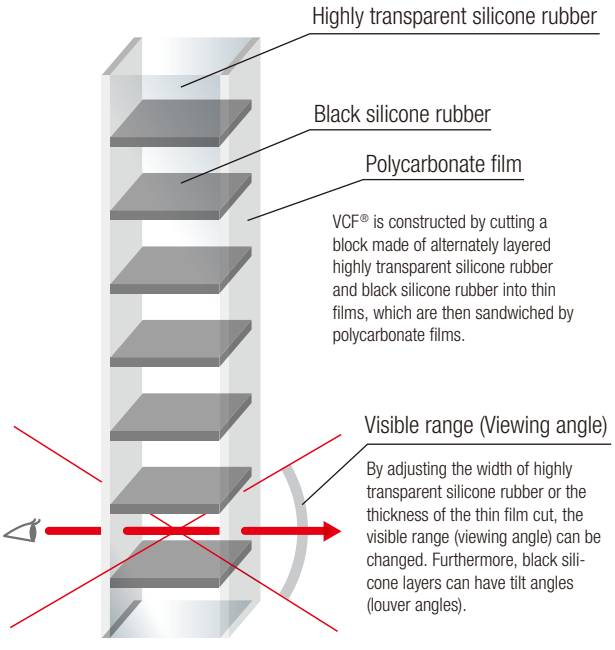
Developing new markets based on customer suggestions

There have been cases where new applications were created after receiving usage suggestions from customers.

Aoki: "The optical sensor application was a project we discussed that had been proposed by a customer. By adjusting the visible range and narrowing the viewing angle, we were able to prevent the malfunction of sensors due to external light penetration."

Takizawa: "A suggestion by a customer developed a new market. I think the capability of VCF to freely change specifications is the reason we were able to successfully apply it to this optical sensor."

Iwama: "As we can support new applications based on specifications of viewing and louver angles, our technological challenge now is to further improve on said flexibility. In order to develop VCF that can solve varied customer challenges, we will proceed with our technological studies."



**Shin-Etsu Sepla Film® is the result of film development through engineering plastics as an effort to create a new business pillar.
Thin films made of PEEK resin that excel in terms of heat resistance, mechanical strength and chemical resistance are widely used in loudspeakers undergoing downsizing and weight reduction, in addition to ultrasmall switches.**

Launching development in anticipation of future needs

About a decade ago, with the idea of making a product that could be a new business pillar, we started to develop a film made of high-performance engineering plastic.

Seriguchi: "At the time, the number of manufacturers dealing with engineering plastics were few due to the expense involved, and as film-making was considered difficult they attracted attention from resin manufacturers. We tried many materials and focused on PEEK resin, as it excels in terms of heat resistance, mechanical strength and chemical resistance. Though we didn't have any specific applications in mind initially, we anticipated future market needs."

Created with such a level of confidence, Shin-Etsu Sepla Film® is a non-stretch film made of PEEK resin. Currently,

Part 2

Thin film of high strength

Shin-Etsu Sepla Film®

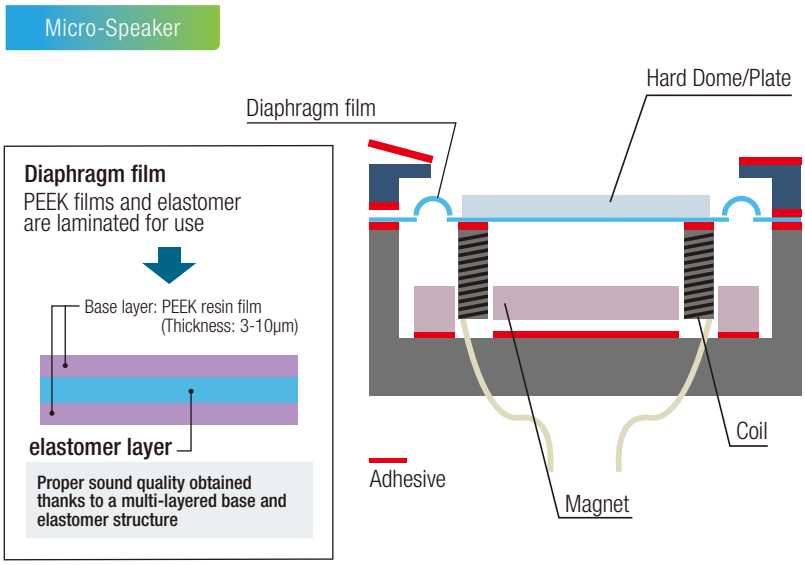
Manager, FF Group
Office of Business Industrializing Management, Development Unit
Junya Ishida

Manager, FF Group
Sales & Marketing Division IV, Sales Unit
Katsuhiko Seriguchi

it is mainly used for loudspeaker vibrating membranes built into smartphones. It should be noted that a loudspeaker is a mechanism where electric signals vibrate the diaphragms made of aluminum, etc. via a coil, and the vibration creates sound when it travels in the air. Shin-Etsu Sepla Film® plays an important role in transmitting those vibrations as sound sources to the diaphragm.

Ishida: "Before PEEK was adopted, films made of PEI and PET were the mainstream. Both of them have heat resistance and strength, but with the downsizing and weight reduction of cell phones, smartphones and loudspeakers, PEEK, with its higher strength and heat resistance even as a thin film, started to take precedence."

Seriguchi: "With the advancement in sophisticated functions of individual devices, even small smartphones and tablet terminals are now required to emit greater sound volume than before. To achieve this, it is necessary to apply higher voltages within the loudspeakers. As a result, demand for PEEK films, with their higher heat resistance and strength to endure stronger vibrations, have increased."



Thinning down to 3μm and leading the industry

There was a material manufacturer that handled films using PEEK before us, however most products on the market had a thickness of about 5-6μm, whereas we succeeded in reducing the films to be as thin as 3μm. Thinning engineering plastic without stretching requires highly sophisticated technology and therefore this is one of our main advantages. Currently, 5-6μm films are common in loudspeakers, but demand for 3-4μm films is increasing. As the downsizing of loudspeakers is making steady progress they have started to laminate and use films.

Seriguchi: "in ordinary loudspeakers different speaker units output sounds to cover high to low sounds, but with smartphones and tablets one speaker unit is required to output a wide range of sounds."

Ishida: "Originally, loudspeakers used different materials in the diaphragms depending on the sound range needed, such as hard materials for high tones and soft materials for low tones. However, inside small devices with a limited amount of space, this is not possible. Therefore, by laminating strong PEEK films, flexible acrylic adhesives and urethane-based elastomer, creating five to seven layers in special cases, a wide range of sounds can be produced from a single unit."

With the progress in downsizing and weight reductions of devices, the parts that make up the loudspeaker are required to be even more compact. In other words, parts currently operating at 5-6μm may, with even further downsizing of devices, assume the use of laminated films, and customers may therefore require even thinner films. We will make sure to stay on top of such future needs and carry out proactive development activities.

Further functionality improvements with unique material mixes

Thin film technology is not the only strength of our company. While our competitors are material manufacturers specializing in PEEK, we have been engaged in the research and development of a wide variety of materials and work with complete knowledge of all their features.

Seriguchi: "The key to further growth of PEEK films is improvement in functionality. Now, we manufacture films with 100% PEEK resin purity, but going forward we believe that by mixing and processing with other materials, we will need to yield new added values."

Ishida: "Improvements in functionality will appeal to customers. However, we are also aiming towards products that are easy to handle and mass produce. Additionally, we will actively tackle market commercialization other than currently applied loudspeaker markets."

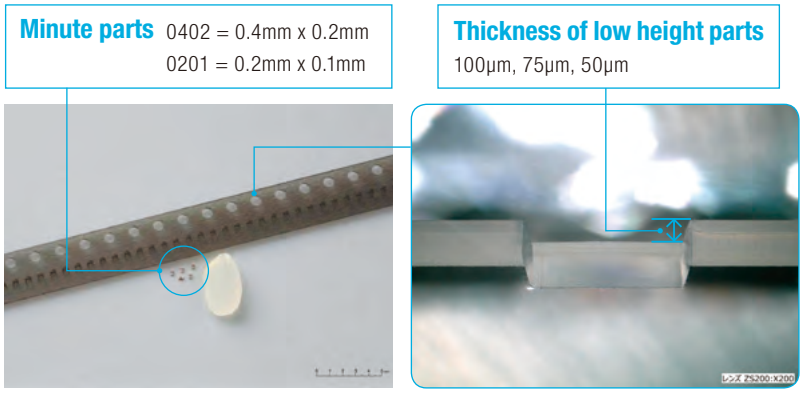
Part 3 Responding to increased needs for thin film technology

Technological innovation is continually making progress. Smaller and thinner products have been developed in many markets, including those we supply our products to. Our products are also used in the handling of processes for new goods and transportation.

Supporting more minute products Embossed carrier tapes/Thin film adhesive plates (LHSP)

New minute and low height parts in the electronic parts and components industry employ our embossed carrier tapes.

[Features]
It is possible to apply precision molding to achieve steady storage and packaging of even minute and low height parts.

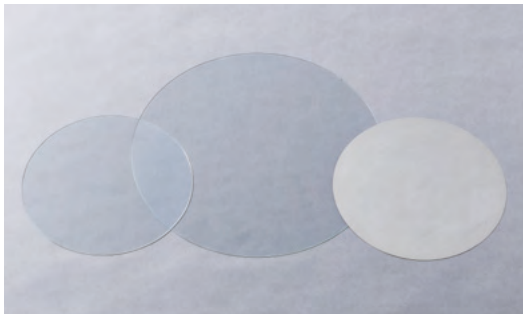


Embossed carrier tape for 0402

Section of embossed carrier tape used for low height parts

In probe tests and epoxy sealing processes of semiconductor chips (IC chips), our thin film adhesive plates (LHSP) are used as chip fixing jigs.

[Features]
Elastomer as a base material is a fluorine-based elastomer with excellent heat and chemical resistance. As it is slightly adhesive, it makes the holding and transportation of electronic parts easier and can be used repeatedly as peeling by adsorption is possible.

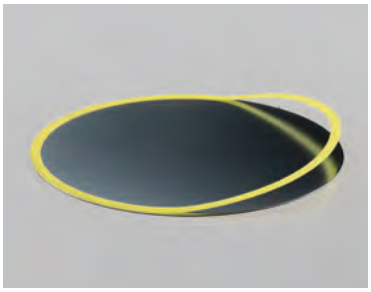


Thin film adhesive plates (LHSP)
Base materials are glass, silicone wafers and SUS

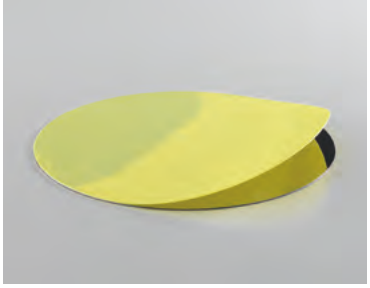
Support of ultra thinner products Shin-Etsu TWSS

Using Shin-Etsu TWSS transportation, a jig for processing silicone wafers is thinned to a thickness of several tens of micrometers.

[Features]
Unlike conventional fixing methods using adhesives, solvents to remove adhesives are not required thereby reducing the environmental burden.



Ring-type
Holds only outer edge of a wafer



Disk-type
Adheres to entire surface of wafer

Supply of environmentally friendly and contributing products

Creation of environmentally friendly and contributing products

Our Group is tackling product development to reduce environmental burdens and conducts internal certification of environmentally friendly and contributing products based on Basic Environmental Principles (page 28).

• Concept of our environmentally friendly and contributing products

The concept of environmentally friendly and contributing products within our group based on Corporate Action Policy is as follows.

Concept Environmentally friendly and contributing products in our Group are new or existing products that solve customers' challenges and, upon confirmation that they are required by society and the environment (social needs), are evaluated and certified for seven items.

• Evaluation standards of environmentally friendly and contributing products

These standards evaluate as to whether we can reduce the environmental burdens caused by our Group and also contribute to a reduction in operational and environmental burdens for our customers.

We have a total 97 evaluation criteria in place for seven categories: (1) Resource saving, (2) Energy saving, (3) Waste reduction, (4) Recycling, (5) Environmental pollutants, (6) Safety and (7) Protection of biological diversity. Since April 2013, we started internal certifications of environmentally friendly and contributing products by assigning grades on these evaluation items.

• Shin-Etsu Group products and technology contributing to the United Nations Sustainable Development Goals (SDGs)

United Nations Sustainable Development Goals (SDGs)	Our Group products and technologies contribute to solutions	Description of contributions
Goal #3: Good Health and Well-being Ensure healthy lives and promote well-being for all ages	• Medical catheters	In certain cases, treatment and examinations can be conducted by using catheters without the need for surgery.
	• Food wrapping films	Good sanitary conditions can be maintained when food and other items are stored. Long-term storage is also possible.
Goal #7: Affordable and Clean Energy Ensuring access to affordable, reliable, sustainable and modern energy for all	• Separators for fuel cells	Used as a key component in clean and low-energy fuel cells.
Goal #9: Industry, Innovation and Infrastructure Building resilient infrastructure, promoting inclusive and sustainable industrialization and foster innovation	• Vinyl chloride tubes and joints	By using highly durable vinyl chloride for tubes and joints, replacements of water supply and sewerage pipes are unnecessary for more than 50 years.
Goal #11: Sustainable Cities and Communities Making cities and human settlements inclusive, safe, resilient and sustainable	• Toilet booths	Reduces risks, such as getting fingers caught. Furthermore, should any accident (sudden illness, unexpected change in condition) occur while using a booth, the door is easily released from the outside. Such functions create a safe toilet space.
Goal #13: Climate Action Taking urgent action to combat climate change and its impacts	• Silicone roller for printers	Particularly with the development of rollers with a smaller outer diameter, it contributes to power consumption reduction for printers.
	• Resin tape frames for wafers • Resin tape frame cassettes	As the weight is less than half of existing metal products, CO_2 discharged during transportation can be reduced.
	• Touch switches (Input devices)	While conventional mechanical switches are built using buttons, frames and many other parts, a touch switch is a single sheet, enabling energy saving and weight reduction. When used in car-mount switches, this weight reduction leads to improved mileage.
Goal #15: Life on Land Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss	• Fumigation sheets	Sheets covering damaged pines when being fumigated. As the material is biodegradable, it contributes to environmental conservation even after use.

As a global company that is trusted by and carries the expectations of various stakeholders, including our shareholders, the Shin-Etsu Polymer Group fully recognizes that improving corporate value is the basis of management. With such an awareness, we are continually working to enhance corporate governance through proper decision-making and execution by promoting prompt management decision-making, securing transparent management, while also strengthening internal control functions.

Corporate governance

Basic Principles

1 Ensuring shareholders' rights and equality

We strive to maintain an environment where shareholders can properly exercise their rights by respecting such rights and ensuring equality for all, including minority and overseas shareholders.

2 Appropriate cooperation with all stakeholders, in addition to shareholders

We strive to uphold appropriate cooperation with all stakeholders other than just shareholders, while working towards creating sustainable growth and medium to longterm corporate value for the company.

3 Ensuring disclosure and transparency of appropriate information

We strive to ensure that all information is useful and easy for users to understand, while making sure details are properly disclosed based on relevant laws and regulations. We also independently provide various other information.

4 Responsibilities of the Board of Directors

We strive for the appropriate implementation of the roles and responsibilities of the Board of Directors based on our fiduciary responsibility to shareholders.

5 Dialogue with shareholders

We strive to make constructive dialogue with shareholders, and understandably explain our management policies in order to make sure they are properly understood.

Corporate Governance System

We adopt an auditor system where all three auditors are outside auditors. Two organizations, the board of directors and the board of auditors, supervise and audit in regard to business execution in a multi-layered way. Whereby, we maintain a functional and effective function of management supervision and an audit function of secured objectivity and neutrality.

Management decision-making and business execution/supervision

The board of directors makes important decisions in management together with supervising business execution of directors properly. The Board of Directors is comprised of 12 members, two of whom are outside directors. Outside directors have extensive experience and deep insights over the years as company owners and specialists in accounts/tax affairs and supervise our company's management from an overall view in an objective, proper manner.

Audit system

Three outside auditors comprise the Board of Auditors all of whom conduct audits totally independent of business execution. Auditors as a function to monitor management attend various meetings including the board of directors etc, and hold board of auditors meetings, needed to discuss important issues regarding an audit based on reports provided from each auditor.

As for internal audits, the Office of Internal Auditing audits the control/operation system and status of business execution from the view of legality, rationality and efficiency.

With regard to accounting audits, we have quarterly reviews where, from time to time, advice regarding accounting is received.

At audits by auditors, internal audits and accounting audits, they exchange information etc. closely based on mutual cooperation and collaboration to improve audits.

Relationship with the parent company

Our parent company, Shin-Etsu Chemical Co., Ltd., is a controlling shareholder that holds 52.3% of the total number of our issued shares (excluding treasury shares). We maintain independence in business activities and properly decide trading conditions based on market prices in trades when we purchase materials, etc. from the parent company.

Directors' remuneration

Directors' remuneration is decided within the range of an amount approved at the General Assembly of Shareholders in consideration of their roles, etc., through discussions at Board of Directors meetings for directors and at Board of Auditors meetings for auditors.

•Directors

Remuneration for directors includes "Bonuses" and "Stock options" that are a reflection of annual results, in addition to a "Basic remuneration," in order to reflect company performance and share price and clarify their management responsibility in improving corporate value. Remuneration for outside directors is a "Basic remuneration" corresponding to their roles in consideration of their responsibilities.

•Auditors

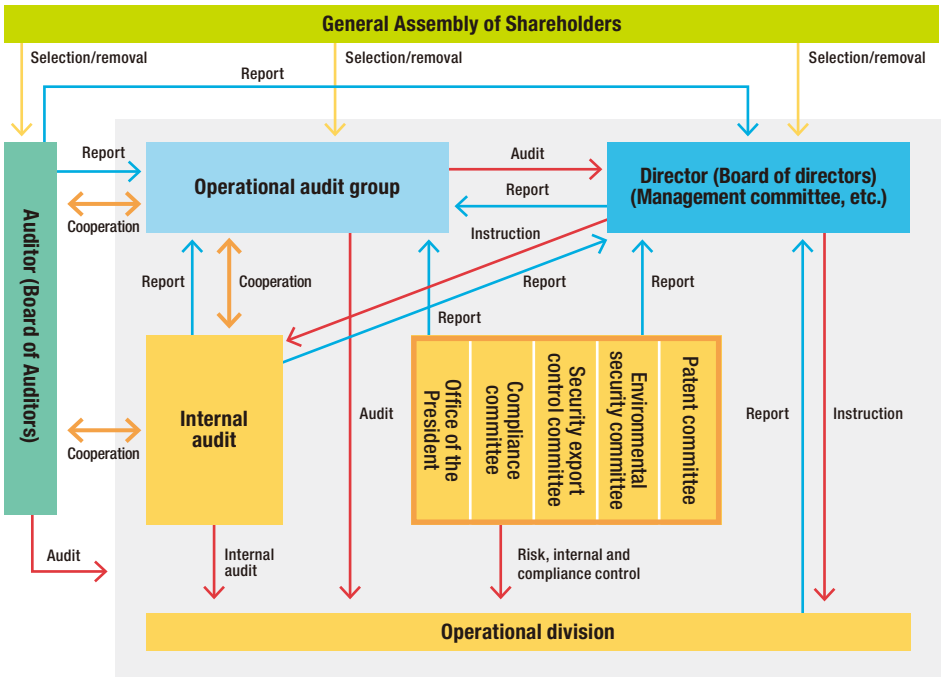
Remuneration for auditors is a "Basic remuneration" in order to place an emphasis on objectivity regarding performance and based on their roles.

Support System for Outside Directors (Outside Corporate Auditors)

The General Affairs Department and Legal Department provide support to outside directors, while the Auditors' Office supports outside auditors.

We inform outside directors and outside auditors of the schedule and agenda of important meetings, such as the Board of Directors meeting in advance. In 2016, frequency and quality of information supplement were improved by holding a liaison meeting for outside directors and auditors every month.

Shin-Etsu Group corporate governance system



Office of the President
Manages corporate-wide challenges and risks, comprehends management policies, measures all situations of the entire company and takes the appropriate measures. Furthermore, cooperates with other departments and operates as a contact center in case of an emergency.

Compliance committee
Involves deliberation and resolution of matters related to compliance policy and situational awareness.

Security export control committee
Involves deliberation and resolution of matters related to compliance with export control laws and regulations.

Environmental security committee
Involves deliberation and resolution of matters related to environmental security, disaster management, in addition to occupational health and safety.

Patent committee
Involves deliberation and resolution of matters related to industrial property rights.

Information disclosure system

We are always bearing in mind to enhance corporate governance and secure transparency of management and making efforts for fair, timely and proper information disclosure to shareholders/investors in accordance with applicable laws and regulations in relation with financial instruments trades, etc. and rules of the Tokyo Stock Exchange.

For our information disclosure system, based on "Basic Information Disclosure Policies," an information disclosure officer is appointed, and an Information Disclosure Committee meeting chaired by said officer takes place. The Information Disclosure Committee is made up of personnel from the Office of the President (In charge of IR/PR), the Accounting Department and the Legal Department as well as other related departmental personnel. The meeting is held when considered appropriate, striving to disclose information in a flexible and prompt manner.

Communication with shareholders/Investors

We hold explanatory meetings for analysts, investors and media at the time of announcements of financial statements of the end of each fiscal year and the 2nd quarter to explain our business status to shareholders/ investors. We also offer information such as news releases, summaries of accounts, materials for explanatory sessions of accounts, annual reviews, notices for General Meeting of Shareholders, notices of resolution etc. using the web site as speedy and fair information disclosure methods to shareholders/investors.

Described below are the current status of our efforts towards the invigoration of the General Assembly of Shareholders and a facilitation of exercising voting rights:

- **Early delivery of convocation notices for the General Assembly of Shareholders**
  To be sent three weeks prior to the day of the General Assembly of Shareholders
- **General Meeting of Shareholders to be held on a day other than a day general meetings of shareholders for other companies are taking place**
  56th General Assembly of Shareholders: June 27, 2017
- **Exercise of voting right using an electromagnetic method**
  Exercise of voting rights using an electromagnetic method via the Internet adopted
- **Effort to improve environment to exercise voting rights**
  Participation in electronic voting platform

Please visit our web site for a "Report on corporate governance".

- **http://www.shinpoly.co.jp/company/corporate.html**

Risk management and maintenance/ promotion of internal control and compliance system

Recognizing that risk management is a crucial issue for the sustainable group of a company, our group takes all necessary measures by promoting information sharing of critical risks across the entire group, especially driven by the Office of the President, and establishes a Disaster Recovery and Business Continuity Manual.

Additionally, we strive to operate and maintain a more appropriate and efficient internal control system positioning the construction, improvement and operation of said internal control system as an important management responsibility.

Furthermore, based on the idea that for our group to obtain trust as a member of society, it is essential to "Sincerely act, respecting values and ethics that are required as a member of society, not to mention complying with laws and regulations," our group promotes thorough compliance and excludes any relationships with antisocial forces.

Risk Management Regulations

Our group established "Risk Management Regulations" for the purpose of contributing to the smooth operation of our business by upgrading to a management system that is aimed at total risk prevention and one that responds to risks that do arise.

Risks as defined in Risk Management Regulations

1 Risk factors relating to business activities

1) Management risks
2) Sales and marketing risks
3) Customer risks
4) Production risks
5) Purchasing risks
6) Logistics risks
7) Quality risks
8) Technology risks
9) Environment and safety risks
10) Research and development risks
11) Intellectual Property risks
12) Information risks
13) Finance and accounting risks
14) Personnel and labor risks
15) Publicity and reputational risks
16) Social risks
17) Business infrastructure risks
18) Legal risks
19) Country specific risks
20) Others

2 Risks due to factors outside business activities

1) Risks due to economic factors
2) Risks due to social factors
3) Risks due to political factors
4) Risks due to scientific and technical factors
5) Risks due to natural environment and disaster factors
6) Others

Management of Business Continuity

Our group recognizes that using advanced technology to supply society with high-value-added products as one of our most important social contributions and considers that it is also a major corporate responsibility to continually supply these products. Many of our products have a large market share and are used for special applications in cutting-edge industries not only in Japan but also around the world, so any suspension of their supply may have a significant social impact.

We work on group business continuity management so that even in the instance of a serious disaster such as a large-scale earthquake, explosion or fire, we can fulfill our responsibility of supplying important products. The development of a business continuity and operational management plan is in progress, and by improving the business continuity system, we target accomplishing the following:

1 Safety confirmation and security of people associated with our group and their family members, as top priority
2 Minimization of any impacts on customers' business
3 Meeting expectations of our group from all stakeholders
4 Active and prompt support of restoration and recovery of disaster affected areas
5 Maintaining a system that allows quick responses to any new issues that may arise

BCM Training

Our group prepares and organizes countermeasures pertaining to potential natural disasters at numerous bases in Japan and overseas. BCM training is conducted once every year to confirm that the Group Emergency Response Division is in fact functioning properly. In FY2016, training was conducted based on the assumption that an earthquake with an intensity of 6 struck the Matsumoto district, in Nagano Prefecture, where Shinano Polymer is located. During the drill, it was assumed that Shinano Polymer requested the launch of a Group Emergency Response Division and for communication using satellite phones in order to survive for three days following such an earthquake.

In order to meet the requirements of customers and for the management rules of chemicals contained in our customers' products, the Shin-Etsu Polymer Group created the "Global Environmental Communication System" (G-Environmental System) to centrally manage all Group companies including overseas plants. We also apply the Global Environmental Communication System to respond to items which the whole group gets involved in, such as customers' environmental quality system, CSR surveys and BCM surveys.

Response to customers

Global Environmental Communication System (G-Environmental System)

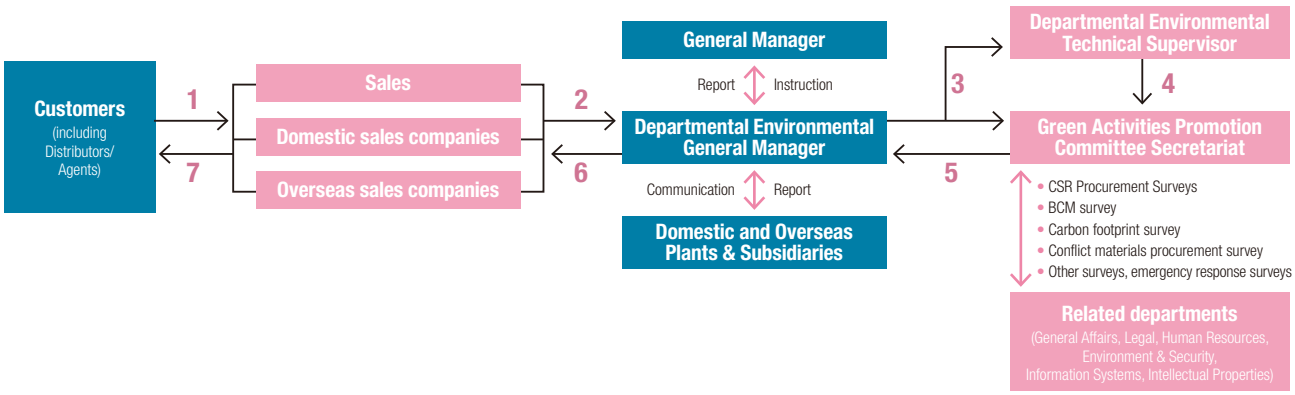
1 The "Environmental Management Representative" of our Group is appointed, and the Representative represents our Group with regard to customer's requirements in relation to the environmental quality of our products.

2 The "Environmental General Manager" and the "Environmental Technical Supervisor" are appointed at each division and respectively manage issues associated with the environmental quality of products of the division.

3 Submissions of such documents as Green Procurement Survey Responses, Certificate of non-use of environment-related substances, Conformation Form of the Changes in Management or Analysis Data are conducted in accordance with the rules set forth in the Global Environmental Communication System.

4 Materials with low environmental burdens (raw material, parts/components, packing material, etc.) are purchased from suppliers that promote environmental considerations in accordance with "Green Procurement Guidelines" and "Control Standards of Chemical Substances Contained in Products."

5 Part of this system is applied to customer's "CSR Procurement Survey (Supplier CSR Promotion Status Survey)" on human rights/labor, safety and welfare, environment, fair trade and ethics, quality and safety, information security and social contribution.



Shin-Etsu Polymer Group Conflict Material Policy

The Shin-Etsu Polymer Group expresses the following in relation to conflict minerals:

- The Shin-Etsu Polymer Group agrees with and supports the objectives of the Wall Street Reform and Consumer Protection Act on conflict minerals.
- The Shin-Etsu Polymer Group has no intention to participate in human right violations or environmental destruction by procuring raw materials, parts, components, or products using such conflict minerals.
- The Shin-Etsu Polymer Group will continue to work with customers, business partners, and industry organizations to proceed with efforts to avoid such participation.
- If any conflict minerals are found in raw materials, parts, components, or products the Shin-Etsu Polymer Group procures, the group will promptly take the necessary measures.

Initiatives in relation to quality control

Quality Policy of the Shin-Etsu Polymer Group

- **Focus on customer satisfaction**
  Recognizing the importance of quality and product safety and in order to ensure responsible action, we target the improvement of customer satisfaction.
- **Improvement of responses to customers**
  Should any problem occur, we strive to resolve it as quickly as possible by cooperating with relevant departments and taking immediate action.
- **Establishment of a quality assurance system**
  By establishing a quality assurance system that covers the entire group and continually improving it, we can realize quality differentiation and contribute to sales increases.
  In addition of course to products manufactured internally, the system is applied to all outsourced products and raw materials in an organized manner.

Our Group is consistently working on improving the overall quality assurance system to enable customers use our products with a real sense of security.

- **Quality of raw materials and outsourced products**
  As the quality of procured items are directly linked to the quality of our products, it is vital that we establish solid partnerships and relationships with suppliers. Conventionally, we conducted quality audits of suppliers by individual business units. Now, following a review and reorganization of the system, we conduct audits in a more aggressive manner.
- **Global Quality Meeting (photograph on the right)**
  In April 2017, staff members responsible for quality assembled at the Tokyo Plant and gave reports on the quality policy and targets, results of quality in the first term and future activity plans from the Office of Quality Assurance and individual production plants. We aim to hold such meetings on an annual basis, going forward.
- **http://www.shinpoly.co.jp/technology/index.html**

Comments from Mr. Makoto Kojima, Manager, Office of Quality Assurance

In order to assure quality of highly value-added products, we must improve the entire company's total strengths, including design and development processes, procured items, facilities and production sites. We are working towards an improvement of customer satisfaction in cooperation with procurement, development and sales divisions, in addition to all production plants.

With thinking that safety and environmental preservation are the foundation of company activities and one of the most important issues for management, the Shin-Etsu Polymer Group is positively working on activities to realize a human- and environment-friendly workplace with the aim for zero work time accidents and zero environmental accidents.

In addition, we are working towards creating a work environment where each and every employee can be themselves but also develop and grow at work.

Together with employees

Respect for human rights

•Human rights awareness raising activities

Based on a respect for human rights, the Shin-Etsu Polymer Group eliminates any unfair discrimination in terms of race, gender, academic background, disability, place of birth, ethnicity or religious beliefs. We conduct human rights awareness training for all employees as part of our efforts to promote an understanding of social integration and prevent problems such as sexual or power harassment.

•Elimination of child or forced labor

Our Group complies with laws and regulations related to labor and applicable global rules and prohibits child or forced labor in all countries and regions. We have surveyed all group companies including the ones overseas and confirmed no existence of child or forced labor.

Status of employment

Changes in consolidated number of employees

(Unit: Person)

End of FY	Personnel (Independent)			Personnel (Consolidated)		
	Male	Female	Total	Male	Female	Total
2012	494	100	594	1,556	1,991	3,547
2013	488	102	590	1,601	2,027	3,628
2014	501	107	608	1,678	2,284	3,962
2015	504	108	612	1,694	2,248	3,942
2016	498	109	607	1,742	2,402	4,144

*Number of employees refers to working employees.

Status of promotion to managerial positions (Our company only)

(Unit: Person)

End of FY	Managers		Officers	
	Male	Female	Male	Female
2012	248	4	15	0
2013	245	4	17	0
2014	251	4	16	0
2015	293	4	15	0
2016	314	5	15	0

*The applicable organization of this data is Shin-Etsu Polymer Co., Ltd. only.

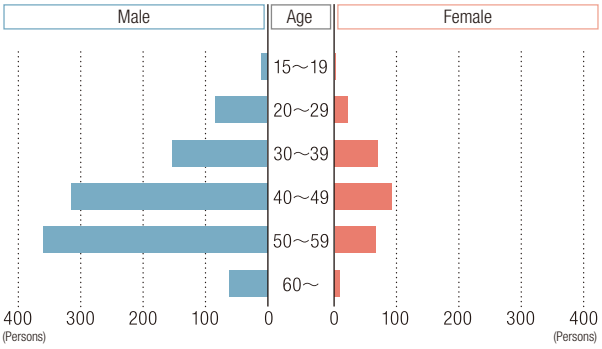
Number of new graduate employees (Our company only)

(Unit: Person)

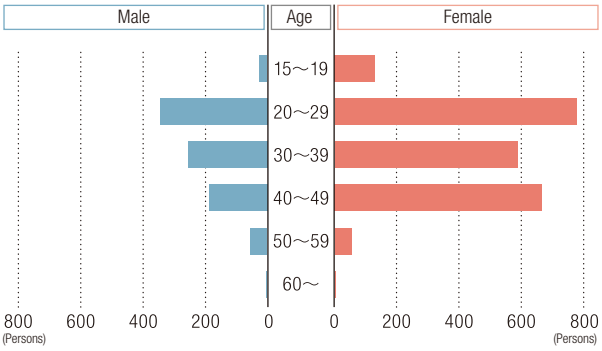
FY	Universities/colleges		High schools,etc.	
	Male	Female	Male	Female
Joined in April 2013	1	1	0	0
Joined in April 2014	6	0	0	0
Joined in April 2015	6	2	2	0
Joined in April 2016	7	2	1	0
Joined in April 2017	6	1	6	1

*Figures until FY2016 are independent data of Shin-Etsu Polymer.
*Figures for FY2017 refer to data following the merger.

Labor distribution by gender and age group (Our company and domestic group companies)



Labor distribution by gender and age group (Overseas group companies)



Work-life balance/ Diversity in ways of working

Our Group and all domestic Japanese group companies strive to create environments where all employees can work in the most comfortable manner as possible.

•Child rearing

Our Group revised the rules for child rearing leave in October 2016. These new rules allow employees to take child rearing leave until a child reaches the age of three, and or work shorter hours until a child reaches third grade in school. This particular revision is based on opinions that were collected through interviews conducted with employees who experienced or are currently experiencing child rearing. In FY2016, 10 employees took child rearing leave. In addition, employees that returned from child rearing leave are continuing to play active roles in the workplace. In cooperation with employees, we will continue to create and establish environments that are conducive to working during child rearing and where employees can easily continue and indeed maintain their employment status.

•Nursing care

Prior to an official legal amendment in 2017, we revised the standards for nursing care leave in advance, in October 2016. Various rules pertaining to nursing care have been revised to, for example, enable employees take advantage of shorter working hours to handle nursing care, in addition to nursing care leave for a period of 93 days. In order to enhance employee awareness in relation to rules regarding nursing care, we carried out briefing sessions of said revised rules at all sites. As the system dealing with nursing care is expected to become increasingly important, we will continue to tackle this task of creating environments where employees involved in nursing care can work in the most comfortable manner as possible.

Status of maternity leave, child rearing leave and nursery leave

End of FY	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of employees who took maternity leave (Persons)	4	2	3	5	7
Number of employees who took childcare leave (Persons)	7	6	3	4	10
Number of male employees who took childcare leave (Persons)	0	0	0	0	0
Ratio of female employees who took maternity leave (%) (Number of acquirer/ Number of birth ×100)	100	100	100	100	100
Number of employees who used shorter working-time system while caring for children (Persons)	4	4	1	3	4
Number of employees who took nursing care leave (Persons)	0	0	0	0	1

*The applicable organization of this data is Shin-Etsu Polymer Co., Ltd. only.

•Handling the Act to Advance Women's Success in Their Working Life

At our company, female employees' average years of service are 16.8 years in management positions and 13.1 years for general staff members*. The difference compared to male employees are five years for management position staff, and 3.6 years for general staff members, showing no significant difference across gender. In addition, we carry out various training programs regardless of gender supporting the development of every single employee. As a result, female employees in positions higher than Manager was 27 in FY2016 (increase of five from the previous year), while a further eight female employees were promoted to a management role in FY2017. They are now in a position where they are expected to play roles to demonstrate leadership and fully exert their abilities. We will continue to work on this issue of creating systems to develop human resources.

*As of the end of March 2017

•Employment of people with a disability

Our group and domestic group companies actively hire people with a disability, exceeding the minimum legal employment rate.

End of FY	FY2012	FY2013	FY2014	FY2015	FY2016
Number of employees with a disability	14	15	15	14	17
Employment rate of people with a disability (%)	1.99	2.22	2.25	2.02	2.34

*The applicable organization of this data is Shin-Etsu Polymer Co., Ltd. only.
*The legal employment rate of people with a disability in the private sector increased from 1.8% to 2.0%, as of April 1, 2013.

Together with employees

•Re-employment system

Our Group and all domestic Japanese group companies have updated individual re-employment systems for employees following retirement so that those who wish to work can do so until reaching the legal re-employment obligation age. This is designed to work alongside revisions to the Act on Stabilization of Employment Elderly Persons. Furthermore, by making full use of the knowledge, skills and experience re-employed persons have cultivated over their years of regular employment, it enables our Group to promote cost reductions and the transfer of skills to young employees. To enable re-employed persons play more active roles, we will continue to work on improving these systems.

•Career self-assessment system

We began implementing a career self-assessment system for employees 50 years old and over to recognize the challenges and knowledge required to continue working, and to improve their motivation levels. Additionally, in order to improve understanding of financial plans after retirement, we regularly host Pension Seminars by inviting outside instructors.

•Transition of annual paid leave

End of FY	FY2012	FY2013	FY2014	FY2015	FY2016
Average annual paid leave granted (Days)	19.4	19.6	19.6	19.2	19.2
Average annual paid leave taken (Days)	10.1	10.3	10.8	11.1	10.8
Annual paid leave taken (%)	52.1	52.6	55.1	57.8	56.3

*The applicable organization of this data is Shin-Etsu Polymer Co., Ltd. only.

Human Resources System

Our Group and all domestic Japanese group companies are continually working on personnel systems to facilitate any challenges being faced by employees. Following a revision to the personnel system for management position staff in 2015, we revised the personnel system for general staff members in FY2016, thereby establishing a consistent personnel system from general staff members to management position staff. We also adopted a track-based personnel system, consisting of three courses for management levels based on expected roles and three courses for general staff members on the basis of duties and or work locations. In conjunction with this, we also revised the personnel evaluation system, in the form of placing a higher importance on fairness and persuasiveness. This new personnel evaluation system focuses not only on achievements but also on abilities and attitudes that serve as a driving force to aim toward higher achievements. It also focuses on contributions made to the organization and teamwork, in addition to personal achievements. We will continue to focus on creating systems that facilitate any and all employee challenges.

Training and Development

We consider “helping people grow” as a source of development and business continuity, by supporting employees with a variety of programs at times of major turning points such as joining the company, promotions, and of course OJT.

•Tutor System

Our tutor system assigns a one-on-one tutor to each new employee with a focus on training. With this system, the tutor acts as both a role model and councilor for new employees. Working with new employees, the tutor also develops and grows through the experience.

•Management Training

Since FY2015, we have participated in rank-specific training (manager layer training, senior staff layer training) to learn the concepts and techniques of group-wide management. The training is conducted by Human Create Co., Ltd., an education and training institution belonging to Shin-Etsu Chemical Co., Ltd.

Also, within our group, we provide promotion training for employees newly elevated to management positions to give them additional support for growth.

Physical and mental health care

•Employee Assistance Program (EAP)

To support employees and their families to lead a healthy life both physically and mentally, the Shin-Etsu Polymer Group introduced the Employee Assistance Program (EAP).

While protecting privacy by using toll-free calls and e-mail, professionals of different fields offer consultation on, among others, mental health, health, child rearing, nursery care, legal matters and financial matters. We also have a point of contact for consultation in relation to sexual harassment.

To raise awareness about mental health and health management, we regularly deliver information useful for health promotion via our in-house LAN.

Environmental security management system

•Environmental Security Policy

Our Group recognizes that safety, disaster management and global environmental protection are management issues of top priority. Consequently, as a group we work on:
(1) creating safe, comfortable and environmentally-friendly workplaces while aiming to achieve zero occupational accidents, zero occupational disease and zero environmental accidents, (2) observing all relevant laws and regulations, (3) preventing disasters and environmental accidents by promoting risk management and minimizing risks (promotion of risk assessments) (4) raising awareness of safety, disaster prevention and environmental conservation via education and (5) obtaining trust from society by openly disclosing information about the current status of all our environmental security activities.

•Aiming for zero work time accidents

We perform regular risk assessments of our facilities and operations based on the occupational health and safety management system in place, and promote safety proposals, near-miss elimination activities, and risk prediction training with participation by all employees. Our target is to achieve zero accidents by establishing safety as part of our corporate culture and creating workplaces with a high level of safety awareness.

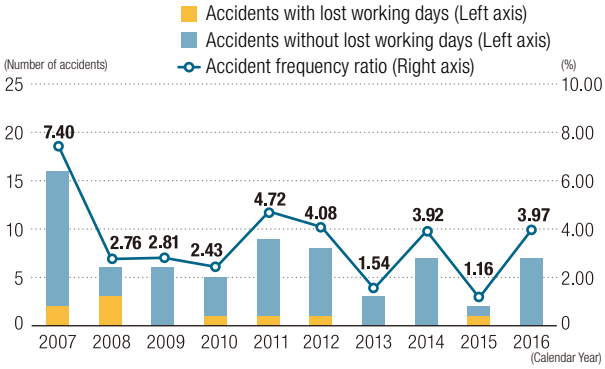
•Environmental security audits

We regularly conduct environmental security audits to confirm as to whether the environmental security activities at each business office are in fact being implemented. As part of these audits, compliance with all applicable laws and regulations and the current status of environmental security management activities are checked on and confirmed. During an audit in FY2016, we engaged in the implementation of effective safety education towards zero accidents and the promotion of preventive measures by applying safety measures across organizations, as top priority challenges.

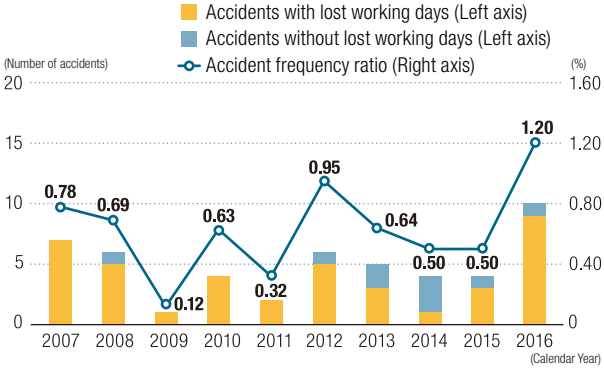
•Reports on work time accidents in 2016

There were seven occupational accidents in 2016 at production sites in Japan and 10 at overseas sites, resulting in an overall increase of 11 accidents across the Group. In response to two overseas production sites, where incidents have particularly increased, we reconsidered the safety system plan focusing on reinforcing safety observation and KYT (Kiken Yochi Training-Risk Prediction Training) activities. As a result of this, the accidents that occurred at the two sites between January and June in 2017 were reduced to one, which clearly demonstrates the beneficial effect of the safety system reinforcement.

Transition in number and frequency ratio of industrial accidents (Domestic plants total)



Transition in number and frequency ratio of industrial accidents (Overseas plants total)



•Regular environmental security audits at overseas production sites

We regularly conduct environmental security audits at domestic Japanese and overseas production sites with the aim to confirm systems and the current status of environmental security activities (safety and health, disaster prevention, fire prevention, environmental conservation and law and regulatory observance), in addition to maintaining and improving the activities every year. Audits were irregularly conducted at overseas sites until FY2015, but with environmental regulations becoming increasingly more strict, it was decided to conduct audits on a regular basis from FY2016. In FY2016, we conducted environmental security audits at Shin-Etsu Polymer (Malaysia) Sdn. Bhd., Suzhou Shin-Etsu Polymer Co., Ltd., Dongguan Shin-Etsu Polymer Co., Ltd. and PT. Shin-Etsu Polymer Indonesia. This allowed for a confirmation that environmental security activities are in fact being executed properly.

Audit at Dongguan Shin-Etsu Polymer Co., Ltd.

Support flags were hung at the local shopping mall in greatly affected Itoigawa City

Based on the concept of "making efforts to coexist with local communities," we tackle health and safety, communication with communities, humanitarian and disaster relief activities, in addition to other environmental protection activities. In relation to the implementation status of such activities, we openly disclose all relevant information.

Together with local community

Communication with communities

•Humanitarian and disaster relief activities

At all domestic Japanese and overseas plants, our Group provides assistance to humanitarian support and disaster relief activities in a number of countries around the world.

Shin-Etsu Polymer Co., Ltd.

Response to Itoigawa Station North Fire in Itoigawa City, Niigata Prefecture, December 22, 2016

•Contribution activity

We donated a total of 10 million yen to Itoigawa City in support of restoration activities.

•Support

As a means to contribute to disaster relief activities for people affected by said disaster, we provided 100 cases of 100-meter Polyma-Wrap rolls, which are produced at our Tokyo Plant (Saitama Prefecture).

We also sponsored a support flag activity, which was organized by an association consisting of local shopping malls and companies in the locality.


Polyma-Wrap that was donated to affected area

Shin-Etsu Polymer India Pvt. Ltd. (SD Company)

SD Company visits a facility for elderly people and children with no relatives in the local neighborhood, and also makes donations since last year. We donated a 2,000-liter water storage tank, as the area is suffering from a lack of rain, which resulted in a continuous drought. A group of 15 SD Company employees delivered a donation that our employees collected, in addition to towels, cotton blankets and clothing contributed by Shin-Etsu Polymer Singapore Pte. Ltd.


Water storage tank and SD Company employees who visited the facility

•Acceptance of workplace experience participants

Each production site offers opportunities for local students to gain a workplace experience. This year, four sites accepted a total of 12 students.

Tokyo Plant	6 People
Shinano Polymer Co., Ltd.	2 People
Niigata Polymer Co., Ltd.	2 People
Shin-Etsu Polymer (Malaysia) Sdn. Bhd.	2 People


Shinano Polymer Co., Ltd.
Second-year students from Okaya Technical High School learned about silicone processes over a period of two days.


Niigata Polymer Co., Ltd.
Second-year students from Itoigawa Hakurei High School learned about inspection processes of semiconductor-related containers for a two-day period.

•Acceptance of plant tour participants

Production sites regularly welcome plant tour participants. This year, three different sites accepted 87 people in total.

Tokyo Plant	20 People
Suzhou Shin-Etsu Polymer Co., Ltd.	42 People
Shin-Etsu Polymer (Malaysia) Sdn. Bhd.	25 People


Shin-Etsu Polymer (Malaysia) Sdn. Bhd.
Students from Terengganu Advanced Technical Institute

•Beautification activities

All production sites conduct beautification activities in their local vicinities. This year, there was participation by a total of 334 employees at five bases.

Tokyo Plant	144 People
Kodama Plant	33 People
Nanyo Plant	2 People
Shinano Polymer Co., Ltd.	75 People
Niigata Polymer Co., Ltd.	80 People

Tokyo Plant
We conduct a monthly cleaning activity in the vicinity of the plant. Quite a quantity of cigarette butts, discarded PET bottles and cans are found and disposed of each time we carry out the activity.

Shinano Polymer Co., Ltd.
Participated in 16th Eco Walk "Clean Shiojiri" Mission

•Participation in community events

Suzhou Shin-Etsu Polymer Co., Ltd. (SC Company)

The Wujiang Foreign Company Association holds public readings on compliance with the purpose of improving awareness of compliance and preventing illegal acts. SC Company fully agrees with the purpose and mandate of the association. Four SC Company employees participated in the latest event. They read Lian Jie Song for 32 overseas companies on May 12. We will continue to participate in this activity in order to prevent any illegal acts.

SC Company employees participated in the activity, and also gave readings

Health and safety

•Blood donation

We conducted blood donations at domestic and overseas sites, with 197 employees in total participating at five different sites this year. The number of participants are as per the below details:

Tokyo Plant	31 People
Shinano Polymer Co., Ltd.	25 People
Shin-Etsu Polymer Hungary Kft.	3 People
Shin-Etsu Polymer (Malaysia) Sdn. Bhd.	93 People
Suzhou Shin-Etsu Polymer Co., Ltd.	45 People

Tokyo Plant
We invite a mobile blood donation bus to our plant and conduct blood donations two times a year

Shinano Polymer Co., Ltd.
Blood donation drive in canteen

•Traffic safety

Shin-Etsu Polymer India Pvt. Ltd. (SD Company)

About 80 employees from 25 Japanese companies called for the wearing of seatbelts and helmets by drivers of cars and motorcycles, respectively, using the local road near Elliots Beach, a tourist destination in the suburb of Chennai City, under the guidance of the local police force. The rate of seatbelt use in India is as low as almost 10%, but when requested, drivers and motorcycle riders immediately complied. From SD Company, two Japanese employees, four local employees and two of their children participated in this event.

SD Company employees that participated in the activity

Based on its Basic Environmental Principles, the Shin-Etsu Polymer Group addresses challenges such as global warming protection, energy saving, resource saving, waste reduction and recycling, positioning them as action items of the group-wide Green Activities and promoting environmental protection by reducing environmental burdens.

Together with environment

Basic Environmental Principles

•Basic Policy

Shin-Etsu Polymer group recognizes that the work for environmental conservation is one of the highest priority issues for our operation. Therefore we are working hard to become a part of building a recycling economic society through our responsibilities required.

•Action Policy

1 We are rebuilding the organization and systems to work for efficient and continuous environmental activities.

2 We observe law and regulations for resource conservation, energy saving, waste reduction, recycling and the proper handling of environmentally harmful substances. In addition, we set challenging goals and try to achieve it within our own manner in technical and economic resources.

3 We evaluate the environmental impacts of all phases from purchase and production through usage and disposal during the new product development stage and thus reduce its environmental impact.

4 We strive for the conservation and sustainable use of biological diversity by understanding and evaluating the impact on ecosystems from business activities, and by reducing this impact.

5 We provide internal education programs to achieve understanding and awareness of basic environmental policies for all employees.

6 We disclose the information of our environmental activities and make efforts to coexist with the community.

Environmental management system diagram

Corporate Mission Statement

⇩

Basic Environmental Principles

Basic Policy / Action Policy

⇩

Organization

Creating promotional structure

⇩

Goal / Plan

3-year mid-term goal

⇩

Activity: Green Activities	
Environmental management system	Acquired certification for environmental management system
Environmental performance	Countermeasures against global warming
	Measures for effective use of resources
	Measures to reduce environmental load substances
	Creation of environmentally friendly and contributing products
	Bio-diversity protection
Publicity	Sustainability report
	Environment accounting
Education / training	Environmental education
	Auditing
	Company-wide briefing

Green Activities organization

Green Activities refer to activities including the acquisition of an environmental management system certificate, understanding and support of “Environmental Performance” such as countermeasures against global warming and measures for the effective use of resources, public relations as represented by environmental and social reports, and education and training in the form of corporate-wide briefings.

Green Activities organization (As of March 31, 2017)

Green Activities

Environment & quality management system

ISO14001, ISO9001, ISO/TS16949, ISO13485

Improvement of environmental performance

Energy saving, Management Waste reduction and recycling, Chemical substance control, Management of chemical substances contained in products

Information disclosure

Sustainability Report, Environmental accounting

Environmental education

Environment quality lectures, Auditing of environmental quality products, Corporate-wide presentations, In-house media

Green Activities Promotion Bureau

Chairman: President
Vice Chairman: Director in charge of Technology,
Director in charge of General Affairs

Secretariat

Technology Management Group,
Environmental Control & Safety Group,
Office of the President, General Affairs Department

Energy-saving Subcommittee

Office Subcommittee

Recycling Subcommittee

Eco-Products Promotion Activities

Plant Green Activities Subcommittees

Plants

Tokyo Plant, Nanyo Plant, Kodama Plant

Production Subsidiaries

Shinano Polymer Co., Ltd., Urawa Polymer Co., Ltd.,
Niigata Polymer Co., Ltd., SAN-ACE Co., Ltd.

Head Office, Branches and Sales Offices

Head Office, Osaka Branch, Nagoya Branch,
Fukuoka Branch, Sendai Branch

Sales Subsidiaries

Shin-Etsu Finetech Co., Ltd.

Overseas Subsidiaries

Suzhou Shin-Etsu Polymer Co., Ltd.
Shin-Etsu Polymer Shanghai Co. Ltd.
Dongguan Shin-Etsu Polymer Co., Ltd.
Shin-Etsu Polymer Hong Kong Co., Ltd.
Shin-Etsu Polymer (Thailand) Ltd.
Shin-Etsu Polymer (Malaysia) Sdn.Bhd.
Shin-Etsu Polymer Singapore Pte. Ltd.
PT. Shin-Etsu Polymer Indonesia
Shin-Etsu Polymer India Pvt. Ltd.
Shin-Etsu Polymer America, Inc.
Shin-Etsu Polymer Europe B.V.
Shin-Etsu Polymer Hungary Kft.
Shin-Etsu Polymer Vietnam Co.,Ltd.

*In April 2017, the organization was restructured.

Certifications of Environmental Management System

We have been awarded with ISO14001 certifications at all domestic Japanese and overseas production sites. Based on a concept of reducing environmental burdens and complete compliance with all environment laws and regulations, we will continue to be engaged in environment improvement activities by efficiently utilizing the management system we have in place.

*Please visit our website for further information on registration card numbers, certification bodies and various other data.

List of Plants & Subsidiaries approved by the Sony Green Partner Environmental Quality Approval Program

Shin-Etsu Polymer Co., Ltd. ID: 410A

Factory Code	MC Name	FC Name	Expiry Date
FC014187	Dongguan Midas Electronic Co., Ltd.	Dongguan Midas Electronic Co., Ltd.	2019.8.31
FC007726	Shin-Etsu Polymer Co.,Ltd.	Itoigawa Plant	2019.8.31
FC002586	Shin-Etsu Polymer Co.,Ltd.	Kodama Plant	2019.8.31
FC002584	Shin-Etsu Polymer Co.,Ltd.	Shiojiri Plant	2019.8.31
FC007742	Shin-Etsu Polymer Co.,Ltd.	Tokyo Plant Production Department I	2019.8.31
FC014180	Shin-Etsu Polymer Co.,Ltd.	Tokyo Plant Production Department II	2019.8.31
FC013450	Suzhou Shin-Etsu Polymer Co.,Ltd.	(No Factory Name)	2019.8.31

*Approval date: June 12, 2017
*Each name is compliant with the Notification of Green Partner Certification.

The 5th Mid-term Targets of the Green Activities of the Shin-Etsu Polymer Group Results for FY2016

(As of April 1, 2017)

The time period for the 5th Mid-Term Targets is from FY2015 to FY2017. We are working towards achieving them all by FY2017.

Countermeasures against global warming

	Indicator	FY2016			FY2017 target
		Target	Result	Achievement	
Reduction of CO_2 emissions (Domestic plants)	Basic unit of production weight (t-CO_2/t) Reference: FY2008	8% reduction	22.8% reduction	Achieved	9% reduction compared to FY2008
		0.8147	0.6833		0.8059
Reduction of energy converted to crude oil (Domestic plants)	Basic unit of production weight (kℓ/t) Reference: FY2014	2% reduction	Max. increase: 0.9% Max. reduction: 19.5%	Achieved at 4 plants Not achieved at 2 plants	3% reduction compared to FY2014

*1. This year's data uses emission factors from FY2008 as references. Due recalculations have been made.

FY2016 activities
- Promoted the introduction of LED lighting and high-efficiency air conditioning units, in addition to investments made in the renewal of aging forming facilities and utilities.

FY2017 challenges
- It is necessary to focus on process yields that contribute to reductions in power consumption and also promote process improvements, including further productivity improvements.

	Indicator	FY2016			FY2017 target
		Target	Result	Achievement	
Reduction of energy converted to crude oil (Domestic non-plant business bases)	Basic unit of used area (kℓ/m²) Reference: FY2014	2% reduction	16.5% reduction	Achieved	3% reduction compared to FY2014
		0.0577	0.0492		0.0574

FY2016 activities
- Implementation of energy saving measures in the summer and winter.

FY2017 challenges
- Implementation of energy saving and power saving measures in the summer and winter (in cooperation with building management company).

	Indicator	FY2016			FY2017 target
		Target	Result	Achievement	
Reduction of energy consumed for logistics	Basic unit of transportation compared to the previous year (kℓ/t)	1% reduction	5.4% increase	Not achieved	1% reduction compared to FY2016
		0.0129	0.0137		0.0136

FY2016 activities
- Basic units worsened due to extended transport distances as a result of a change in shipping bases.
- Upsizing of vehicles and modal shifts: Rail transportation: 10.5%; Sea transportation: 10.6%

FY2017 challenges
- Consideration of how to change means of transport from changed shipping bases.
- Smaller lot shipments, downsizing of vehicles and countermeasures pertaining to urgent shipments.

Effective use of resources

	Indicator	FY2016			FY2017 target
		Target	Result	Achievement	
Emission rate (Group domestaic plants)(*2)	Less than 1%	Less than 1%	1.03%	Not achieved	Less than 1%
Emission rate (Domestic plants)	Less than 1%	Less than 1%	Minimum 0% Maximum 2.57%	Achieved at 5 plants Not achieved at 1 plants	Less than 1%

*2. Emission rate = (amount of landfill + simple incineration)/total waste emissions x 100 (%)

FY2016 activities
- Targets were not achieved as unexpected defects occurred while parts of defective products could not be recycled and were disposed of by landfill.

FY2017 challenges
- It is necessary to consider how best to respond to unexpected incidents and towards the recycling of reagents and chemicals in small quantities.

	Indicator	FY2016			FY2017 target
		Target	Result	Achievement	
Reduction of waste emissions (Group domestic plants)	Basic unit of production weight (kg/t) Reference: FY2014	2% reduction	3.8% reduction	Achieved	3% reduction compared to FY2014
		58.4kg/t	57.3kg/t		57.8kg/t
Reduction of waste emissions (Domestic plants)	Basic unit of production weight Reference: FY2014	2% reduction	Between 12.5% increase and 29.8% reduction	Achieved at 4 plants Not achieved at 2 plants	3% reduction compared to FY2014

FY2016 activities
- Activities involved improving process yields and reducing molding burrs.

FY2017 challenges
- Further improvement of process yields and production processes, while also necessary to consider the eradication of urgent deficits.

Control value achievements for 2015 are shown in the table below.
We worked towards year-on-year reductions in FY2016.

	Indicator	FY2016			FY2017 target
		Target	Result	Achievement	
Creation of environmentally friendly and contributing products	Compared with the number of certified products in FY2014	To be doubled in FY2017	1.5 times	-	To be doubled in FY2017

FY2016 activities
- Certification was not conducted as related products were mainly released in FY2016. However, we approached the R&D Division in order to create such products.

FY2017 challenges
- It is necessary to solve cases where it is not possible to evaluate the degree of contribution being made by new products if measurements are difficult when used by customers.

Control of chemical substances

Control item	Indicator	FY2016		
		Control value	Result	Achievement
PRTR registration	Registered amount	1,417kg	2,016kg (599kg increase)	42% increase compared to previous year
	Basic unit of production weight	0.039kg/t	0.053kg/t	36% increase compared to previous year
	Class I Specified Chemical Substance	84kg	95kg (11kg increase)	13% increase compared to previous year
Reduction of emissions of VOC into the atmosphere	Emissions into atmosphere	27.2t	Emissions: 16.7t (10.5t reduction)	39% reduction compared to previous year
	Basic unit of production weight	0.744kg/t	0.439kg/t	41% reduction compared to previous year

FY2016 activities
- Promoted replacement of cleaning solvents.

FY2017 challenges
- Evaluations by risk assessments and the study of alternative materials.

Water resources

Control item	Indicator	FY2016		
		Control value	Result	Achievement
Domestic use of industrial water	Total amount of use by all domestic plants	462m^3	487m^3 (25m^3increase)	5% increase compared to previous year
	Total basic unit of production weight by all domestic plants	13m^3kt	13m^3/kt	Same as the previous year
Domestic industrial water drainage	Domestic industrial water drainage	407m^3	437m^3 (30m^3 increase)	7% increase compared to previous year
	Total basic unit of production weight by all domestic plants	11m^3/kt	12m^3/kt	3% increase compared to previous year
Amount of overseas industrial water used	Total amount of use at overseas plants	185m^3	192m^3 (7m^3 increase)	4% increase compared to previous year
	Basic unit of production weight at overseas plants	34m^3/kt	36m^3/kt	5% increase compared to previous year
Overseas industrial water drainage (*3)	Total amount of drainage at overseas plants	156m^3	161m^3 (5m^3 increase)	3% increase compared to previous year
	Basic unit of production weight at overseas plants	28m^3/kt	30m^3/kt	5% increase compared to previous year

*3. Volumes of drainage at overseas plants were duly corrected.

FY2016 activities
- Promoted switching to circulating water both in Japan and overseas.

FY2017 challenges
- Countermeasures against issues that may accompany the switch to circulating water.
- Investigate water risks at each plant and also study countermeasures.

Environmental burdens accompanying our business activities

We consider that accurately understanding the environmental burdens associated with our business activities is the basis of environmental conservation activities. In order to effectively and continually promote environmental conservation activities, we check these figures and make plans to reduce environmental burdens and duly carry out activities.

INPUT

Resources and energy

( ) Figures within brackets show the percentage against the previous year

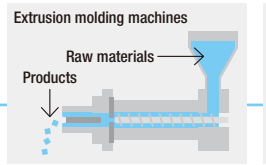
	Domestic production locations	Domestic offices	Foreign production locations	Foreign offices	Group Total
Energy (Converted to crude oil)	11,901kℓ (4% increase)	280kℓ (5% increase)	17,246kℓ (3% increase)	37kℓ (3% reduction)	29,464kℓ (4% increase)
Water consumption	487km³ (5% increase)	-	192km³ (4% increase)	-	648km³ (5% increase)
Chemical substances subject to PRTR	100.6t (13% reduction)	-	-	-	-

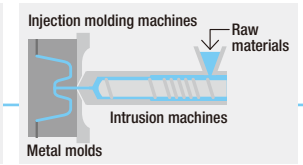
* Amendment made as domestic office data of last year was incorrect.

Raw materials

- Polyvinyl chloride
- Silicone rubber
- Other synthetic resin
- Other materials

Shin-Etsu Polymer Group





High-definition printing | Adhesion | Compositions of different types of resin | Extrusion molding | Injection molding | Film forming

OUTPUT

Touch switches


Key switches


Tap water pipes, etc.


Medical catheters


Wafer cases


Wrapping films

To the environment

( ) Figures within brackets show the percentage against the previous year

		Domestic production locations	Domestic offices	Foreign production locations	Foreign offices	Group Total
CO_2 emissions		25,945t-CO_2 (3% increase)	594t-CO_2 (5% increase)	38,115t-CO_2 (3% increase)	80t-CO_2 (4% reduction)	64,734t-CO_2 (3% increase)
Waste	Total emissions	2,177t (5% increase)	-	2,294t (4% reduction) (*1)	-	4,471t (Same as previous year)
	Recycled amount	2,154t (4% increase)	-	-	-	-
	Simple incineration	5.85t (11% increase)	-	-	-	-
	Landfill	16.62t (481% increase)	-	-	-	-
	Emission rate	1.03% (0.64 points increase)	-	-	-	-
Waste water		437km³ (7% increase)	-	161km³ (3% increase) (*2)	-	598km³ (6% increase)
PRTR emissions (Reported amount of subject substances)		2.0t (44% increase)	-	-	-	-

*1. Aggregated value based on Group standard

*2. This year's data uses emission factors from FY2008 as references. Due recalculations have been made.

*Figures of overseas plants are aggregated based on the calendar year.

Countermeasures against global warming

To contribute to the prevention of global warming, we are striving to promote efficient transportation, in addition to energy saving in Japan and at overseas plants. We calculate energy converted to crude oil, the basic units of CO_2 emissions against produced weight and scope 3, all the while attempting to reduce each of them.

•Domestic plants

About all domestic plants

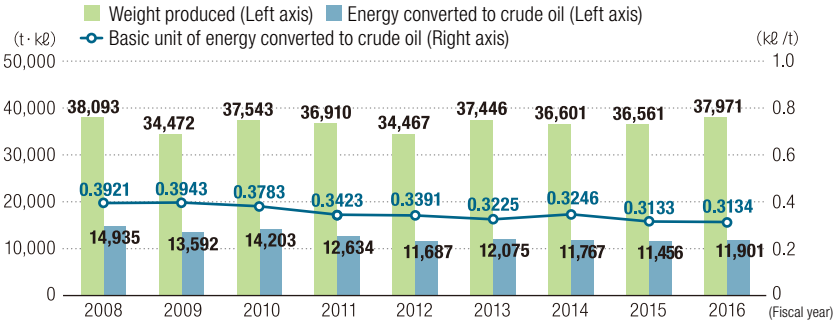
The basic unit of produced weight energy in FY2016 was reduced by 3.5% compared to that of FY2014. The basic units of CO_2 emissions against produced weight declined by 22.8% compared to the reference year (FY2008) and achieved the targeted 8% reduction.

About each plant

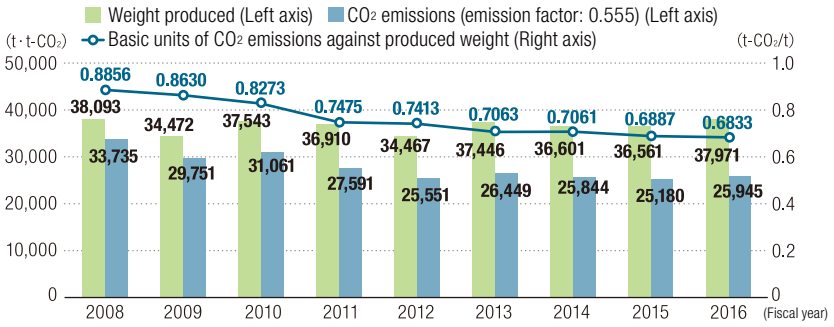
The target for basic units of produced weight energy in FY2016 was a 2% reduction compared to the reference year (FY2014). Four plants achieved the target, however two plants were unable to do so.

We will promote countermeasures against global warming by improving process yields and investing in highly efficient facilities in the form of LED lighting and air conditioners.

Transition of energy converted to crude oil and basic unit of energy converted to crude oil (Domestic plants)



Transition of CO_2 emissions and basic units of CO_2 emissions against produced weight (Domestic plants)



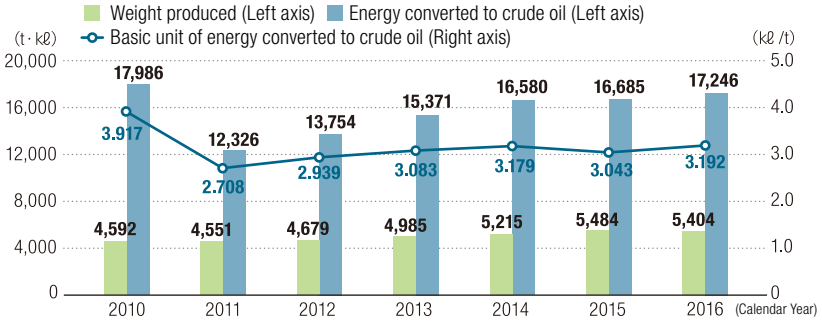
•Overseas plants

The basic units of produced weight energy in 2016 increased by 0.4% compared to that of 2014. The basic unit of CO_2 emissions against produced weight increased by 0.2% compared to that of 2014.

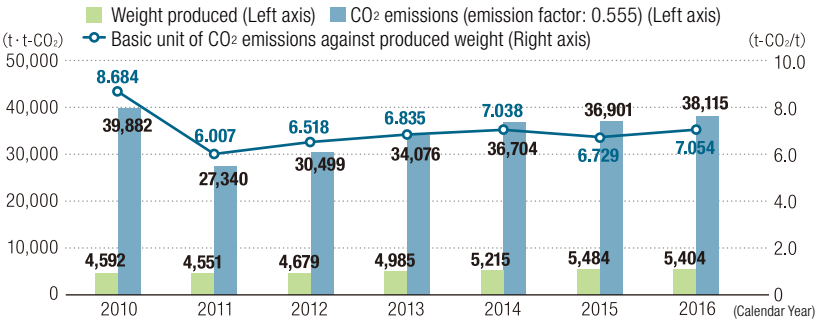
We will promote countermeasures against global warming that we have deployed in Japan, which includes an improvement of process yields.

*This year, CO_2 emissions were recalculated with a fixed emission factor. By applying the same method of calculation to both domestic plants and overseas plants, CO_2 emissions were recalculated.

Transition of energy converted to crude oil and basic units of energy converted to crude oil (overseas plants)



Transition of CO_2 emissions and basic units of CO_2 emissions against produced weight (Overseas plants)



•GHG Scope 3 emissions

Our group calculates the Scope 3 emissions based on the guidelines by the Ministry of Environment, and compares the value with last year by category. Scope 3 emissions in FY2016 saw a 3% increase from the previous fiscal year at 151,400t-CO_2, which accounted for 69% of the total supply chain (Scope 1 - 3).

Category		FY2015	FY2016	Compared to previous fiscal year
Our group	(Scope 1) Direct emissions	3.0	2.8	-7%
	(Scope 2) Indirect emissions from	62.7	64.7	3%
1	Purchased products/services	48.7	55.7	14%
2	Capital goods	-3.6	0.0	-
3	Energy-related activities outside Scope1, 2	4.1	4.3	5%
4	Transportation, shipping (upstream)	38.3	43.7	14%
5	Business waste	1.1	1.2	9%
6	Business trips	1.8	1.7	-6%
7	Employee commute	2.6	3.0	15%
8	Lease assets (upstream)	-	-	-
9	Transportation, shipping (downstream)	3.9	3.9	0%
10	Processing of products sold	-	-	-
11	Use of sold products	-	-	-
12	Disposal of sold products	32.0	37.9	18%
Subtotal of Scope 3		128.9	151.4	17%
Total		194.6	218.9	12%
Percentage (Scope 3)		66%	69%	

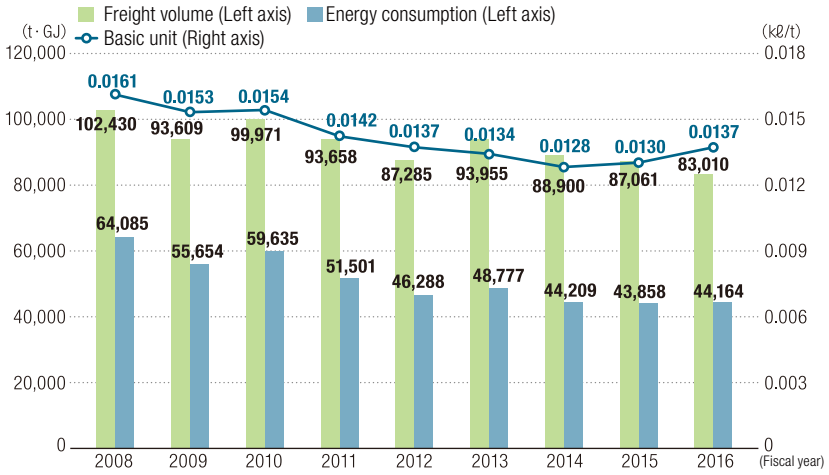
*1. Category 1-8 belong to upstream in the supply chain, and Category 9-12 belong to downstream
*2. If not indicated, the unit for figures is 1,000t-CO_2

•Energy-saving activities related to transportation

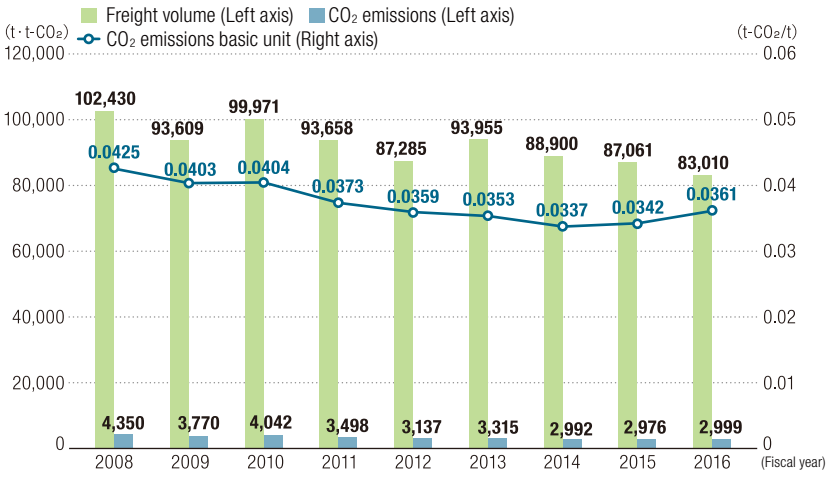
Freight volume decreased by 4.7% from the previous fiscal year, while the energy consumption basic unit increased by 5.5%, as a result of a shipping base relocation and the downsizing of vehicles due to an increase in small-lot and urgent shipments.

The effects from expanding the size of vehicles for transportation purposes between sites, in addition to modal shifts (change to railway and ship transportation) continued, as can be seen from railway transportation at 10.5% and sea freight at 10.9%. We will continue to promote a reduction of the basic unit, while also implementing further modal shifts.

Transition in basic unit of heat and energy consumption for freight volumes



Transition in basic unit of CO_2 emissions rate and CO_2 emissions for freight volumes



•Energy conservation of air conditioners

Nagayoshi Kiyosawa
Manager
Production Engineering Section

Looking back, the Shiojiri Plant of Shinano Polymer Co., Ltd. was built in September 1979, while the fifth building on site was completed in 1996. We worked on energy conservation even prior to the start of Green Activity in 2000, planning targets and countermeasures via the Energy Conservation Subcommittee.

During this process, we established the efficiency promotion of air conditioners, which accounts for a major portion of the energy consumption we use apart from electric power, as one of our main goals. Air conditioning facilities consisting of five buildings operated on kerosene and heavy-duty oil. We had to proceed with the project in a systematic manner, in conjunction with the aging of facilities. This project began in 2014, following a year of planning. We have conducted large-scale modifications on an annual basis ever since. We are currently planning for FY2017. The reduction rate in energy consumption differs for each modification, but a major modification resulted in reducing energy consumption by almost 50%.

We will continue to promote this project, while at the same time, consider new targets for energy conservation with the full involvement of all project members.

Modification of outdoor units, etc.

Underground tank sign

•Countermeasures against quality deterioration of PVC pipes (Nanyo Plant)

Quality deterioration due to ultraviolet rays and external temperature has long been a significant issue when storing PVC pipes outdoors. Therefore, in order to solve this problem, we launched a project to implement improvement activities.

Issue 1: Discoloration of pipes

Issue 2: Bending of pipes

Issue 3: Scratching and soiling of pipes

We conducted a number of repeated investigations on conditions where individual issues occurred, while also studying countermeasures and carried out tests of said countermeasures. Throughout this process, we implemented various improvements such as using sheets with higher UV protection and changing loading methods on storage racks, and consequently, were able to reduce the quality deterioration of the pipes.

We will continue with these improvement activities and put further effort into additional quality improvements.

Yoshihiro Yoshimura
Management Group
Nanyo Plant

Waste reduction and recycling

In the 5th Mid-term Targets (FY2015-2017), we are promoting activities with the goal of "maintenance and continuation of zero emission" and "3% reduction of basic unit of waste emissions against produced weight compared to FY2014".

•Approaches to waste reduction and recycling

With our keywords "zero landfills and simple incineration by promoting waste recycling," we are engaged in activities to achieve and maintain zero emissions (less than 1% emission rate) with control indicators 1) basic unit of waste emissions and 2) emission rate.

•Key initiatives

In terms of waste reduction activities, we tackle the improvement of pass rates and the reduction of start-stop losses, while also working on waste disposal in the form of deterioration preventive measures of inventory and a reduction of liquid silicon material residue.

•Results for FY2016

Domestic plants

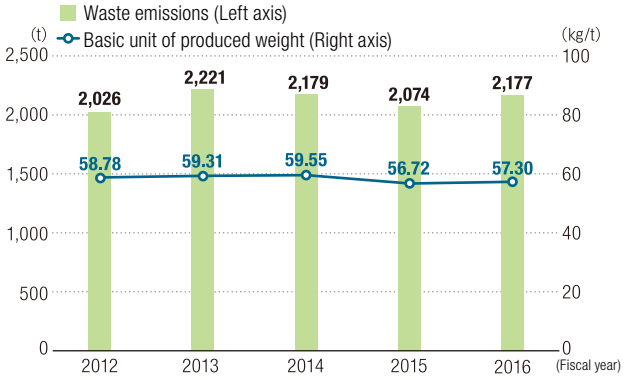
The total volume of waste in FY2016 was 2,177 tons, which was a 103-ton increase from the previous fiscal year. The basic unit of waste emissions against produced weight was 57.30kg/t, which achieved the targeted amount but at the same time was a 1.0% increase from the previous fiscal year. In addition, the emissions rate was 1.03%, which failed to achieve the target of less than 1.0%. This was caused by 124.29 tons of sporadic defects in a certain film product, 16.35 tons of which could not be recycled due to contamination by foreign substances, and that were disposed of in a landfill.

Specially controlled industrial waste mainly consists of waste acid, waste alkali and waste oil. They were all properly treated with neutralization, incineration and other methods.

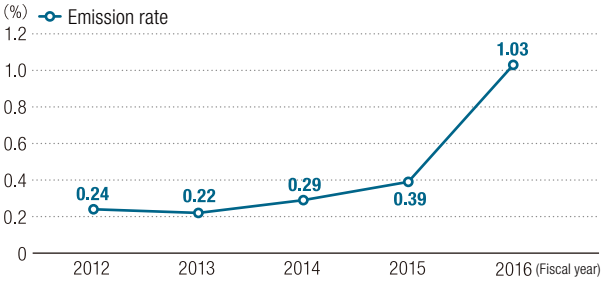
Overseas plants

The total volume of waste in 2016 was 2,294 tons or a 82-ton decrease from the previous year. The basic unit of waste emissions against produced weight was 424.5kg/t, which was a 2% decrease from the previous year.

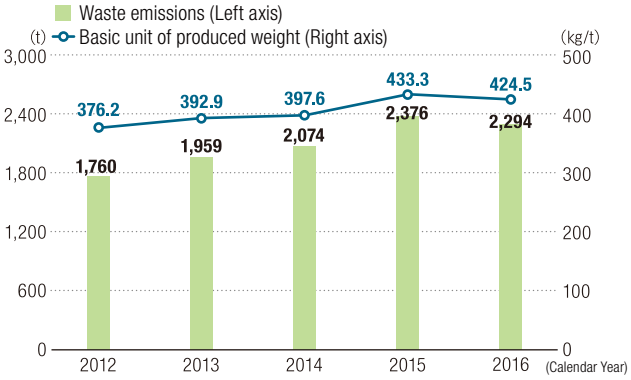
Annual transition of waste emissions (Domestic plants)



Annual transition of emission rate (Domestic plants)

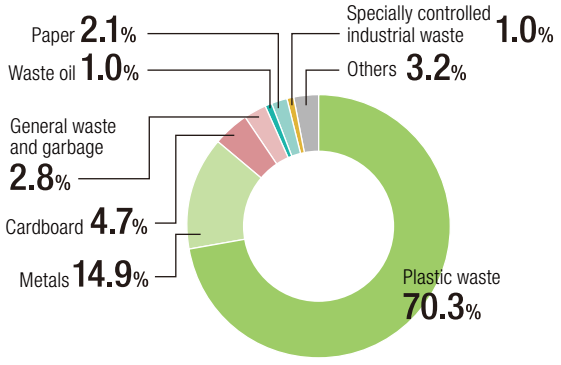


Annual transition of waste emissions (Overseas plants)



*The data for 2014 and 2015 was revised due to errors at some sites.

Sorting category (57th Period in FY2016)



Control of chemical substances

•Control Standards of Chemical Substances Contained in Products

Based on Control Rules of Chemical Substances Contained in Products, our Group stipulates Control Standards of Chemical Substances Contained in Products. Under these standards, we target reducing chemical substances in all finished products and purchased materials. In Version 3.0 of the Shin-Etsu Polymer Group's Control Rules of Chemical Substances Contained in Products, we established new regulations for prohibited and controlled substances as per the following details. (Table-1).

Prohibited substances

(1) Chemical Substances Control Law: Class I Specified Chemical Substance
(2) Industrial Safety and Health Law: Hazardous substances prohibited for production, etc.
(3) Poisonous and Deleterious Substances Control Law: Specific poisons
(4) POPs regulation: Annex 1

Controlled substances

(1) RoHS Directive: Designated substances
(2) ELV Directive: Designated substances
(3) REACH Regulations: Annex XVII
(4) REACH Regulations: SVHC
(5) IEC62474

Table-1:
Standards of prohibited and controlled substances

△: Acceptable if below threshold
×: Unacceptable

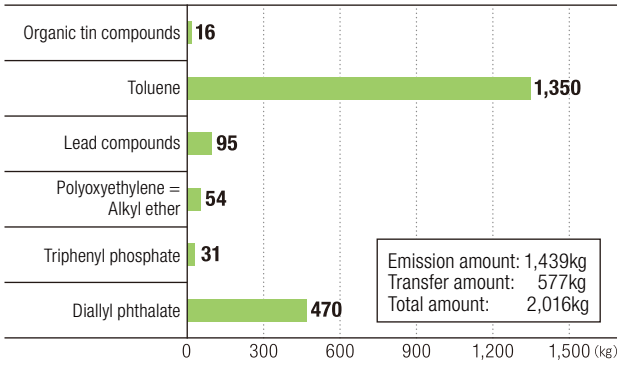
	Prohibited substances	Controlled substances
Intentional use	×	×
Contained in the form of impurities	×	△

*Please visit our website for further details. (http://www.shinpoly.co.jp/environment/pdf/standard_3.0.pdf)

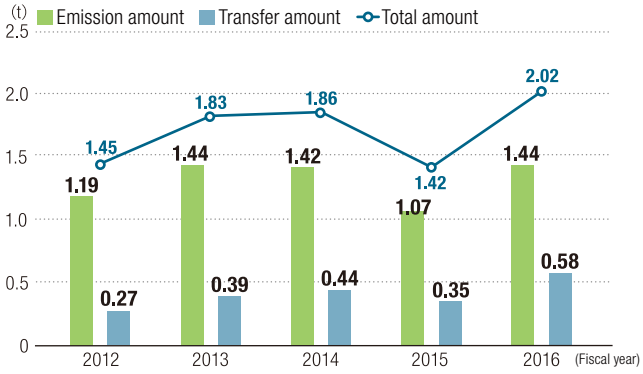
•PRTR notifications in FY2016

The Tokyo Plant, the Nanyo Plant and the Shiojiri Plant of Shinano Polymer Co., Ltd. made PRTR notifications. In FY2016, we made notifications for 2,016kg of six substances (1,439kg of emissions and 577kg of transfer). In relation to Class I Specified Chemical Substances, we notified of 95kg (39kg of emissions and 56kg of transfer) of lead compounds (lead-based stabilizer for PVC products).

PRTR notification results (FY2016)



Substances subject to PRTR
(Details of emission and transfer amounts)



•VOC emissions into the air in FY2015

The domestic VOC emission amount into the air (t/year) in FY2016 was 16.7 tons or a reduction of 10.5 tons (38.6%) compared to the previous year. Substances containing a large amount of emissions, included ethanol, butyl acetate and isopropyl alcohol.

(Until: t/year)

		Tokyo Plant	Nanyo Plant	Kodama Plant	Shinano Polymer Co., Ltd.	Urawa Polymer Co., Ltd.	Niigata Polymer Co., Ltd.	Total
Facilities category	1. Painting	0.0	0.0	3.8	0.3	0.0	0.0	4.1
	2. Adhesion	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	3. Printing	0.0	0.0	0.0	0.8	0.0	0.0	0.8
	4. Chemical products production	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5. Industrial cleaning	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6. VOC storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other types of facility category		0.0	0.0	7.0	2.0	0.0	2.7	11.7
Total amount		0.0	0.0	10.9	3.1	0.0	2.7	16.7

*Subject VOCs are 20 substances for electrical and electronic organizations.

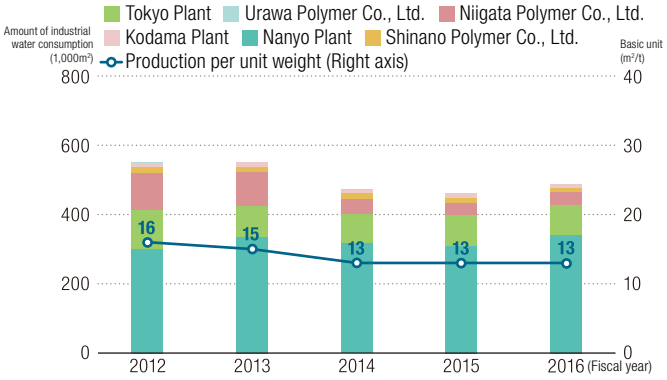
Activities for Bio-diversity Protection and Pollution Prevention

Our group promotes efforts to reduce environmental burdens, such as global warming countermeasures, effective use of resources, and management of chemical substances, in order to reduce effects of our business activities for the protection of bio-diversity.

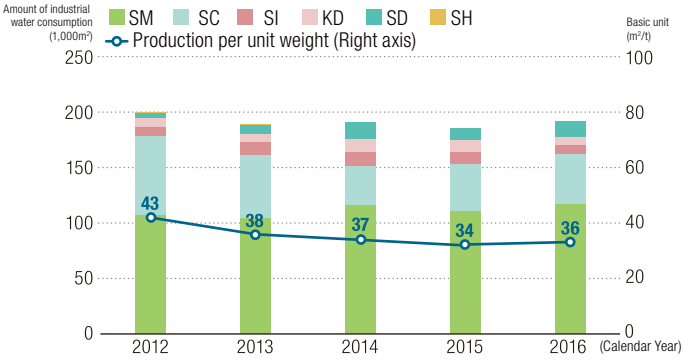
•Efficient use of water resources

The production per unit weight of industrial water at domestic sites remained at the same level, while the consumption of circulating water decreased as a result of facility changes undertaken. The production per weight of industrial water at overseas sites saw a slight increase, while the consumption of circulating water decreased due to a decline in consumption at a certain site that accounts for the majority of overall consumption. We will continue to promote the replacement of industrial water with circulating water for a more overall efficient use of water resources.

Waste water use status (Six domestic plants)

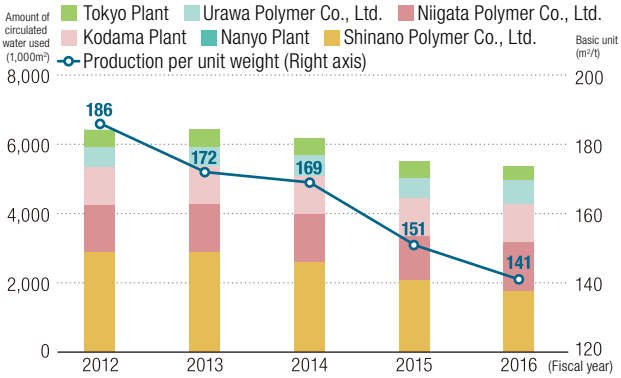


Waste water use status (Six overseas plants)



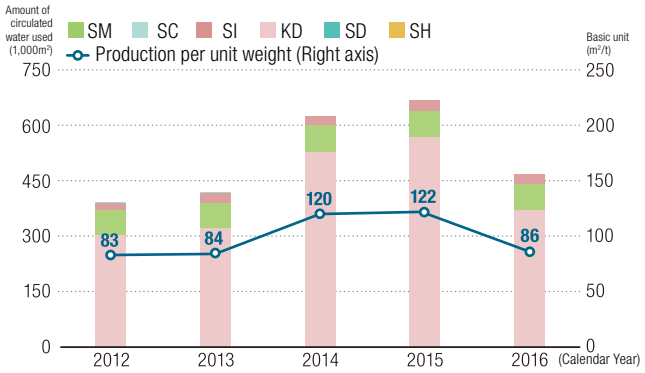
Circulating water use status (Six domestic plants)

***No circulating water at Nanyo Plant**

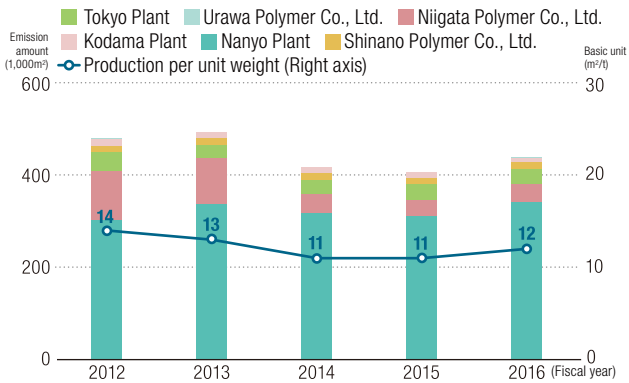


Circulating water use status (Six overseas plants)

***No circulating water at SC, SD and SH**

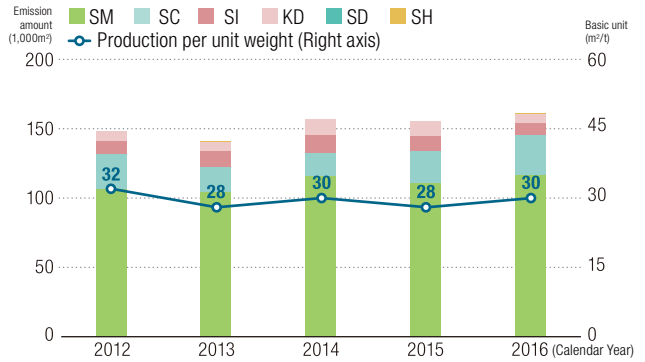


Water discharge status (Six domestic plants)



Water discharge status (Six overseas plants)

***No circulating water at SD**



*This year's data is different from last year as volume of water discharge at some offices relocated in 2008 was amended.

SI: PT. Shin-Etsu Polymer Indonesia
SD: Shin-Etsu Polymer India Pvt. Ltd.
SM: Shin-Etsu Polymer (Malaysia) Sdn. Bhd.
SH: Shin-Etsu Polymer Hungary Kft.
KD: Dongguan Shin-Etsu Polymer Co., Ltd.
SC: Suzhou Shin-Etsu Polymer Co., Ltd.

•Air pollution prevention

We have no equipment that is subject to regulations, but we stipulate self-control standards when it is considered necessary and work on reducing emission amounts. We periodically measure the emission concentration of VOC in order to confirm the value is below the standard.

•Water pollution prevention

We voluntarily test the water quality of discharged water to satisfy the standard specified in Water Pollution Prevention Act. We are also working on reducing the basic units of water use and conducting conversion to circulated water.

•Soil contamination prevention

We conduct monitoring based on the Soil Contamination Countermeasures Act. We also conduct surveys on soil and underground water where necessary to confirm there is no contamination.

Environmental accounting

Cost for environmental conservation

(Unit: Million yen)

Category		Main initiatives	Investment amount	Cost (*1)
1. Costs within business are as follows	1-1. Pollution prevention cost	Regular inspections of equipment, noise measurements, etc.	10.8	17.8
	1-2. Global environmental conservation cost	High-efficiency air conditioners, LED lighting, etc.	224.2	48.6
	1-3. Recycling cost	Collection and recycling of resources, conversion into raw materials or fuel, etc.	21.4	19.4
Total			256.4	85.8
2. Upstream and downstream cost (*2)		Costs related to the control of chemical substances contained in products, etc.	0.0	3.7
3. Control activity cost		EMS maintenance, education, greening of plants, etc.	0.0	33.0
4. R&D cost (*3)		Development of eco-friendly and eco-contributing products, etc.	156.4	-
5. Social activity cost		Donations, etc.	-	11.1
6. Environmental damage prevention cost		N/A	0	0
Total			**412.8**	**133.6**

*1. Cost = Actual cost – cost in the case of not conducting the activity. When the total difference ≦ 0, 0 is the assumed value.
*2. Registration costs for recycling agreements are not included.
*3. R&D cost is calculated based on our own standards.

Environmental conservation effects

Items for reduction of environmental burdens	Unit	Annual reduction amount
A. Energy consumption	t-CO_2	706
B. Waste discharge amount	t	1,200
C. Chemical substances consumption	t	1.0
D. Amount of purchased paper	1,000	51
E. Others	-	-

Economic effects in accordance with environmental conservation measures

Items for reduction of environmental burdens	Unit	Cost
A. Energy cost	Million yen	17.5
B. Waste disposal cost	Million yen	12.5
C. Material purchase cost (Raw materials + subsidiary materials)	Million yen	15.5
D. Gain on the sale of valuables	Million yen	19.2
E. Others	Million yen	0.0
Total	**Million yen**	**64.7**

Opinion of Third Person

We received third-party comments to further improve the environmental and social activities of our Group.

Third-party comments on the "Sustainability Report 2017"

Professor, Economics Department, Sophia University

Yoshinao Kozuma

In relation to the environmental and social efforts and initiatives by the Shin-Etsu Polymer Group, I am providing my comments after reading the same Group's "Sustainability Report 2017" (hereinafter referred to as Report) and after interviewing certain people involved.

1. Globalization of CSR management

With a consolidated overseas sales ratio for the fiscal year ending March 2017 in excess of 45% and six overseas plants in operation, improving overseas CSR management is a very important challenge for CSR management. This year, a number of significant changes were observed.

The first was the Green Activity, which is Group-wide environmental management. It covered overseas group companies in terms of organizational frameworks, but the majority of environmental KPIs at overseas plants were not subject to targets or achievements until the current 5th Mid-term Targets. However, it has now been decided to include overseas KPIs in Mid-term Targets from the following fiscal year, marking the start of overseas environmental performance improvements that had been delayed till now.

In addition, environmental security audits that had been irregularly conducted at overseas plants became regular events in FY2016. It can therefore be expected that environmental security activities, one of the most prioritized management challenges can now be strengthened on a global scale. These points are worthy of a high evaluation this year.

2. Expansion and improvement of work-life balance initiatives

Compared to the previous fiscal year's report, descriptions in relation to "Response to the Act to Advance Women's Success in Their Working Life" were significantly improved. This year, support of female employees and their achievements were explained in ample detail. It is obvious that employee management is being conducted in accordance with the spirit of the Act to Advance Women's Success in Their Working Life.

Also, in October 2016, internal rules on childcare and nursing care leave were revised, raising the maximum age for children to be eligible for childcare leave to three years of age and for shorter working hours to nine years of age. Furthermore, as for nursing care, a shorter working hour system was established, which is separate from the conventional nursing care leave. However, it certainly stood out that no male employees took childcare leave but I want to express my high level of appreciation for the fact that work-life balance efforts appear to be generally making steady progress.

3. Initiatives for the employment of people with a disability

The employment rate of people with a disability at the Shin-Etsu Polymer Group increased to 2.34% in FY2016, which actually exceeds the current legal rate. This rate is sufficiently high to meet FY2020 standards that are due to be implemented following step-by-step increases, indicating that the employment of people with a disability in the Group is making steady progress. I would though like to see a disclosure of employment rates at all domestic group companies in Japan subject to the system, as a means to further clarify this people with a disability employment rate.

4. Handling supply chain risks

Looking at the carbon footprint for the entire Group, Scope 3 emissions are slightly less than 70%. It is obvious that Categories 1 and 4 are points that require attention. In order to control these, it is essential to promote CSR procurement, as it is necessary to formulate a standard and establish a system. This will also enable a lowering of human risk in the supply chain where the probability of an occurrence is high.

Member of the Board, Assistant Chairman, Green Activities, Promotion Bureau, Director

Toru Takayama

In response to third-party comments

The Shin-Etsu Polymer Group recognizes that an "Expansion of the Green Activity overseas" is a challenge that needs to be addressed and have made efforts in relation to it. As environmental data systems in Japan and overseas will be integrated, overseas plants will be able to establish targets as Japanese plants do in FY2018. Further improvements in environmental performance are anticipated. In addition, we will study countermeasures pertaining to labor accidents, while taking the features of each overseas plant, in addition to the Green Activity, into full consideration.

In relation to childcare and nursing care leave, we recognize the fact that no male employees have taken childcare leave as of this point in time to be a matter of regret. In order to achieve the target as set by the Japanese government of "13% of male employees taking child care leave," we will further improve internal rules and focus on creating a culture for employees to more easily take leave so that the number of men engaging in childcare increases.

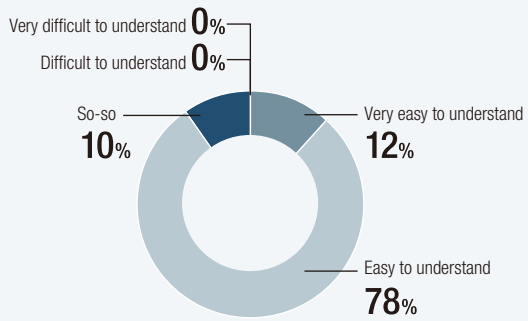
As for the employment of people with a disability, we will maintain the current rate by offering employment opportunities according to the abilities and aptitude of people with a disability. As actual employment rate data at domestic group companies is ready to be collected, we will disclose this in the following fiscal year.

Scope 3 emissions at our Group exceeded 65% for two consecutive years, which is something we recognize as a challenge that needs to be addressed. We plan to improve this by reformulating CSR procurement standards and thoroughly implementing countermeasures against supply chain risks.

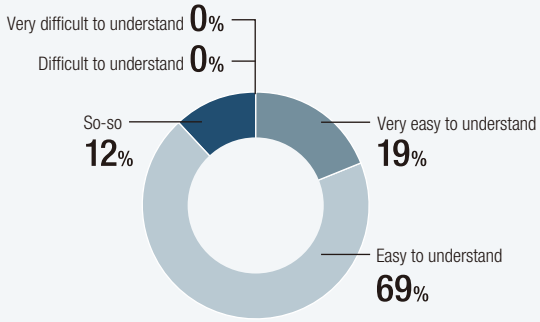
Questionnaire results

After releasing the “Sustainability Report 2016,” we received both internal and external readers’ responses to our questionnaire,and the results are given below. We would like to take your opinions and comments into consideration for future issues. Thank you very much.

•Was the report easy to understand?



•What about the contents?



•Please give your comments, opinions, and requests.

[Contents you are especially interested in and its reason]

Structure/Design

- The viewpoint of the report was clear and well-defined from the beginning. The photos and diagram explanations in the special feature article were also very clear and concise.
- The company’s business and environmental activities, as well as challenges toward new markets, were well-summarized.
- The structure of the article was well thought out, which allowed me to learn more about our proactive involvement in environmental conservation.

→We have summarized our activities to make it more legible. Your opinions are always welcome.

Contents

- In the “Together with local community” section, one of the most impressive articles was the one about the disaster relief activities that provided Polymer Wrap to earthquake affected areas. I believe these kinds of activities should be done more often. It also helped deepen my understanding of the company, which I hadn’t realized I was lacking.
- Instead of only seeing our adhesive technologies in relation to divisions and products this perspective made the articles easy to understand and were very helpful when introducing the company.
- I really appreciated that it showed how our products contribute to the environment. In the development process, I tended to only focus on usability and cost, but from now on I want to focus more on environmental adaptability as an important part of eco-conscious product development.
- It’s good that they covered Business Continuity Management. Though the size of the column was small, it was quite interesting to read.

→We will continue to introduce our company’s activities in an easy-to-understand manner.

[Need to improve]

Design

- As a whole, it’s easy to understand, but unnecessary details should be left out so the font size can be enlarged, making it more legible and increasing the readers willingness to read.

Others

- I think the social report should have included more content.
- To be more eco-conscious, we should stop distributing the print edition for employees and just release the PDF data online.

→We will continue to improve our contents so they are easy to read and understandable.

[Internal opinions]

Topic request

- Our company’s activities regarding SDGs, such as countermeasures for waste, food situation and ozone depletion, etc.

Others

- The manufacturing division is also working on a waste reduction activity as part of the Green Activities, so it would be great if continued updates were reported on the progress.
- It is very helpful as a sales tool since it covers the company’s CSR activities, including corporate governance and customer response.

→We would like to keep providing information about how our products help to solve serious social issues.

Editor’s Note

We are working on developing products to reduce our environmental burden while aiming to achieve a sustainable society. This year, we introduced a view control film, VCF, which took full advantage of our thin film technologies and Shin-Etsu Sepla Film®, a high strength thin film, as some of our eco-friendly products.

As of this fiscal year the name of our report is “Sustainability Report” to convey our recognition that in order to achieve a more sustainable society we need to review not only our technical issues, but also the entire group’s activities.

Based on the opinions of Professor Kozuma and readers, we will improve ourselves by starting making any improvements we can and keeping you updated on our progress. Your kind support and opinions are always welcome.