# **Environmental & Social Report 2009**

(April 2008-March 2009)

SUMITOMO BAKELITE CO., LTD.

#### Contents

- 02 Message from the President
- 03 Special Feature

#### **About Sumitomo Bakelite**

- 05 Management Policies and Corporate Policies for Safety, Health, and the Environment
- 06 Corporate Data
- 07 Corporate Governance, Compliance, and Risk Management
- 09 **Promotional Organization**

#### **Environmental Protection Efforts**

- 10 Environment-Conscious Products
- 11 Environmental Targets—Domestic Business Sites
- 12 Summary of Environmental Impact Reduction Activities
- 13 Environmental Targets—Overseas Group Companies
- 14 Environmental Impact Material Balance
- 15 Environmental Accounting
- 17 Reduction of Environmental Impact Substances
- 18 Reduction of Emissions of Solvents and Others
- 19 CO<sub>2</sub> Emissions and Energy Conservation
- 21 Waste Disposal
- 22 Recycling
- 23 Soil and Groundwater Assessment and Countermeasures
- 24 Environmental Conservation Activities

#### Relations with Society

- 25 Product Liability
- 27 Chemical Substance Management
- 29 Occupational Safety and Health
- 31 Safety and Accident Prevention
- 32 Environmental Audits and Environmental Education
- 33 Production Innovation
- 34 Employment and Human Rights/Human Resource Development
- 37 Exchanges with Local Communities
- 40 Site Report

#### 目)

Data

- 41 Site-Specific Environmental Impact Data— Domestic Business Sites
- 43 Site-Specific Environmental Impact Data— Overseas Business Sites
- 45 Network
- 46 Independent Assurance Report

#### **Editorial Policy**

Sumitomo Bakelite Co., Ltd., has disclosed its environmental initiatives since the 1998 publication of the *Environmental Activities Report*, which became the *Environmental Report* in 2001. Since 2005, we have provided augmented information on our social initiatives in the *Environmental & Social Report*.

Regarding the preparation of this 2009 version of the report,

- while giving due attention to Universal Design principles, we have striven to prepare an easy-to-understand, easy-to-read style and format for readers,
- we have referred to the Ministry of the Environment's Environmental Reporting Guidelines (fiscal 2007 version), and
- since 2001, we have included an independent review to raise the report's credibility.

Use of the J-SUS mark is granted based on the results of the review of an independent assurance provider. This mark indicates that the reliability of the sustainable information contained in our *Environmental & Social Report 2009* meets the standards established by The Japanese Association of

Assurance Organizations for Sustainable Information (J-SUS; http://www.j-sus. org/) for granting an assurance and registration mark.



Boundary of Environmental & Social Report 2009

#### Period

Fiscal 2008 (April 2008 to March 2009)

Some activities mentioned in the report include those undertaken in fiscal 2009.

#### Business Sites

Sumitomo Bakelite Co., Ltd.

Amagasaki Plant

- Shizuoka Plant (including subsidiaries and consolidated affiliates on the premises)
- High Performance Plastic Products Plant
- Industrial Laminates Plant
- Utsunomiya Plant
- Tsu Plant
- Kanuma Plant
- Nara Plant
- Fundamental Research Laboratory
- Kobe Fundamental Research Laboratory
- Akita Sumitomo Bakelite Co., Ltd.

Artlite Kogyo Co., Ltd.

- S.B. Techno Plastics Co., Ltd.
- Hokkai Taiyo Plastic Co., Ltd.
- Yamaroku Kasei Industry Co., Ltd.
- Kyushu Bakelite Industry Co., Ltd. Suzuka Plant, Decolanitto Co., Ltd.\*
- Kyodo Co., Ltd.\*
- Y-Techs Co., Ltd.
- \* Business operations of Decolanitto Co., Ltd., the Suzuka Plant, and Kyodo Co., Ltd., have been discontinued.

Please refer to page 13 for information on overseas subsidiaries.

#### Message from the President



# The Sumitomo Bakelite Group is confidently implementing initiatives aimed at **"Creating Additional Customer Value"** as it strives to work toward the realization of a low-carbon society.

The unprecedented global economic turmoil triggered by the financial sector that continued in the latter half of fiscal 2008 had a major impact on the semiconductor and automobile industries, which have the closest links with Sumitomo Bakelite's activities. For the time being, it will be impossible to avoid the substantial impact of these circumstances on our product sales. On the other hand, we will be able to seize certain business opportunities in the plastics business that have been created by recent trends toward reducing the impact on the natural environment through energy conservation (by reducing weight), lower use of electric power, and other measures. Sumitomo Bakelite, as a plastics product manufacturing pioneer, has offered products to the information and communication products, electronics, automobile, and other industries that contribute to conserving energy, reducing power consumption, and achieving other objectives, via the reduced use of resources. The Sumitomo Bakelite Group creates plastics with more-sophisticated functions, and, by providing additional value for customers, has worked to contribute to society; however, in today's harsh economic environment, we will confidently implement initiatives for creating additional customer value as we work toward the realization of a low-carbon society.

#### In accordance with its Business Philosophy, Sumitomo Bakelite is managing its business operations to make continuing contributions to its growth and to the natural environment and society.

Sumitomo Bakelite's Business Philosophy is "We value trust and maintain steadiness. Based on this, we strive through our business activities to make contributions to social progress and improvements to the quality of life worldwide." In accordance with this philosophy, we have set ourselves the core management objective of ensuring our management is "highly compatible with society and the environment." Based on these concepts, we have established standards of conduct for the operations of Sumitomo Bakelite Group companies based in 13 countries around the world, and we make relentless efforts to ensure that these concepts are comprehensively and thoroughly implemented. In addition, we are constantly confirming that all employees are continuing to conduct business activities based on the Sumitomo business spirit and thereby offer value added in the form of safety and peace of mind for customers.

#### Our products and services, which satisfy our customers and give them peace of mind, are supplied from workplaces that are safe and have minimal environmental impact.

By implementing the Sumitomo Bakelite Production System (SBPS), which is based on the Toyota Production System, we are working to ensure that our business operations are waste-free and working continually to achieve improvement in quality. In addition, we are moving forward with measures to reevaluate and further strengthen our quality assurance systems, which are integrated systems with Failure Mode and Effect Analysis (FMEA), autonomous quality assurance for individual processes, quality auditing, and other functions covering all stages from product planning through sales.

In fiscal 2008, our total emissions of greenhouse gases decreased in volume, but, in part because of the decline in production levels, the ratio of emissions per production unit actually deteriorated. Based on the concepts underpinning our SBPS, we worked to eliminate wasteful energy consumption and proceed with the development of a new production system that features improved adaptability to fluctuations in demand. In the field of safety, we have a two-pronged approach. First, in line with the concept of "fundamental safety design in machinery," we standard-ized risk assessment within our operations and moved closer toward accident-free machinery and equipment, and second we are continuing to implement education and training programs to prevent accidents. In addition, both workers and management joined together to promote safety in the work environment, and these efforts resulted in steady declines in work-related accidents.

#### Fostering the Development of "Human Assets"

With the aim of developing human assets that understand our management policy and can autonomously help us to realize sustained business growth, we began operating the SB School as an in-house educational unit in September 2007. All categories and levels of Sumitomo Bakelite employees now attend the SB School, which offers an array of courses covering compliance, human rights, occupational safety, quality assurance, and the natural environment. In 2008, we strengthened our educational courses related to the management of chemical substances, focusing on the Registration, Evaluation and Authorization of Chemicals (REACH) regulations, issued by the European Commission.

#### **In Conclusion**

Sumitomo Bakelite supports the Responsible Care Global Charter, which contains guidelines for the worldwide chemical industry, and, by implementing this charter, is working toward the improvement of the quality of life throughout the global community. As part of initiatives related to the charter, we are continuing to work to minimize the impact of our products on the natural environment as well as product safety and effects on human health over their full life cycles, ranging from development through manufacturing, use, and final disposal.

We hope this *Environmental & Social Report 2009* will give readers a good understanding of the Sumitomo Bakelite Group's stance and its initiatives in this area. We hope and will appreciate your continued understanding and support.

August 2009 Tomitaro Ogawa, President

#### **Special Feature**

# Phenolic products contribute to the environment with weight saving for automotive application

The total volume of carbon dioxide (CO<sub>2</sub>), which is a part of greenhouse gas, emitted into the atmosphere in 2005 amounted to about 28 billion tonnes, but forecasts call for this figure to rise to approximately 43 billion tonnes in 2030. About 15% of the total CO<sub>2</sub> emissions in 2030 are expected to result from fuels of land transportation.

As a result, each country is asking the automobile industry to take the initiative in reducing CO<sub>2</sub> emissions and are setting high targets for fuel efficiency. The automobile industry is, therefore, significantly stepping up its activities to make vehicles lighter, which will make a major contribution to improving fuel economy.

#### **Advantages of Phenolic Products**

Sumitomo Bakelite develops, manufactures, and sells phenolic resins, molding compounds, and molded parts for automotive application. Although phenolic resin products have a lower specific gravity than metals,\* they are superior to thermoplastics in terms of thermal resistance, chemical resistance, and dimensional stability because of their exceptionally strong network cross-linked structure. Phenolic products are, therefore, the most suited among various types of plastics as the materials for high-end applications.

#### Comparison of the Specific Gravity of Phenolic Molding Compounds and Metals



\* This does not mean that they are lighter in proportion to their specific gravity. Differences in product shape and product thickness as well as other factors have an effect on weight.

#### Voices of the People in Charge

We at Sumitomo Bakelite have a long experience in manufacturing phenolic products. We work not only to provide customers with higher performance solutions but also to contribute to having automobiles lighter to improve their fuel economy. With further technological breakthroughs, we would like to contribute to the earth's environment; so, please

Shigeru Oda, Dept. Manager, Solution Development Department, Market Development Division, High-Performance Plastic Products Business Unit

continue to follow our activities.



# Phenolic Products Advance together with Automobiles

Phenolic resins, which were developed early in the 20th century by Dr. L.H. Baekeland, a U.S. citizen of Belgian descent, were the first plastic resins to be commercialized and have the longest history of any plastics. Sumitomo Bakelite was the first company in Japan to make these resins commercially available.

Phenolic resins are made by using an additive polymerization with phenols monomer and aldehyde. Sumitomo Bakelite has its own technology of polymerization, compounding, and molding, and, even today, is moving forward to contribute to the evolving automobile sector through the development of new technologies.

#### **Recycling Activities**

Since phenolic products cannot be melted by heating once they have been cured, they are reused as fuel (thermal recycling) or reused as filler after being crushed into fine particles (material recycling).

Sumitomo Bakelite is working on the chemical recycling process that will allow recovery of these higher-value-added chemical materials.

#### **Phenolic Resins**

Featuring superior thermal resistance and chemical resistance as well as adhesive properties, phenolic resins find application in disk brake pads, drum brake lining, clutch facings, tire binders, resins for shell moldings, and other areas.

#### **Phenolic Molding Compounds and Molded Parts**

Phenolic molding compounds with reinforcement, such as fillers, acquire additional properties like mechanical strength, modulus, and reliability in addition to superior thermal resistance and chemical resistance, thus making them high performance materials for automotive application. These uses include front end accessory pulleys, disk brake pistons, water pump covers, and a wide range of other applications.



pulleys



#### **Continuous Evolution of Phenolic Products**

To respond to the increasing diversity of automotive applications and other needs, Sumitomo Bakelite is engaged in the development of new materials, including carbon fiber reinforced phenolic molding compounds that exhibit wearing resistance, long fiber reinforced molding compounds with high impact resistance, and other types of materials.

# Phenol adhesives for plywood production contribute to biodiversity and global warming prevention

#### Kizukai (Wood Use) Activity

About 67% of Japan's land area is forestland. Forests are needed to perform an important function as absorbers of carbon dioxide, and to put forests into good condition to play this role, it will be necessary to increase demand for domestic wood fiber and return a portion of the funds obtained from such forest enterprises to pay for taking care of forestland. Accordingly, beginning in 2005, Japan's Forestry Agency has begun to promote the "Kizukai (Wood Use) Activity" to encourage the proactive use of domestic wood fiber.



#### Promoting the Use of Wood from Forest Thinning

To properly care for the forests, it is necessary to cut the undergrowth and conduct forest thinning. Active use of thinning wood obtained from these forest thinning activities in the manufacturing of plywood is expected to make an important contribution.

However, there are a number of technical problems that have to be solved. Wood from forest thinning (primarily cedar) is difficult to dry and soft, and adhesives used in the production of plywood tend to release a relatively high level of formaldehyde. Overcoming these problems, however, is one way to promote the economic use of wood obtained from forest thinning.





#### Phenol Resin Adhesive: Yuroid PL-9000

PL-9000 was developed as a result of a basic review of resin reactions, and, compared with previously existing adhesives,

the volume of formaldehyde released by the adhesive itself has been reduced. In addition, by developing adhesives that harden more rapidly at lower temperatures, even wood from forest thinning (cedar) can be bonded without puncture\* problems. In addition, since PL-9000 excels in hardening guickly and at low temperatures, it is also effective in preventing reduction in the thickness of plywood sheets and results in plywood that has uniform thickness





Tank transport vehicle

#### **Conventional Phenol Resin Adhesives**

Since conventionally existing general-purpose phenol resin adhesives are applied at high temperatures, plywood made with wood having a high water content tends to puncture\* more easily. In addition, compared to Russian larch and other types of woods that have been used thus far in the production of plywood, cedar has a higher formaldehyde content, and the amount of formaldehyde released by plywood products made from cedar tends to be higher. In addition, because sheets are glued together at high temperatures, the thickness of the plywood sheets tends to be reduced.

\* Puncture occurs in the production of plywood when the moisture contained in the wood obtained from forest thinning and the adhesive is put under heat and pressure in the plywood manufacturing process, and, as a result, the high temperature vaporizes the moisture causing it to expand. When the energy of the vaporizing moisture overcomes the adhesive, the plywood punctures, and this destroys the adhesive laver.

#### **Supporting the Care and Preservation** of Forests through Thinning

Previously, imported lumber made from softwood (coniferous) trees was the principal wood fiber material used in Japan in the manufacturing of plywood, but, at present, there is an ongoing shift toward domestic wood fiber, with more than half accounted for by cedar. As previously mentioned, the importance of caring for and improving forest resources is increasing, and the value of Yuroid PL-9000 phenol resin adhesive in this area is becoming recognized more widely. Sumitomo Bakelite will continue to develop products that contribute to the prevention of global warming and to diversity with the aim of maintaining and expanding abundant forest resources and preserving the habitats of the diversity of life-forms that make their homes in the forests.

#### Voices of the People in Charge

We are aware that we are supporting, at least indirectly, the Kizukai (Wood Use) Activity through the supplying of phenol resin adhesives. We want to continue our efforts to make a con-

tribution by supplying easy-to-use, high-quality adhesives.



Mitsuhiro Kuroda, Dept. Manager, Sales Dept., SUNBAKE Co., Ltd. The Sumitomo Bakelite Group has set environmental targets based on environmental and safety management policies in line with its basic policy of "society and environment-compatible management."

#### **Management Policies**

- 1. Strengthen and expand three core businesses semiconductor materials and electronic circuit products, high-performance plastics, and quality of life products
- 2. Enhance customer satisfaction (CS)
- 3. Augment consolidated management systems through measures that include those to increase internationalization
- 4 Establish management that is highly compatible with society and the environment

#### **Corporate Policies for Safety, Health, and the Environment**

#### Philosophy

In all its operations, Sumitomo Bakelite will endeavor to carry out its social responsibilities by meeting the highest standards of the Responsible Care concept and giving due consideration to human health and safety as well as to the protection of the environment.

#### Policies

In accordance with this philosophy, we will:

- Evaluate the safety, health, and environmental aspects of all corporate activities, from product design through product disposal, strive to minimize the environmental impact of our corporate activities, and undertake to develop safer products and technologies;
- 2. Make sustained, Groupwide efforts to promote resource and energy conservation, recycling, and waste reduction;
- **3.** Perform environmental audits and safety audits as well as work to maintain and improve systems for managing environmental protection, safety promotion and disaster prevention, and occupational safety and health;
- 4. Comply with all relevant laws, regulations, and agreements associated with safety, health, and the environment while autonomously establishing administrative rules designed to promote safety, health, and environmental protection;
- **5.** Work to improve the safety of raw materials, products, and transportation operations and provide product safety information to employees, customers, and others;
- **6.** Implement operational safety management programs to ensure the safety and health of employees and residents of local communities; and
- 7. Publicly disclose information to and promote dialogue with employees and residents of local communities.

#### Name

Sumitomo Bakelite Co., Ltd.

#### President

Tomitaro Ogawa

#### Established

January 25, 1932

#### Capital (As of March 31, 2009)

¥37.1 billion

Number of Shareholders (As of March 31, 2009)

18,436

#### Number of Employees (As of March 31, 2009)

2,290 (non-consolidated)

8,071 (consolidated)

#### Net Sales (Fiscal 2008)

¥104.3 billion (non-consolidated)

¥212.4 billion (consolidated)

#### Fiscal 2008 Net Sales by Division (Consolidated)



#### Net Sales



#### **Major Products by Division**

#### Semiconductor and display materials

- Epoxy resin molding compounds for semiconductor packaging
- Photosensitive wafer coating resins

Liquid resin for semiconductors Carrier tape for semiconductor surface mounting

Adhesive tape for semiconductor chips

#### Materials for circuitry and electronic components

Epoxy resin copper clad laminates Phenolic resin copper clad laminates Flexible printed circuits

#### **High-performance plastics**

Phenolic resin molding compounds Industrial phenolic resins Precision molded products

#### Quality of life products

Medical devices

- Vinyl resin sheets
- Multilayer sheets
- Melamine resin decorative laminates
- Polycarbonate resin boards
- Vinyl resin boards
- Water treatment products
- Waterproofing construction and design contractor

# **Enhancing management transparency and compatibility** with society

#### Strengthening Corporate Governance

We at Sumitomo Bakelite Co., Ltd., recognize that improving transparency and our relationship with society is fundamental to corporate governance. The Company's philosophy is to value trust and maintain steadiness. Based on this, we strive through our business activities to make contributions to social progress and improvements to quality of life worldwide and are taking steps to further improve corporate governance.

#### Structure of Corporate Governance **Management Oversight** Shareholders' Meeting Election Election Election **Board of** Accounting **Board of** Auditors Cooperatio



#### **Basic Policy Regarding Internal Control System Establishment**

At the Board of Directors' meeting held on May 9, 2006, a basic policy on the establishment of internal control systems was adopted pursuant to Japan's Company Law. At a Board of Directors' meeting held on April 30, 2008, a portion of this basic policy was amended. For more information, please refer to our corporate website (http://www.sumibe.co.jp/english/company/controlp.html).

This fiscal year (April 2008 through March 2009) was the first year for the application of the internal control reporting system (J-SOX) required under Japan's Financial Instruments and Exchange Law. Through assessments of the design and operation of the Group's company-level controls and process-level controls, management assessed that internal control systems related to financial reporting were effective.

#### **Rigorous Compliance**

Sumitomo Bakelite promotes management with an emphasis on compliance in recognition of the fact that adhering to laws and corporate ethics is a crucial component of business activities.

We endeavor to ensure that all the individuals constituting the Company are sufficiently informed regarding Our Standards of Conduct, an employee conduct code which each and every employee is expected to follow in conducting business activities. Also, we are moving forward with compliance initiatives led by the Compliance Committee. In addition, similar initiatives are being implemented at all Group companies to ensure uniform operations, and our affiliates, including those overseas, are establishing codes for conduct based on Our Standards of Conduct.

#### **Our Standards of Conduct**

To further familiarize employees and ensure compliance with corporate ethics, Sumitomo Bakelite has established an employee conduct code called Our Standards of Conduct and

distributes this in a booklet to all employees. Also, periodically this conduct code is confirmed by having employees take turns reading the code in the office.



#### **Our Standards of Conduct**

- 1. We play an important, beneficial role in our society, offering customers products and services that put customer satisfaction first.
- 2. We strive to improve the performance of the Sumitomo Bakelite Group, always taking a global perspective.
- 3. We adhere to our corporate ethics, complying with legal requirements and our bylaws both in Japan and abroad, while engaging in fair and transparent business activities.
- 4. We emphasize safety while independently engaging in environmental protection activities.
- 5. We strive to create a pleasant work environment through respect for individual personalities and human rights.
- Note: The booklet includes what we should strive for as well as specific modes of behavior related to each item.

#### The Sumitomo Bakelite Compliance System

As part of systems to ensure the appropriate conduct of business activities by Directors and employees, Sumitomo Bakelite has established its Compliance Committee. This committee is responsible for promoting compliance through assessments of compliance levels and, when necessary, undertaking related improvements as well as education and training.



#### Ten Articles for Emphasis in Compliance

To make compliance an integral part of daily activities, each department decides on the key items for compliance and prepares "Ten Articles for Emphasis in Compliance." The content of these articles varies from one department to another, but they are displayed prominently in all workplaces, and they are confirmed with all employees periodically by having them read the articles aloud in unison.

#### **Reporting System**

In cases where an employee discovers a compliance violation or suspects that there may have been a violation, he or she reports this directly to the supervisor or to a designated contact point. In addition, employees can access designated external legal counsel to report the incident.

During the fiscal year, two such reports were made, but neither of these contained factual information of any major improper activities, and both were dealt with appropriately and brought to a final settlement.



The Audit Office conducts internal audits in each department, and the status of compliance is reported and confirmed at the meetings of the Compliance Committee. Through these activities, we confirmed the status of compliance in fiscal 2008 and found that there were no major legal or regulatory infractions in fiscal 2008 and no major violations of human rights.

#### **Strengthening Risk Management**

To prevent all kinds of potential risks from becoming actual and to minimize unavoidable business losses, Sumitomo Bakelite has established its Risk Management Committee, which operates continuously with a Companywide scope.

In addition, in April 2008, we instituted our Basic Risk Management Regulations, which establish the basic policy regarding the risk management of Sumitomo Bakelite and its Group companies, and we are currently working to implement on-target and precise management activities with respect to diverse kinds of risks.

Initiatives during the fiscal year included the preparation of

a business continuity plan (BCP) assuming the occurrence of a major earthquake, formulation of measures for dealing with the new influenza strain, and the establishment of a contact system for quick and accurate communication within the Group.



Meeting of the Risk Management Committee

#### **Initiatives to Protect Personal Information**

We recognize that the customer, shareholder, employee, and other personal information in our possession is important and must be protected, and therefore are committed to ensuring that this information will not be leaked to outside sources.

For more information about Sumitomo Bakelite's privacy policy, please refer to our corporate website: (http://www.sumibe.co.jp/english/).

#### Voices of the People in Charge

Management has made its stance regarding compliance clear, and, based on this, we have a grasp of issues we should address in the Group as a whole. Through continued training, activities in the workplace, and other means, we want to ensure that each and every employee will comply with legal regulations and corporate ethics and, thereby, take care that the Company is evaluated as an enterprise that puts trust and integrity first.

Masahiko Shinoda, Manager, General Affairs and Legal Department



### Organization for protecting the environment and ensuring safety and health

The Sumitomo Bakelite Group's Responsible Care\* operations are carried out by a Groupwide organization centered on the Head Office's Responsible Care Committee as well as an individual business site organization comprising each business site's environmental management departments, general affairs departments, and other departments responsible for specific initiatives. \* Responsible Care operations involve autonomous measures to ensure "environmental maintenance, safety, and health" regarding all chemical-related processes from development through manufacturing, distribution, usage, final consumption, and disposal as well as to publically announce the results of those measures and to undertake two-way communication with society regarding those measures.



# Sumitomo Bakelite contributes to the implementation of policies for global warming in many fields.

Sumitomo Bakelite defines environment-conscious products as those that do not contain dangerous or harmful substances, that make it possible for our customers to avoid the use of substances that are dangerous or harmful, that contribute to conservation of resources and energy, and that make it easier to recover and recycle the products that contain them.

Note: The products introduced in this report are limited to new items that have not been introduced previously.

#### SUNLOID LumiKing<sup>®</sup>LK Energy-Conserving Electric Display Plates

Sumitomo Bakelite manufactures and sells edge-lighted type electric signs that are energy conserving and feature a low environmental impact. These plates provide a high degree of surface luminance while also conserving energy and reducing the impact on the environment since incident light that comes from the edge of the plate is converted uniformly and efficiently to surfaceemitted light.



#### SUNLOID<sup>®</sup>DN Industrial Water-Repellant PVC Resin Sheets

To maintain their superior strength and durability, DN Sheets are reinforced by a laminated net. Previously, fragments from the manufacturing processes were disposed of in landfills for industrial wastes, but Sumitomo Bakelite has developed technology for separating the reinforcement net and the sheet material, thus making full recycling, with zero emissions, of DN Sheets possible.



Sales of environment-conscious products are shown in the graph below.

Note that, beginning in fiscal 2007, the environmentconscious products of the former Tsutsunaka Plastic Industry Group (Kanuma and Nara plants), which has been integrated with Sumitomo Bakelite, are included in these data. For this reason, the graph shows two sets of data, one with Tsutsunaka Plastic Industry Group sales and one without.



#### Sales of Environment-Conscious Products

Note: The boundary of the data is Sumitomo Bakelite Co., Ltd. (non-consolidated).

# To reduce the impact on the environment, Sumitomo Bakelite has set medium- to long-term targets and is mounting a companywide effort to attain them.

#### Medium- and Long-Term Environmental Impact Reduction Targets

#### Aiming to Attain Targets for Fiscal 2010

Waste generation:	35% reduction
Zero-emissions-	
designated substances:	99% reduction
Air emissions of solvents and	ł
other chemical substances:	95% reduction
CO <sub>2</sub> emissions:	10% reduction
	(Base year: 1999)

Definitions	
Waste generation:	Aggregate volume of industrial and general waste from business sites
Zero-emissions- designated substances:	Aggregate volume of landfill and incinerat- ed waste without energy recovery
Air emissions of solvents and other chemical substances:	Emissions of solvents and other chemical substances targeted by the Japan Chemical Industry Association (JCIA) Pollutant Release and Transfer Register (PRTR) assess- ments (including substances targeted for reporting pursuant to the PRTR Law)
CO <sub>2</sub> emissions:	CO <sub>2</sub> emissions due to energy (fuel and elec- tricity) used in business activities, such as production and research

#### **Environmental Impact Reduction Performance and Targets**

Action	Unit	1999 2006 (base year) performance		2007 performance	2008 performance	2009 plan	Medium- to long-term target (fiscal 2010)	
Waste generation	Tonnes	12,800	11,317 (12% reduction)	10,017 (22% reduction)	7,818 (39% reduction)	7,802 (39% reduction)	8,285 (35% reduction)	
Zero-emissions- designated substances	Tonnes	7,053	287 (96% reduction)	227 (97% reduction)	201 (97% reduction)	123 (98% reduction)	58 (99% reduction)	
Air emissions of solvents and other chemical substances	Tonnes	3,164	400 (87% reduction)	317 (90% reduction)	194 (94% reduction)	177 (94% reduction)	150 (95% reduction)	
CO₂ emissions	Tonnes	130,769	134,785 (3.1% increase)	122,559 (6.3% reduction)	108,568 (17.0% reduction)	108,236 (17.2% reduction)	117,692 (10.0% reduction)	

Notes: 1. Numbers in parentheses are rates of reduction or increase based on fiscal 1999 levels.

2. CO<sub>2</sub> emissions are calculated based on the Act on Promotion of Global Warming Countermeasures.

# Environmental impact figures are compiled from data from the following business sites:

Sumitomo Bakelite Co., Ltd.: Amagasaki Plant, Kanuma Plant (included from 2006), Nara Plant (included from 2006), Utsunomiya Plant, Tsu Plant, Shizuoka Plant (including subsidiaries and consolidated affiliates on the premises), Industrial Laminates Plant, High Performance Plastic Products Plant, Fundamental Research Laboratory, and Kobe Fundamental Research Laboratory Akita Sumitomo Bakelite Co., Ltd., Artlite Kogyo Co., Ltd., S.B. Techno Plastics Co., Ltd., Hokkai Taiyo Plastic Co., Ltd., Yamaroku Kasei Industry Co., Ltd., Kyushu Bakelite Industry Co., Ltd., Suzuka Plant of Decolanitto Co., Ltd. (included from 2004 through July 2008), Kyodo Co., Ltd. (including from 2006 through February 2009), Y-Techs Co., Ltd. (included from 2006), and Sano Plastic Co., Ltd. (included through June 2002)

Note: These medium- to long-term targets were set in 2000 and have been revised along with the integration and closure of certain business locations.

# Each year, Sumitomo Bakelite sets specific targets for reducing its environmental impact, evaluating them on a monthly basis.

The planned targets and actual performance in fiscal 2008 are shown in the table below.

The Sumitomo Bakelite Group was influenced in fiscal 2008 by the worldwide economic recession, and was obliged to reduce certain production activities. As a

result, each of the items below was affected by these developments. While declines were not reported in any of the items, certain items, including waste, increased because of fluctuations in demand for reuse.

Action	Unit	2007 performance	2008 plan	2008 performance	Comments
Waste generation	Tonnes	10,017	9,180	7,818	As a result of the decline in production, waste generation was substantially below the targeted volume. In certain fields, sale of waste for eco- nomic use became difficult, and it was necessary to dispose of such items as industrial waste, but this did not exceed the effect of the decline in production volumes.
Zero-emissions- designated substances	Tonnes	227	119	201	The targeted level of emissions was exceeded, because those items for which, previously, eco- nomic uses could be found and those that could be disposed of through recycling were disposed of in landfills. In addition, the amount of sludge collected in plant cleanup operations rose.
Air emissions of solvents and other chemical substances	Tonnes	317	206	194	The target was attained because reduction in production volumes resulted in lower air emissions.
CO <sub>2</sub> emissions	Tonnes	122,559	120,307	108,568	The target was attained because reduction in production volumes resulted in lower air emissions.

# To reduce the environmental impact of overseas production locations, Sumitomo Bakelite has set medium- to long-term environmental targets and is monitoring progress toward attainment.

#### **Medium- and Long-Term Environmental Impact Reduction Targets**

#### Aiming to Attain Targets for Fiscal 2010

Waste generation:	31% reduction
Zero-emissions-	
designated substances:	35% reduction
CO <sub>2</sub> emissions:	2.4% reduction
	(Base year: 2004)

Definitions	
Waste generation:	Aggregate volume of industrial and general waste from business sites
Zero-emissions- designated substances:	Aggregate volume of landfill and incinerat- ed waste without energy recovery
CO <sub>2</sub> emissions:	$\rm CO_2$ emissions due to energy (fuel and electricity) used in business activities, such as production and research

#### **Environmental Impact Reduction Performance and Targets**

Action	n Unit 2004 performance		2006 performance	2007 performance	2008 performance	2009 target	Medium- to long-term target (fiscal 2010)
Waste generation	Tonnes	14,312	12,755 (11% reduction)	11,473 (20% reduction)	10,343 (28% reduction)	9,052 (37% reduction)	9,928 (31% reduction)
Zero-emissions- designated substances	Tonnes	13,023	11,182 (14% reduction)	9,928 (24% reduction)	8,495 (35% reduction)	7,624 (41% reduction)	8,495 (35% reduction)
CO <sub>2</sub> emissions	Tonnes	157,048	164,562 (4.8% increase)	167,220 (6.5% increase)	134,421 (14.4% reduction)	130,781 (16.7% reduction)	153,233 (2.4% reduction)

Notes: 1. Numbers in parentheses are the rates of reduction or increase compared with fiscal 2004 levels.

2. CO<sub>2</sub> emissions associated with electric power generation are calculated based on coefficients used by each relevant country or by individual power companies. 3. Sumitomo Bakelite North America, Inc. has been included within the boundary since the fiscal 2009 plan.

5. Sumitorio Bakente North America, inc. has been included within the boundary since the fiscal 2009 plan.

# Environmental impact figures are compiled based on data gathered from the following entities:

Sumitomo Bakelite Singapore Pte. Ltd., Sumicarrier Singapore Pte. Ltd., SumiDurez Singapore Pte. Ltd., SNC Industrial Laminates Sdn. Bhd., BASEC Hong Kong Limited, P.T. Indopherin Jaya, Sumitomo Bakelite (Suzhou) Co., Ltd., SB Flex Philippines, Inc. (included through December 2007), Sumitomo Bakelite (Taiwan) Co., Ltd., Bakelite Precision Molding (Shanghai) Co., Ltd., Rigidtex Sdn. Bhd., Durez Corporation, N.V. Sumitomo Bakelite Europe S.A., Sumitomo Bakelite Europe (Barcelona), S.L.U., Sumitomo Bakelite Vietnam Co., Ltd., Sumitomo Bakelite Macau Co., Ltd., Vyncolit N.V. (included from fiscal 2005), and P.T. SBP Indonesia (included from fiscal 2007), Sumitomo Bakelite (Thailand) Co., Ltd. (included from fiscal 2008), and Sumitomo Bakelite North America, Inc. (plans call for inclusion from fiscal 2009).

Note: These medium- to long-term targets were set in 2000 and have been revised along with the integration and closure of certain business locations.

# The flowchart below illustrates the environmental impact of Sumitomo Bakelite's business activities.

The chart below shows inputs, including raw materials and energy, as well as outputs that are released into the environment. The Group is working to reduce its impact on the environment through waste reduction and resource conservation by promoting cutbacks on the use of raw materials, energy, and water.



Note: Please refer to page 1 for an explanation of business locations within the boundary of this data.

# Sumitomo Bakelite has adopted environmental accounting to promote efficient environmental management and fulfill its responsibility to society.

Sumitomo Bakelite implemented environmental accounting in fiscal 2000 to quantify the costs and benefits of environmental conservation and effectively promote environmental management as well as disclose information to stakeholders and give them an understanding of the Company's initiatives. Environmental accounting was introduced at five plants and the Company's two research laboratories in fiscal 2000 and, since fiscal 2001, has been successively implemented at affiliated companies in Japan, figures for which are included in data compilation. The Company tabulates figures for environmental accounting based on the Ministry of the Environment's Environmental Accounting Guidelines (2005 version). Furthermore, the Group is working to develop its own accounting standards, with the view that environmental accounting is a means of quantitatively evaluating the progress of activities to reduce environmental impact. In addition, we review the standards every year to obtain more useful information through environmental accounting.

	Environmental co	onservation costs	
ltem	Investment (millions of yen)	Expenses (millions of yen)	Description
Emissions control	78	324	• Fuel switching for boilers
Energy conservation	88	60	<ul> <li>Change in boiler fuel</li> <li>Energy conservation through improved equipment operating efficiency</li> </ul>
Waste reduction, recycling, and treatment	11	528	• Waste treatment
Product initiatives at the R&D stage	128	2,174	• R&D for environment-conscious products
Reduction of upstream and downstream environmental impact		23	<ul> <li>Analysis of environmental substances</li> <li>Commission fees to the Japan Containers and Packaging Recycling Association (JCPRA)</li> </ul>
Environmental management activities	3	350	<ul> <li>Personnel expenses for environmental management activities</li> <li>Beautification activities and maintenance of green spaces</li> </ul>
Contributions to community activities		2	Outside communications activities
Response to environmental damage		258	• Inspections of soil and groundwater con- tamination at vacant lot of Sano Plastic Co., Ltd., and implementation of associated and remediation measures
Total	308	3,719	

#### Environmental Conservation Costs for Fiscal 2008

Note: See page 1 for period and business site.

#### **Compilation Methods**

- Figures have been tabulated based on the Company's Environmental Accounting Compilation Standards with reference to the Ministry of the Environment's Environmental Accounting Guidelines (2005 version).
- In cases where composite costs include costs other than those related to environmental conservation, environmental conservation costs have been tabulated based on the proportion used for environmental conservation purposes.

- Economic benefits have been calculated by adding up benefits that can be measured based on certain premises, and such theoretical benefits as risk aversion are not included.
- Expenses do not include depreciation.
- Research and development investments and expenses are compiled for each environment-related category.

#### Benefits of Environmental Conservation for Fiscal 2008

	Reduction of environmental impact (compared with fiscal 2007)	Environmental impact (fiscal 2008)		
Reduction in amount of air emissions and other substances	(123)t	194t		
CO <sub>2</sub> emissions	(13,991)t	108,568t		
Volume of waste generated	(2,200)t	7,818t		
Disposal in landfills and simple incineration	(27)t	201t		

Note: Due to rounding, the figures for reduction in emission volumes may not match with figures calculated using the figures shown.

#### Economic Benefits for Fiscal 2008

ltem	Amount (millions of yen)
(1) Cost reductions resulting from energy conservation	83
(2) Cost reductions resulting from waste reduction	16
(3) Income from external recycling	135
(4) Cost reductions resulting from internal recycling	670
(5) Others	1
Total	905

#### Criteria for Computation of the Economic Effects

#### (1) Reduction in costs through energy conservation

The reduction in costs due to specific actions to invest in and make improvements in equipment and other activities

#### (2) Reduction in costs accompanying decline in waste

The amount of reduction in production value per basic unit is computed by the following formula. However, the results of the formula computation are included only when they are positive.

(Cost of disposal in the previous fiscal year)	V	(Value of		(Cost of disposal
(Value of production in the previous fiscal year)	~	fiscal year)	_	under review)

#### (3) Revenue obtained from external recycling (sale) is included in the value of sales of economic materials.

#### (4) Reduction in costs through internal recycling

Types of internal recycling:

- Type 1: Workplace recycling: Items are processed for recycling inside or outside the processing line and are re-input as materials.
- Type 2: Recycling outside the workplace: Items are processed by an external company or party and are then re-input as materials.

The portion of recycled materials that is re-input as production materials are valued in monetary terms. However, for Type 2 recycling, the cost paid to the external company or party is subtracted from the value of the materials recycled as production materials according to the following formula:

(Value of materials recycled as production materials) = (Amount paid for an equivalent amount of new materials that would be purchased in place of the materials recycled as production materials) – (Cost paid to external company or party for processing services)

In addition, the cost of disposal avoided by using the materials recycled as production materials is not included in the computation.

(5) Other items: Reduction in costs, etc., through the restraint of emissions into the environment

# Sumitomo Bakelite is continuing to implement initiatives to reduce the environmental impact on air quality and bodies of water.

#### **Air Emissions**

Since 2004, we have continuously worked to shift from heavy fuel oil to natural gas as the source of energy for boilers at domestic business locations. In fiscal 2008, we converted fuel sources at the Shizuoka Plant and Utsunomiya Plant.

#### NO, Emissions





Pipes for natural gas transport at a

boiler that has been converted for

gas usage (Shizuoka Plant)

Note: Data are compiled from all domestic business sites listed on page 11.

SO. Emissions



Note: Data are compiled from all domestic business sites listed on page 11.



(Tonnes) 4 26 2 1.6 1.2 ΛQ 00 000 2001 2002 200 2000 (FY)

Note: Data are compiled from all domestic business sites listed on page 11.

#### Water Discharges

Factory water discharges are broadly classified into wastewater, which includes industrial wastewater and domestic wastewater, and rainwater, which includes coolant water. By recycling coolant water, we are working to curb the use of water resources and reduce our wastewater discharges.

Regarding wastewater, we operate such treatment equipment as high-precision phenol recovery equipment, active sludge treatment equipment, and neutralizing and coagulating sedimentation equipment (metal removal treatment) and have established a regular surveillance system that uses surveillance devices in an effort to comply with national wastewater standards, ordinances, and agreements with local communities.



Rainwater treatment equipment (Nara Plant)

#### COD



Notes: 1. Data are compiled from all domestic business sites listed on page 11. 2. In fiscal 2004 and fiscal 2005, poor sludge precipitation at active sludge treatment facilities caused a rise in COD. Subsequently, however, COD levels have been steadily reduced owing to the reevaluation of facility operating conditions. 3. The figure of 28.3 tonnes appearing in the previous year's Environmental & Social Report 2008 has been corrected to 32.2 tonnes.

4. COD: Chemical oxygen demand: An index of organic matter pollution in water that indicates the amount of oxygen consumed by the oxidizing agent potassium permanganate in the oxidation of organic matter in water.

Since fiscal 1996, the Company has been involved in JCIA PRTR\* initiatives, keeping track of the release and transfer of certain substances and setting medium-term and long-term targets for improvement, focusing particularly on reducing its air emissions of solvents. The graph on the right shows the release of solvents and other chemical substances into the air since fiscal 1999.

Since fiscal 2002, we have been moving forward with measures to reduce emissions, including the planned installation of exhaust gas treatment facilities and the implementation of



Exhaust gas treatment facilities

steps to reduce the amounts of solvents used. As a result, in fiscal 2008, we reduced emissions by approximately 94% from the fiscal 1999 level. Furthermore, the Company released 15 tonnes of chemical substances controlled by the PRTR Law\* (PRTR System) into the air, approximately 99% less than in fiscal 1999.

- \* The Pollutant Release and Transfer Register (PRTR) system provides for measuring, compiling, and releasing data on a wide range of harmful chemical substances that have been released. Data that is collected includes the sources of the releases, the amounts released into the environment, and the amounts transported from business locations in the form of waste.
- \*\* The "Specified Chemical Substance Law" is the shortened version of "The Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof."



Emissions of Solvents and Others

Note: Data are compiled from all domestic business sites listed on page 11.

The amounts of the 27 PRTR Law controlled substances released and transferred by the Company are shown in the chart below.

#### Transfer and Release of Substances Subject to the PRTR Law (Fiscal 2008 Performance)

Government		A	A	mount release	ed	Amount transferred		
order number	Substance	(manufactured)	Into air	Into water	Into soil	As waste matter	As sewage	
1	Zinc compounds (water-soluble)	2.0	0	0	0	0	0	
15	Aniline	136	0	0	0	0.2	0	
25	Antimony and its compounds	83	0	0	0	3.9	0	
29	Bisphenol A	229	0	0	0	0	0	
30	Bisphenol A-type epoxy resin (liquid)	183	0	0	0	0.4	0	
43	Ethylene glycol	799	0	0	0	0.5	0	
44	Ethylene glycol monoethyl ether	23	0	0	0	0	0	
45	Ethylene glycol monomethyl ether	1.2	0	0	0	1.0	0	
63	Xylene	25	0	0	0	0.8	0	
64	Silver and its water-soluble compounds	15	0	0	0	0	0	
67	Cresol	1,099	0	0	0	0.2	0	
104	Salicylaldehyde	5.0	0	0	0	0	0	
172	N,N-dimethyl formamide	433	2.8	0	0	16.1	0	
176	Organic tin compounds	50	0	0	0	4.4	0	
177	Styrene	9.2	0.7	0	0	0	0	
198	Hexamethylenetetramine	899	0	0	0	23.9	0	
202	Tetrahydromethylphthalic anhydride	129	0	0	0	0	0	
207	Copper salts (water-soluble, except complex salts)	(55)	0	0.2	0	54.9	0	
227	Toluene	278	8.6	0	0	22.6	0	
232	Nickel compounds*	1.5	0	0	0	0.1	0	
242	Nonylphenol	2.6	0	0	0	0.1	0	
243	Barium and its water-soluble compounds	70	0	0	0	0	0	
266	Phenol	22,591	1.7	0	0	24.6	0	
272	Bis (2-ethylhexyl) phthalate	17	0	0	0	0.3	0	
300	1,2,4-benzenetricarboxylic 1,2-anhydride	15	0	0	0	1.1	0	
304	Boron and its compounds	12	0	0	0	0.9	0	
210	Formaldabuda	11,528	1.0	0.1	0	4.6	0	
310	Formaldehyde	(9,224)	0.1	0	0	2.0	0	

(Tonnes)

### Sumitomo Bakelite implements energy conservation activities and strives to reduce CO<sub>2</sub> emissions.

#### Plant- and Office-Related Energy-Conservation **Measures**

Global warming resulting from greenhouse gases, such as CO<sub>2</sub>, is said to be a cause of climate change exemplified by abnormal weather patterns and rising temperatures and is now seen as the problem that threatens the foundations of human survival. The Sumitomo Bakelite Group has been working to reduce CO<sub>2</sub> emissions through a variety of energy-conservation initiatives.

The commencement of full-fledged operations of a cogeneration system installed at the Shizuoka Plant in August 2004 contributed to Groupwide reductions in energy use and CO<sub>2</sub> emissions.

This cogeneration system can reduce CO<sub>2</sub> emissions by enhancing energy-conversion efficiency by generating electricity via gas turbine power generation using natural gas for combustion while employing the exhaust heat from this process to create steam. In addition, we were able to reduce the amount of electricity used by installing a steam turbine compressor in July 2006 that uses energy released when the high-pressure vapor generated in the cogeneration system is reduced to a normal pressure level and ceasing operation of existing compressors.



Cogeneration system (Shizuoka Plant)



Boiler converted to utility gas (Amagasaki Plant)



Steam turbine compressor (Shizuoka Plant)

As a result of the deterioration in economic conditions in 2008, the volume of production declined, thus bringing decreases in the use of energy and emissions of CO<sub>2</sub>.

Since 2007, the Amagasaki, Shizuoka, and Utsunomiya plants have been able to reduce emissions of  $CO_{2}$ , and control emissions of SO<sub>x</sub> and soot and dust, by switching from heavy oil to utility gas for boiler fuel. The building in which Sumitomo Bakelite's Head Office is located was in fiscal 2006 selected by Japan's Ministry of the Environment to receive subsidies under a program wherein grants are provided to facilities establishing voluntary greenhouse gas reduction targets. The implementation of variable flow control in accordance with air-conditioning load and other efforts at the building has reduced its CO<sub>2</sub> emissions.

Further, to facilitate continuous energy-saving measures from a different point of view, some facilities are undergoing energy diagnostics studies by an external company.

In addition to measures noted above, we are proceeding with various sorts of energy-conservation initiatives at each of our business sites. These initiatives include the following:



Light shield installation (Tsu Plant)



Energy conservation via greenification (Amagasaki Plant)

- 1. Installation of inverter controllers for pumps, fans, compressors, and others
- 2. Water cooling of outdoor air-conditioning units
- 3. Installation of an energy-saving static capacitor
- 4. Installation of energy-saving water-cooling chillers
- 5. Installation of energy-saving lighting fixtures
- 6. Installation of energy-saving controllers
- 7. Maintenance of air-conditioning equipment

#### Energy Usage and Energy Usage per Production Amount Value\*



\* Energy usage per production amount value is determined using the following equation: Energy usage per production amount value = energy usage / (production amount x unit price)

Note: Data are compiled from all domestic business sites listed on page 11.

#### **Distribution-Related Energy-Conservation Measures**

Based on the revision of the Act on the Rational Use of Energy, Sumitomo Bakelite has begun working as a "specified load owner" to calculate shipping-related energy usage since fiscal 2006.

- 8. Refurbishment and maintenance of cooling towers
- 9. Recovery of steam from steam drains
- 10. Spot repairs of steam and air leaks
- 11. Removal of unnecessary pipes
- 12. Installation of energy-saving molding machines
- 13. Application of insulation coating to roofs and tanks
- 14. Reduction of air-conditioned space through rearrangement and cleaning up the workplace

#### CO<sub>2</sub> Emissions and CO<sub>2</sub> Emissions per Production Amount Value\*



\* CO<sub>2</sub> emissions per production amount value are determined using the following equation: CO<sub>2</sub> emissions per production amount value = CO<sub>2</sub> emissions / (production amount x unit price)

Note: Data are compiled from all domestic business sites listed on page 11.

In fiscal 2008, sales volume decreased 7.62 million tonne-kilometers to 33.65 million tonne-kilometers. In addition, as a result of the decline in the average size of shipments, the ratio of small transport vehicles has increased, and the amount of fuel used per volume of cargo transported has increased. As a result, in fiscal 2008, the energy use per production value unit rose.

		Units	FY2006	FY2007	FY2008
Shipping tonne-kilometers		Thousands of tonne-kilometers	30,297	41,265	33,647
CO <sub>2</sub> emissions as	emissions associated with energy use		5,090	6,730	5,580
Energy con- sumption per shipping unit	Energy consumption (crude oil conversion basis; kL)/shipping thousands of tonne-kilometers	kL/thousands of tonne-kilometers	0.0632	0.0613	0.0624
	Rate of change (FY2006=100%)	%	100	97	99

Note: The following are included in the compilation of the data above: Sumitomo Bakelite Co., Ltd., Amagasaki Plant, Kanuma Plant\*, Nara Plant\*, Shizuoka Plant, Industrial Laminates Plant, High Performance Plastic Products Plant, Utsunomiya Plant, and Tsu Plant (Plants marked with an asterisk (\*) were included in the computation beginning in fiscal 2007.).

#### Annual Energy Use Report Figures

# The Sumitomo Bakelite Group aims to reduce waste generation and achieve zero emissions.

In its waste reduction efforts, the Sumitomo Bakelite Group focuses on improving yield in manufacturing processes and controlling waste generation by recycling within those processes. Furthermore, with regard to waste generation, we are aiming to achieve "zero emissions," recycling all waste and thereby avoiding the use of landfills or incineration without energy recovery.

The graphs below entitled "Waste Generation" and "Zero-Emissions-Targeted Substances" show our progress and targets. Since fiscal 2000, we have steadily reduced waste generation by improving yield, implementing recycling, and converting

#### Waste Generation



Notes: 1. Data are compiled from all domestic business sites listed on page 11. 2. Waste consists of the amount of landfill waste, externally incinerated waste, internally incinerated waste, and externally recycled waste (expenses paid). waste into valuable resources. Year-on-year increases in total waste generation were recorded in fiscal 2004 and fiscal 2006 owing to the addition of new facilities to the boundary of data gathering and other factors. In fiscal 2008, as a result of the effects of the decline in production volume, the total volume of waste generated decreased 2,915 tonnes.

On the other hand, we were successful in reducing the amount of "zero-emissions-targeted substances" 98% to 2% of the amount in the base year of 1999, also as a result of the decline in production volume.

#### Zero-Emissions-Targeted Substances



Notes: 1. Data are compiled from all domestic business sites listed on page 11.
2. Zero-emissions-targeted substances include landfill waste, externally incinerated waste, and internally incinerated waste.

#### The number of zero-emissions-certified sites has increased to 12 in Japan and 1 overseas.

#### Zero-Emissions-Certified Sites\*

Fiscal years	Domestic	Overseas
2002	Yamaroku Kasei Industry Co., Ltd.	
2003	Amagasaki Plant and Kyushu Bakelite Industry Co., Ltd.	
2004	Utsunomiya Plant, Tsu Plant, and Fundamental Research Laboratory	
2005	Shizuoka Plant	Sumitomo Bakelite (Taiwan) Co., Ltd.
2006	Artlite Kogyo Co., Ltd.	
2007	Akita Sumitomo Bakelite Co., Ltd., S.B. Techno Plastics Co., Ltd., Hokkai Taiyo Plastic Co., Ltd.	
2008	Kobe Fundamental Research Laboratory	

Note: When the total volume of waste disposed of in landfills and through simple incineration is less than a cumulative total of less than three tonnes for six months and then less than three tonnes for the next six months, the business location can be certified as "zero emission." We would like to introduce what the persons in charge of promoting zero-emission operations have to say.

#### Voices of the People in Charge

#### Kobe Fundamental Research Laboratory

We do not have large amounts of waste here, but our unnecessary equipment as well as glass instruments and vessels are largely disposed of in landfills. We have worked to separate this waste into different types to enable us to change the method of disposal. We posted signs regarding the separation of wastes and took steps to make everyone aware of these initiatives, while also implementing measures to improve the areas for depositing separated waste. These efforts made it possible to

recover wastes more effectively, recycle a portion of these items, and thereby reduce the level of wastes to be disposed of.

Minoru Kita (left), Haruo Ohkubo (right), Facilities Department



# Sumitomo Bakelite promotes recycling for the efficient use of resources.

Regarding recycling initiatives, Sumitomo Bakelite has been reusing phenols recovered from phenolic resin reaction effluent, pulverizing phenolic resin laminates and melamine resin decorative laminates for use as a filler in phenolic resin molding compounds, reusing sprue and runner—by-products of molded products—as raw materials, and reusing finely pulverized fireproof decorative board coating paper as filler in fireproof decorative boards.

Other examples of recycling initiatives include:

- Reuse of epoxy resin and phenolic resin molding compound waste as a raw material and fuel for cement
- Reuse of waste isopropyl alcohol and acetone via distillation at the Company
- Paper recycling via the repulping of raw-material bags and paper waste
- Recovery and reuse of plastic cutting boards
- Reuse of film and sheet materials as recycled products (trays, mats, planters, etc.)
- Reuse of wastewater treatment equipment sludge as a raw material for cement
- Reuse of fragments of plate products as materials
- Development of sludge-reduction systems for use in processing equipment for activated sludge effluent processing

Established in 1992 to promote waste recycling, S.B. Recycle Co., Ltd., is developing more efficient recycling technologies, conducting research on the reuse of by-products, establishing waste recovery and treatment systems for plastic waste generated by customers, and working to enable the use of microorganisms for phenol biodegradation and other objectives.



Distillation recovery equipment for waste isopropyl alcohol

#### **Chemical Recycling of Phenolic Resin Products**

Historically, the recycling of phenolic resin products has been limited to thermal recycling applications, including reuse as raw fuel. However, we have established a project team that has been working to develop and put into practical use chemical recycling processes that enable reuse as high-value-added chemical raw materials. Thanks to their efforts, the team has succeeded in developing the world's first chemical recycling method for phenolic resin products that employs supercritical fluid technology. This technology is able to completely decompose threedimensionally cross-linked phenolic resins in periods of only about 10 to 20 minutes and makes it possible to achieve high recoverable yield rates for recycled resin for use as a raw material chemical. The principle of this chemical recycling method is to cut the links between threads in web structures and liberate the threads so that they can be rewoven into webs (see illustration).

In July 2005, this method received recognition for its superiority and innovativeness with its selection as a subsidized project by the New Energy and Industrial Technology Development Organization (NEDO). As one part of this subsidized project, in March 2007, we finished building a demonstration plant at the Shizuoka Plant that is able to annually process several hundred tonnes of phenolic resins (see photo). At present, we are pressing ahead with the development of mass production at the demonstration plant with the aim of the early practical use and commercialization of the recycling method.

Sumitomo Bakelite proactively reports on the results of its R&D activities at academic conferences, and its R&D has won a high evaluation, as evidenced by the receipt of awards for promoting the advancement of science, for its poster, and for other activities.





Demonstration plant for chemical recycling

# Moving ahead with assessments and countermeasures regarding Group business sites in Japan

We conducted surveys at the Sumitomo Bakelite Group's plant sites of soil and groundwater based on the record of usage of 25 substances specified in Japan's Soil Contamination Countermeasures Act. As a result, we found that there were locations where the level of substances was in excess of the standards set by the Soil Contamination Countermeasures Act within the plant sites of Sano Plastic Co., Ltd., and the Company's Nara and Kanuma plants.

#### Soil and Groundwater Remediation Work at a Former Plant Site of Sano Plastic<sup>\*1</sup>

As a result of a general assessment of the soil and groundwater conducted beginning in December 2006, levels of trichloroethylene and other substances in excess of the environmental quality standard were detected. In addition, inspections of the groundwater in areas surrounding the site detected trichloroethylene and other substances<sup>\*2</sup> in excess of the allowable limit in some well water. We gave a report to the local government authorities and explained the results to the neighborhood community association. In February 2008, we began remediation work using a combination countermeasure method involving the excavation and removal of some soil as well as the use of reductive decomposition to decontaminate the soil. This work was completed in May 2009. We then conducted soil and water sampling surveys at the site through the end of May and confirmed that the remediation work had reduced the substance levels to below the environmental quality standards. In addition, we confirmed that the declines in concentration in wells surrounding the site. Monitoring surveys of groundwater inside and outside the site will be conducted eight times over a period of two years.



Overall view of the remediation work (June 2008)

Site following the completion of the remediation work (May 2009)

#### Soil Contamination at the Nara Plant

Lead in concentrations exceeding environmental quality standards was detected in sludge in roadside rain gutters within the plant complex in January 2008. Since rainwater from such gutters flows into a regulating pond shared with other companies in the industrial park in which the Nara Plant is located, we conducted surveys on water in the regulating pond and beyond Trends in Concentrations of VOC Found in Groundwater Drawn from Observation Wells outside the Site



- \*1. Address: 213 Kubocho, Sano City, Tochigi Prefecture. As a consolidated subsidiary of Sumitomo Bakelite, Sano Plastic manufactured plastic-molded parts at this site from August 1968 through June 2002. The plant site was closed in August 2002.
- \*2. The largest values detected in well water were 0.78 mg/L for trichloroethylene (versus an environmental quality standard of 0.03 mg/L) and 0.66 mg/L for cis-1, 2-DCE (versus an environmental quality standard of 0.04 mg/L) (as of October 2008).

the exit conduit from the pond. As a result, we discovered there were areas with high concentrations<sup>\*3</sup> of lead on the bottom of the pond. Beyond the exit conduit, the concentrations of lead were at the same level as in the natural environment.

Following discussions with the industrial park's management committee and government authorities, we decided to implement work to remove the sediment at the bottom of the regulating pond in October 2009.

\*3. The largest values detected were 260 mg/kg. (While there is no statutory quality standard for lead concentrations in sediment, the environmental quality standard for lead concentrations in soil is 150 mg/kg.)

#### Soil Contamination at the Kanuma Plant

Boron in concentrations exceeding environmental quality standards was detected in soil adjacent to a waste liquid tank within the plant complex in March 2008. Thereafter, following a detailed survey, the concentration for the surface layer of soil was found to be below the statutory quality standard, and boron was not detected in groundwater. However, according to the results of elution tests, at a depth of three meters, lead concentrations of 3.8 mg/L were detected, which exceed environmental quality standards by a factor of 3.8 times. Therefore, we adopted the measure of forbidding excavations in the contaminated portion and the surrounding area, and we will monitor groundwater on a continuing basis. Please note that, as a result of surveys to detect possible contamination outside the plant site, it was confirmed that levels are below environmental quality standards.

# The Sumitomo Bakelite Group is constantly striving to further improve its environmental conservation activities.

#### **History of Activities**

•••••		
Year	Sumitomo Bakelite Group initiatives	Societal developments
1969	<ul> <li>Pollution countermeasures secretariat established</li> </ul>	
1973	<ul> <li>Environmental Management Division established</li> </ul>	
	Environmental auditing of domestic business sites commenced	
1974	• Environmental management departments established for all business sites	
1978	<ul> <li>Environmental auditing of domestic affiliates commenced</li> </ul>	
1987		Montreal Protocol on Substances That Deplete the Ozone Layer adopted
1990	<ul> <li>Environmental Issue Action Committee established</li> </ul>	
1991	Recycling Technology Action Office established	<ul> <li>Act on the Rational Use of Energy enacted</li> </ul>
1992	• S.B. Recycle Co., Ltd., established	United Nations Conference on Environment and Development (UNCED or Earth Summit) generates several agreements, including the "Rio Declaration on Environment and Development" and "Agenda 21"
1993	<ul> <li>Environment and Safety Volunteer Plan drafted</li> <li>Environment and safety management regulations established</li> <li>Environmental audits of overseas affiliates commenced</li> </ul>	The Basic Environment Law enacted
1994	Use of certain CFCs and 1,1,1-trichloroethane ceased	
1995	<ul> <li>Responsible Care Committee established</li> <li>The Company joined the Japan Responsible Care Council as a founding member.</li> </ul>	<ul> <li>Japan Responsible Care Council (JRCC) established</li> <li>Law for Promotion of Sorted Collection and Recycling of Containers and Packaging enacted</li> </ul>
1997	<ul> <li>"Corporate Policies for Safety, Health, and the Environment" revised</li> <li>Utsunomiya Plant and Sumitomo Bakelite Singapore Pte. Ltd. acquired ISO 14001 certification</li> </ul>	Kyoto Protocol adopted by the Third Conference of the Parties of the United Nations Framework Convention on Climate Change (COP3)
1998	First Environmental Activities Report issued	
1999	All Sumitomo Bakelite plants acquired ISO 14001 certification	<ul> <li>Law Concerning Reporting, Etc., of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management enacted</li> <li>Law Concerning Special Measures against Dioxins enacted</li> </ul>
2000	Environmental accounting implemented	Basic Law for Establishing the Recycling-Based Society enacted
2001	Environmental Report issued (independent reviews conducted)	Law Concerning Special Measures against PCB Waste enacted
2002	<ul> <li>Scope of Environmental Report expanded to include domestic affiliates</li> <li>Tokyo Kakohin Co., Ltd., received an award for promoting a "3R" policy of reduce, reuse, and recycle</li> <li>Risk Management Committee established</li> </ul>	Soil Contamination Countermeasures Law enacted     Japan adopted COP3 Kyoto Protocol     World Summit on Sustainable Development generates Johannesburg     Declaration on Sustainable Development
2003	Yamaroku Kasei Industry Co., Ltd., became certified as the Company's first zero waste emissions plant     Compliance Committee established	Building Code revised to resolve "sick building" syndrome
2004	Shizuoka Plant commenced operations of a cogeneration system	Air Pollution Prevention Law revised to reduce volatile organic compound     (VOC) emissions
2005	• Title of annual Environmental Report changed to Environmental & Social Report to reflect broader coverage of social initiatives	Kyoto Protocol went into effect     Ordinance on Prevention of Health Impairment Due to Asbestos
2007		• The new EU Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) came into force
2008	<ul> <li>30 Sumitomo Bakelite Group domestic and overseas business sites held ISO 14001 certification as of July 31</li> <li>Start of soil and groundwater pollution remediation measures at a site owned by Sano Plastic Co., Ltd., following the dismantling of a factory building there (February)</li> <li>Signed Responsible Care Global Charter (November)</li> </ul>	

#### Items in blue represent developments in international society.

#### Voices of the People in Charge Regarding Future Activities

Sumitomo Bakelite has adopted the management principle, "Management that is highly compatible with society and the environment." Accordingly, we are moving ahead to achieve additional reductions in the environmental impact of our business activities with respect to each stage of the product life-cycle process, which is the central focus of our Responsible Care activities.

Society is demanding that companies make progress in reducing energy consumption and CO<sub>2</sub> emissions while providing clear information on the energy consumption and CO<sub>2</sub> emissions associated with individual products. Sumitomo Bakelite is broadly utilizing energy conservation technologies developed inside and outside the Company as it strives to realize sustained reductions in energy consumption and  $CO_2$  emissions.

In addition, we are making effective use of our newly introduced

Chemical Substance Management System as we work to provide product information based on the latest safety information and legal information.

> Takamasa Akamatsu, General Manager, Environment & Recycling Department



Sumitomo Bakelite is moving ahead with quality management activities on a companywide level to enhance customer satisfaction by providing its customers with products and services with quality that they can use free from worry.

#### **Quality Assurance System**

We provide products that customers are satisfied with and can be used free from worry, by establishing a system that related divisions work in cooperation with each other, maintaining and improving quality in all processes (from product planning, product design, manufacturing preparatory work, manufacturing, to sales and service).

#### **Quality Management System (QMS)**

Sumitomo Bakelite and its domestic and overseas business sites develop quality management systems based on ISO 9001 standards and work to acquire certification. In particular, we have already acquired ISO 13485 certification for medical device operations and are working to acquire ISO/TS 16949 certification for auto parts operations. As of April 1, 2009, certifications had been obtained for 34 business sites, including 16 business sites of the Company and consolidated subsidiaries in Japan and 18 business sites of consolidated subsidiaries overseas.

#### **Quality Management Policy for Fiscal 2009**

All Sumitomo Bakelite Group employees are systematically implementing quality assurance activities based on QMS. In view of this, we have established the following quality management policy.

#### Basic Policy

All Sumitomo Bakelite Group employees shall try to provide products and services based on our customers' views, and continue to evolve to a more-flexible business structure to accommodate any changes in the market proactively.

#### • Action Plan

In accordance with the above-mentioned policy, all Sumitomo Bakelite Group employees shall:

- 1. Work on the improvement of customer satisfaction,
- 2. Establish a system to avoid quality risk of our products,
- 3. Work on the establishment of "Quality assurance at each process,"
- 4. Reduce failure cost, and
- 5. Improve our consciousness and skills.

The following sections offer a general description of these measures.

#### **Introduction about Actual Activities**

The chart in the upper right-hand side of this page shows principal elements in the flow of activities from market surveys to sales and services.

Throughout the range of processes from product design and development to manufacturing and sales, we are implementing risk assessment, inspections, and verification measures and are moving forward with activities to reduce and avoid product quality risks.



#### Activities to Upgrade Design Quality and Process Quality (Reduce Product Quality Risks)

#### (1) Failure Mode and Effect Analysis (FMEA)

In new product development—particularly in design/development and commercialization processes—we are seeking to realize highly finished product and process designs by using Failure Mode and Effect Analysis (FMEA) regarding raw materials, designs, and manufacturing processes and then incorporate risk reduction countermeasures and risk avoidance measures in new product development plans, in advance of their implementation.

To advance further regarding risk reduction and risk avoidance measures related to design/development and commercialization processes, we are moving forward with the establishment of companywide FMEA implementation rules in fiscal 2009.

#### (2) Quality Audits

To ensure product safety, we periodically implement quality audits, and we also implement companywide consciousness-raising campaigns regarding quality management activities and product safety countermeasures.

In fiscal 2008, we undertook a trial program of design quality audits with respect to a portion of the Company's products and thereby inspected and verified the quality of design/development processes. In fiscal 2009, we will implement wide-ranging quality audits.

In addition, while quality audits have been periodically implemented primarily at domestic business sites to date, the scope of the audits will be expanded to include overseas business sites during fiscal 2009.

#### (3) Design Reviews

To check, inspect, and verify such issues as whether design specifications meet customers' requirements, whether processes can realize design specifications, and whether product safety is ensured, etc., each business unit implements design reviews at each design stage and is moving forward with countermeasures to reduce quality-related risks.

#### Activities to Quickly Share and Respond to Customer Information

#### (1) Claim and Complaint Processing Systems

We have established a companywide system for processing claims and complaints. Each department defines and standardizes the importance-ranking of claims and complaints related to each product, and provides for effective responses to claims and complaints from customers.

#### (2) Quality Information Systems

Diverse quality-related information from customers—such as information related to claims and complaints—is input into the system, registered in the database, mailed to management and other relevant staff as a flash report, and shared among those people. This system also serves as a support tool for helping in-house users quickly resolve problems according to pre-established rules and routes.

Accumulated data for the entire Company is consolidated and utilized in diverse ways.

In fiscal 2008, the system was renovated to make it easier for inhouse users to use, and the operation of the system at domestic facilities began from this April. In addition, during fiscal 2009, we plan to begin operation of the system at overseas facilities, and expand and upgrade the system's supplemental functions.

#### Overview of the Quality Information System (Example of Claim & Complaint Processing)



#### (3) Responding to Major Claims

Each business department responds to claims and complaints from customers. Each department investigates the root causes of claims and complaints, and implements countermeasures to correct those problems and prevent a recurrence or occurrence. Regarding claims with a major impact on society and/or customers, we separately handle them as "major quality problems" within the claim and complaint processing systems so that management can quickly acquire related reports and information and timely countermeasures can be executed.

#### Activities Related to "Quality Assurance at Each Process"

We are using the Sumitomo Bakelite Production System (SBPS),\* based on the Toyota Production System, to progressively improve our product quality. One of the fundamental concepts of the SBPS is "Quality Assurance at Each Process" (not allowing defects and/or failures to proceed to the next process). In addition to manufacturing processes, we continually implement these activities with respect to raw materials procurement, product design/development, quality assurance/inspection, and sales/service processes, etc. \* See page 33.

#### Activities to Enrich Quality-Related Education

#### (1) FMEA Education

Aiming to increase quality consciousness, reduce quality risks, and upgrade quality technologies, in fiscal 2008, we established 22 programs at the SB School\* and have used those programs to provide employees with quality-related education.

Among these programs, an especially large number of members participated in newly established "Failure Mode and Effect Analysis" (FMEA) courses (a basic course and a practical course) to reduce quality risks.

Especially in the practical course, the participants studied means of analyzing risks related to practical business items so that risks are recognized and risk reduction countermeasures can be incorporated in design and production processes, and the course also enabled participants to obtain a deep understanding of and practice using methods for applying and moving forward with risk analysis and reduction countermeasures. It has been recognized that FMEA is necessary for actual business operations.

During fiscal 2009 also, we plan to increase the number of employees who can use FMEA for actual business items. \* See page 35.

#### (2) Defect Analysis Course

Aiming to upgrade our capabilities for accurately analyzing defective products returned by customers or defective items discovered during design, development, and manufacturing processes and to ensure that we obtain accurate analysis results, we have during fis-

cal 2009 begun offering three defect analysis courses—a basic course, an applied course, and a practical course.

Many of the participants in these courses have commented that these courses were very useful for their actual business operations.

#### (3) Establishment of New Educational Courses

Going forward, we are planning additional business education courses designed to reduce quality-related risks.



A scene from a Defect

Analysis Course session

# Sumitomo Bakelite takes environmental, safety, and health issues into consideration throughout all stages of the product life cycle—from development through disposal.

#### **Prior Assessment of New Raw Materials**

Sumitomo Bakelite evaluates raw materials to be newly used in product development from the standpoint of regulations in Japan and overseas, hazardous property data, and other important factors and has in place a framework for screening and registering such materials. For use as part of assessment criteria, we have established lists of banned substances and substances for which use is restricted.

#### Green Procurement and Supplying Safe Products

Consideration with regard to the chemicals contained in products throughout all stages of their life cycles, including use and disposal, has become a necessity. The EU's Restriction of Hazardous Substances (RoHS) directive and other regulations concerning the use of specified chemical substances are requiring the augmentation of product environmental quality management processes involving suppliers as well as increased information transmission. Response to environmental issues, primarily in the electronics and automotive industries, is on the rise not only in the EU member countries but also in other countries throughout the world. As a "Green Partner" to customers, the Sumitomo Bakelite Group is working with its customers to manage regulated chemical substances and plan the development and provision of products that do not harm the natural environment, even after their disposal.

### Responding to Regulations Overseas and in Japan

The EU Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) came into force on June 1, 2007. Requiring such processes as the registration of all chemicals exported to the EU in annual quantities of one ton or more, this law has considerably increased the strictness of the EU's chemical-related regulations. At the time of REACH's enforcement, we formed a project team to comprehensively prepare the entire Sumitomo Bakelite Group's response. Currently, we are moving ahead with measures related to Substance Information Exchange Forum (SIEF) consortia and other measures aimed at preparing for the implementation of registrations.

Within Japan, also, the government is taking measures to reform such chemical management-related laws as the "Act on

Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof" and "the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc." Sumitomo Bakelite has responded by working to gather reform-related information, gain a good grasp of the reforms, and work proactively within and outside the Group to respond to the reforms.

#### **Supplying Chemical Substance Data**

The Material Safety Data Sheet (MSDS) is a data sheet that provides diverse information—such as information from the perspectives of health, safety, and environmental protection—to enable related employees to gain a thorough understanding of relevant materials. As a supplier of plastic products, the Sumitomo Bakelite Group issues product MSDSs that reflect the latest available information and are designed to ensure that customers are provided with fundamental safety information (such as information related to transport, handling, storage, and emergency responses). In addition, we are arranging in-house educational programs\* for our own employees to ensure that a comprehensive set of raw material MSDSs is always available in each workplace that procures raw materials and thereby promote the prevention of accidents and increase employees' consciousness of safety issues.

Furthermore, as "the Globally Harmonized System of Classification and Labelling of Chemicals" (GHS) is adopted and advanced by countries around the world, we are working to introduce improved labeling, based on uniform hazardous substance classification standards, for all products that enables users to quickly understand important warning and reminder points with a single glance. The requirements with regard to product labels and MSDSs are becoming increasingly strict.

Sumitomo Bakelite has striven to anticipate regulatory changes and begin developing in-house responses as early as possible, and the Group is reevaluating all its product labels and MSDSs to make sure they meet all requirements in Japan and overseas.



A sample of a GHS label

\* See information about the SB School program on page 35 of this report for more details.

#### Comprehensive Chemical Substance Management System

To effectively manage responses to chemical substances related laws and regulations as well as other information associated with chemical substances, the Sumitomo Bakelite Group is moving ahead with the introduction of its Comprehensive Chemical Substance Management System. Because the system records the raw materials and a breakdown of the chemical substances in those materials, it facilitates the simple confirmation of data related to products' environment-friendliness, safety, and compliance with laws and regulations.

We have supplemented the system with the introduction of Material Safety Data Sheet (MSDS) authoring software that works in tandem with the system's core database of chemical substance related laws and regulations. In accordance with domestic and overseas laws and regulations, the system is able to automatically perform products' GHS classifications and create and dispatch GHS labels for each relevant country and MSDS in each country's

language. Going forward, we plan to continue improving the "Chemical Substance Integrated Management System" to enable responses to REACH and other global regulation systems as well as to green procurement-related and other needs of customers throughout the world.



A November 2008 training session held to prepare for the introduction of the MSDS authoring software

#### Overview of the Chemical Substance Integrated Management System



#### Voices of the People in Charge

To ensure the safety of chemical substances in Sumitomo Bakelite Group products and respond to diverse country-specific laws and regulations and to needs associated with customers' green procurement programs, we provide Chemical Substance Integrated Management System support for all operations from raw material procurement through product development and disposal. We work while striving to quickly and accurately respond to developments in our complex and chang-

Environment & Recycling Department Chemical Substance Management Group

ing operating environment within

the Group and outside the Group.



### Adopting ISO machinery safety standards, obtaining occupational safety and health system certifications, and promoting continuing activities based on international rules

#### **Occupational Safety and Health**

#### Raising Sensitivity to Danger through Education and Training

Safety and health are the basis for all activities. As the phrase "Safety First" suggests, we should proceed with our activities by putting our highest priority on safety. At Sumitomo Bakelite, labor and management cooperate in striving to create healthy and pleasant workplaces and aiming for zero industrial accidents through such initiatives as hazard prediction as well as "pointing and calling," and gesture- and vocalization-based autonomous safety confirmation procedures.

#### Making Improvements in Safety and Health Assessments

In October 2006, we formulated our Safety Related Standards for Machinery and Equipment to serve as internal regulations and began activities to reduce the safety risks of machinery, taking the ISO machinery safety standards as a guideline. In addition to the safety and health activities conducted thus far, which have been focused on education and training, we added activities to reduce the risks inherent in using machinery and equipment per se. In other words, in addition to the "software" activities conducted so far, we have added activities related to "hardware" and have thus begun to implement a stronger approach than before. Specifically, we have conducted risk assessments for all existing equipment at domestic business sites, completed the identification of equipment with higher levels of risk, and are taking measures to reduce the risks of using such equipment with relatively high risk levels.

#### Obtaining OHSAS 18001 Certification and Making Continuing Improvements

At our principal domestic business sites (Utsunomiya Plant, Kanuma Plant, Shizuoka Plant, Amagasaki Plant, Nara Plant, Akita Sumitomo Bakelite Co., Ltd., and Kyushu Bakelite Industry Co., Ltd.),



#### Introducing Results of Implementation of OHSAS 18001 OHSAS 18001 Certificate (at Kyushu Bakelite Industry Co., Ltd.)



beginning in 2008, we have been implementing activities to obtain OHSAS 18001 health and safety management system certification. We obtained these certifications on schedule and have begun to conduct related autonomous activities on a continuing basis. In addition, beginning in 2009, at our overseas subsidiaries and affiliates, we have begun equipment design activities based on the ISO machinery safety standards and have begun to formulate plans and conduct improvement activities.

Since, in addition to ISO 9001 and ISO 14001, we have not yet obtained OHSAS 18001 certifications, we are now conducting activities aimed at making improvements in the three key areas of quality, environmental compatibility, and safety and health.

Introducing Machinery Measures Based on ISO Machinery Safety Standards





Measures to prevent entanglement in machinery (Amagasaki Plant)





Measures to prevent entry into the cutting portion of shearing machinery (Kanuma Plant)

#### Trends in Occupational Accidents

Data on industrial accidents, including subsidiaries and affiliates, are shown in the graphs on the following page. In 2008, we reduced the number of industrial accidents to about two-thirds the level of the previous year; this was the second consecutive year of decline in such accidents. Particularly noteworthy is the fact that the data indicate that the number of industrial accidents without interruption in operations was at the lowest level since we began to prepare these statistics in 1970. We were also successful in reducing the frequency rate of these accidents, but we believe that the results are still not sufficient. We intend to continue to make steady reductions in industrial accidents by moving forward with measures related to equipment that has been classified as high risk in our machine safety risk assessment activities.

The pie charts on the following page show the breakdown of accidents by type. Since we focused especially on safety measures for preventing "pinches and entanglements," which lead to particularly serious accidents, the number of these accidents is continuing to decline.

#### Number of Industrial Accidents

(Number)



Notes: 1. Data are compiled from all domestic business sites listed on page 11. Data through 2006 included workers who are not employees of the Company. In line with frequency rate data, data from 2007 exclude workers who are not employees of the Company.

2. Data are compiled from January through December of each year.

#### Frequency Rate\*



\* Frequency rate = (Deaths and injuries/total working hours) x 1,000,000

- Notes: 1. Data are compiled from all domestic business sites listed on page 11, and exclude workers who are not employees of the Company. Group data have been compiled only since 2003.
  - 2. Data are compiled from January through December of each year.





Note: Data are collected for January through December.



#### Introduction to Some of Sumitomo Bakelite's Occupational Safety and Health Activities at Domestic and Overseas Business Bases

By providing "danger experience" facilities, we educate employees about where they may encounter dangers as well as about the nature of those dangers.



Safety and health course (Shizuoka Plant)

Examples of Occupational Safety and Health Education Activities



Firefighters give a class on emergency lifesaving methods (Shizuoka Plant).



A nutritionist performs a blood vessel age check (Kyushu Bakelite Industry Co., Ltd.).

A safety education class

(P.T. SBP Indonesia)

#### Voices of the People in Charge Sustaining Our Zero-Accident Record!

At the Yokohama Branch, close occupational safety cooperation between labor and management has borne fruit in the form of our 7-year-long zero-accident record. Moreover, we have never in the 33-year history of this office had an accident accompanied by lost work-time. We have emphasized human-oriented occupational safety and health programs, rigorous compliance with rules, and thorough use of "pointing and calling" and gesture- and vocalization-based autonomous safety confirmation processes. Aiming to create a cheerful and dynamic workplace environment, we have begun a "greeting campaign" calling for all employees to greet each other heartily each day when they meet. In addition, we have performed risk assessments regarding machinery facilities and are implementing risk-reduction countermeasures. Going forward, we will sustain our efforts to maintain a

zero-accident record by encouraging all employees to concertedly cooperate in high-quality occupational safety and health programs.

> Hiroshi Nakatake, Labor Union, Yokohama Branch Manager



# Continually moving ahead with the creation of "safe and secure plants"

#### **Safety and Disaster Prevention**

#### Aiming to Create Safe and Secure Plants

At production plants, top priority is given to safety and disaster prevention measures. Aiming to create "safe and secure plants" able to earn the trust and confidence of local society, ensure the safety of employees, and provide customers with steady supplies of products, we create action plans at each of our plants and continually implement education and training programs designed to maintain a record of zero accidents and zero disasters. Moreover, to prepare for the possibility of an accident, we undertake disaster-countermeasure training with the objective of minimizing damage.

#### Strengthening Safety, Health, and Disaster Prevention Audits

Since 2009, we have conducted safety, health, and disaster prevention audits separately from our environmental and safety audits. Conducted by facilities specialist technicians, these safety, health, and disaster prevention audits are identifying numerous potential risks that were not previously evident as well as arranging for the execution of related countermeasures.

#### Overview of Safety and Disaster Prevention Training Activities at Domestic and Overseas Plants

Examples of Cooperation with Local Society to Conduct Disaster Prevention Activities



Cooperative training with the Utsunomiya Municipal Fire Department (Utsunomiya Plant)



Fire-extinguishing training by local fire department (SumiDurez Singapore Pte. Ltd.)

Examples of Evacuation/Rescue Training Activities within Plants



Evacuation training (SNC Industrial Laminates Sdn. Bhd.)



First-aid training (Sumitomo Bakelite (Thailand) Co., Ltd.)

#### **Examples of Fire-Fighting Activities within Plants**



Fire-fighting training with the plant's fire-fighting truck (Shizuoka Plant)



Initial fire-fighting training (Sumitomo Bakelite (Thailand) Co., Ltd.)



Fire-fighting training (Nara Plant)



Initial fire-fighting training (P.T. SBP Indonesia)



Fire-fighting training (Akita Sumitomo Bakelite Co., Ltd.)

within Plants

# Examples of Chemical-Related Disaster Countermeasure Training Activities



Explosion/fire victim evacuation and aid training (Sumitomo Bakelite Europe (Barcelona), S.L.U.)



Fire-fighting training (Sumitomo Bakelite Macau Co., Ltd. (China))



Chemical leak response training (Sumitomo Bakelite North America, Inc.)

# Sustaining activities to further improve environments of local communities and workplaces

#### **Environmental Audits**

Every year, we conduct environmental audits to investigate the environmental protection activities and legal compliance situations of all the Company's business sites in Japan as well as Group companies in Japan and overseas. Regarding fiscal 2008, we conducted environmental audits of six domestic Group companies during April and May 2008, while environmental audits of six domestic business sites were conducted during October and November 2008.





Also undertaken during fiscal 2008 were audits of the environmental protection activities and legal compliance situations of two Group companies in Southeast Asia.



Audit activities at Rigidtex Sdn. Bhd.



Audit activities at P.T. SBP Indonesia

#### **Environmental Education**

#### **Group Education Programs**

To further deepen understanding of environmental issues and chemical substances, each business site annually provides all employees with group education programs related to environmental protection and chemicals. Principal topics explained during the programs include companywide environmental policies and the environmental protection targets of each business site; relevant laws and regulations; environmental issues relevant to the company or business site; and the handling of hazardous materials, organic solvents, and toxic substances.

#### Voices of the People in Charge

Among the SB School\* environmental educational courses we are now offering are those related to new chemical reporting procedures and the general principles of REACH regulations. We do our best to provide easy-to-understand explanations of things that many managers in plants and research facilities have to know about in connection with

their work.



Shizuo Takeuchi, Environment & Recycling Department

#### **E-Learning**

Sumitomo Bakelite has established the SB School\* system to provide its employees with various educational courses. Besides courses tailored to the needs of each level of employee, the system includes e-learning courses for all employees.

We offer environmental education e-learning courses each year as a means of deepening all employees' understanding of recent environmental issues.



\* See page 36 for more information on the SB School.

### Taking the initiative in "Cost Reduction by Thorough Elimination of Waste" and "Human Resource Development" with the rallying cry of "Manufacturing Method and Human Development from Full Employee Participation"

#### Sumitomo Bakelite's Production System Initiatives

Since 2003, we have worked actively to implement the Sumitomo Bakelite Production System (SBPS), which is based on the principles of the Toyota Production System, with the fundamental idea of "full employee participation and voluntary action."

SBPS activities are aimed at "Cost Reduction by Thorough Elimination of Waste" and "Human Resource Development." To fulfill the Company's mission of "generating customer value by creating more sophisticated functions for plastics," we implement an inseparable two-pronged approach, which includes "customer-oriented research and development" and the "manufacturing method".



#### **History**

We kicked off SBPS activities in June 2003. For the first four years, external instructors at our principal plants helped us engage in educational and training activities related to the principles of the Toyota Production System. At that time, these activities were introduced in *Industrial Management*, a monthly magazine published by the *Nikkan Kogyo Shimbun*, in a special feature entitled "Application of the Toyota Production System to Industrial Processes."

.....

Beginning in July 2007, we shifted to "voluntary action" measures to implement SBPS activities. To lead and support this, we selected staff members from the plants that had received educational training from external instructors. We then organized a Companywide SBPS Development Team (called the "SZS team"), and the current team members became the trainers responsible for fostering the new training personnel. After promoting voluntary action, we adopted the rallying cry of "Manufacturing Method and Human Development from Full Employee Participation" and are now working to expand the application of SBPS to all enterprises, including overseas plants.

#### **Status of Activities**

At present, we are providing guidance and support for voluntary action in all Company workplaces through the formation of SBPS Development Departments in all our business locations that work together with the SZS team.

Also, in related offices of subsidiaries and affiliates located overseas, as in Japan, we have formed the SBPS Development Department in all places of business that act as the core for providing instruction and support for SBPS activities.

In addition, to respond to the common needs throughout the Company of training instructors and providing training materials, we have organized a project team to take charge of these tasks. We are also working to prepare and translate educational materials and standardized formats into four languages (Japanese, English, Chinese, and Indonesian) and make these available on the Company website. Similarly, we have already implemented basic e-learning training courses for all employees, including those located overseas, and about 8,000 persons have taken these courses.

Since the objective of these activities is "Cost Reduction by Thorough Elimination of Waste," each of our business locations has established "manufacturing indicators." Inspections and verifications are conducted based on these indicators every six months.





Practical training in a training room Education and train

a training room Classroom training led by an instructor Education and training of new trainers

#### Voices of the People in Charge

Six years have passed since the president of Sumitomo Bakelite made the proclamation: "It may take us 20 years to put the ideal systems in place, but, no matter what happens, we will imple-

ment SBPS activities continuously." We will promote SBPS activities honestly to create an outstanding corporate culture.

> Katsuhiro Tsukamoto, Manager, SBPS Development Department



# Sumitomo Bakelite respects the personality and human rights of each person and aims to create workplaces conducive to work.

We strive to recruit a workforce with diverse values and personalities, facilitate each employee's self-expression, and provide workplaces that are enriched both physically and esthetically.

Accordingly, we respect international human rights standards and do not discriminate on the basis of nationality, race, skin color, religion, ideology, age, gender, marital status, health condition, physical handicaps, or mental handicaps.

**Specific Standards of Conduct** 

- 1. The Company will provide employees with information relating to business conditions after giving due consideration to its corporate structure.
- 2. We will actively participate in suggestion plans and small group activities, striving to create a comfortable work environment through workplace improvement activities.
- 3. We will promote amity in the workplace and foster trusting relationships among colleagues.
- 4. We will maintain and improve on the positive labor-management relationship, working together to achieve a comfortable workplace.
- 5. Both internally and externally, we will not discriminate with regard to factors such as race, nationality, ethnicity, sex, age, religion, philosophy or creed, education, or health condition.
- 6. We will abide by the *Manual for the Prevention of Sexual Harassment* and will not condone sexual harassment.

Excerpt from Our Standards of Conduct

### Providing Continuing Employment Opportunities for Staff Members beyond Retirement Age

Accompanying the enactment in April 2006 of the "Revised Law Concerning Stabilization of Employment of Older Persons," we revised our internal regulations to enable staff members who have passed the mandatory retirement age of 60 years and wish to continue working to become contract employees. The revisions are designed to facilitate post-retirement hiring and promoting greater use of the knowledge, technical skills, and know-how that employees have accumulated over their careers.

Currently, three years since the enactment of the revised law, the number of people utilizing the post-retirement hiring system is increasing, reflecting a rise in the minimum age for eligibility to receive a full basic pension from Japan's welfare pension program.

	FY2006	FY2007	FY2008
Number of retirement-age retirees	60	67	71
Number of post- retirement rehires	27	40	46
Rehiring ratio	45.0%	59.7%	64.8%

#### **Employment of People with Disabilities**

Sumitomo Bakelite considers the employment of people with disabilities to be an integral part of its corporate social mission, as established by law. Sumitomo Bakelite endeavors to give necessary consideration to enabling such persons to work despite their disabilities, and, as with its other employees, offers them a safe and secure work environment, as it also strives to create workplaces that enable them to continue to draw fully on their capabilities and further develop their skills and abilities.

### Employment Rate of People with Disabilities



#### Support for Employees with Children

Sumitomo Bakelite is emphasizing measures to create work environments that enable employees to harmonize their work with such life events as childbirth and child raising. In 2007, the Company introduced various systems in line with that goal, including systems that enable employees raising children to shorten their daily working hours until their children have completed the third year of elementary school, that expand the application of annual holiday leave for childbirth and child-raising purposes, and that create special vacation periods for childraising and hospitalization purposes. The number of employees taking advantage of shorter working hours is increasing especially in our business locations in urban areas, where the percentage of nuclear families is relatively high.

#### Voices of Support System Users

When children are young, they are quite prone to contracting various illnesses. Especially when they go to childcare centers or other places where children congregate, they may catch a range of diseases, and I find that I frequently have to take my children to clinics sometimes two or even three times a week. When I am working full-time, I cannot reach the clinic before the reception closes for the day and, therefore, have to use some of my vacation time. But, with the option now of working shorter hours, I have the time to return home first and then take the children to the clinic. That is really a big help. However, when something occurs at a time outside my working hours, fellow workers can cover for me, but I feel I am imposing on them; therefore, to avoid as much as possible

putting a burden on those around me in the Company, I feel I want to finish as much work as I can earlier, and, thereby, get it out of the way.

> Kazue Nagatani, General Affairs & Corporate Legal Department



#### Voices of Support System Users

I began to use the system for shorter working hours because I found that I could not reach the childcare center that my children attend before it closed and because I wanted to spend as much time as possible with my children. Infants and younger children are prone to contracting diseases, and I, therefore, have to take my children to clinics and hospitals frequently. However, given the option of working shorter hours, I do not have to use my annual vacation leave time to give my children the diagnostic care they need and can have more time at home with the children and watch them grow and develop day by day. For these reasons, I think the system is a very good one. However, obtaining shorter working hours requires the understanding

and cooperation of fellow workers in my department and in related departments. I really would like to express my thanks to them.



Akiko Sakane, Marketing Department, Plate & Decola Division

#### **Health Management**

Sumitomo Bakelite strives to create workplaces that facilitate the work activities of employees as well as help them maintain good physical and mental health. Our programs in this regard center on regularly scheduled health checks and health guidance based on the results of those examinations. By gaining a proper understanding of the results of these diagnoses and receiving guidance from in-house and outside industrial health staff (including industrial physicians, labor health consultants, and staff nurses), our efforts to prevent and correct lifestyle problems have generated tangible results. In addition, we schedule days on which employees can receive health consultation at their own discretion, and industrial health staff provide advice on physical and mental health issues. Through these various measures, we assist employees in living healthy lives and provide total backup for them in health-related matters not only as they relate to work but also in their daily lives.

Based on the awareness that health enhancement requires both the supervisory efforts of the Company and the indispensable preventive efforts of each and every employee, we also place emphasis on staff health education. Especially in the field of mental health, where the importance of early "awareness" is important, we offer a basic course in mental health for all employees as well as self-care courses. We also call on personnel at the managerial level who are responsible for managing other employees to attend courses related to maintaining and showing concern for the mental health of those employees under their direction. These educational programs are held each year and provide opportunities for gaining further knowledge as well as brushing up knowledge gained previously.

#### **Voices of System Participants**

The issue I am concerned with in the area of health supervision of headquarters staff of Sumitomo Bakelite is conducting risk assessments related to health management. Topics I have dealt with include securing consistency between the "Specified Health Examination and Specified Health Guidance," implementation of which became obligatory for persons covered by health insurance in April 2008 and the previously existing "Periodic Health Examination." Another topic I have dealt with, in the

field of mental health policy, is promoting the creation of a workplace environment that will not give rise to persons with mental illnesses.



Yoshiko Sugiyama, Health Nurse, Labor Health Consultant

#### Human Resource Development

The kinds of human resources that Sumitomo Bakelite seeks who are equivalent to the kinds of human resources that the Company would like to foster—are those people who can make a contribution on their own initiative to the sustainability of Sumitomo Bakelite's business activities.

Specifically, the following are key characteristics of the autonomously motivated personnel we seek.

- 1. People with the drive to grow and acquire new skills and knowledge necessary for their jobs;
- 2. People with a pro-reform stance who are not satisfied with the status quo, but are always looking for ways to do a better job;
- 3. People with a team-oriented approach who can combine their individual strengths with the strengths of those around them to deliver better results;
- 4. People with outstanding skills and know-how who can produce results in jobs both in and outside of Japan as professionals.

In September 2007, we opened the Sumitomo Bakelite School (SB School), which is designed to provide lifelong education and training courses that help the Sumitomo Bakelite Group realize sustained growth in business operations as well as rise in corporate value. It provides courses for all grades of employees from all departments involved with business activities. These courses include "all-employee education" courses that confirm and reinforce employees' awareness of basic management principles as well as fundamental knowledge about such issues as compliance, human rights, occupational safety, quality, and environmental protection. The school is also planning and methodically implementing various other kinds of educational and training courses. From the time the SB School commenced its activities in September 2007 through July 2009, the cumulative total number of attendances at its courses has been about 49,000, and the number of hours of instruction has been approximately 103,000. Going forward, the SB School will implement a wide range of education programs that enhance the knowledge and the skills of Sumitomo Bakelite Group personnel.

As business becomes increasingly global and borderless in the 21st century, Sumitomo Bakelite is actively striving to develop the capabilities of each employee—the Company's most precious management resource—through sustained development as a "Global Excellent Company."

#### Two Examples of Educational Programs Conducted by SB School

# Educational Programs by Personnel Level—Course for New Employees

Employees who newly joined Sumitomo Bakelite in 2009 received classroom-type training for about one month after their entry. We would like to introduce the content of a three-day training course aimed at giving new employees opportunities to "experience work firsthand." This course included instruction in business manners and basic work tasks and procedures.

In the business manners part of this course, we worked to give new employees the opportunity to learn through the repetition of practical business activities. Many new employees were impressed by the key messages of the course, which included "proper manners help work flow more smoothly" and "judgments on whether manners are good or bad are made by the person you are interacting with." We sought to go beyond just teaching formal manners and gave the new employees the opportunity to learn about the significance of business manners.

In addition, as part of the course, we divided the new employees into groups and gave them the chance to experience real business situations. At first, the new employees seemed puzzled, but, as they moved ahead by trial and error, the new employees took notice of many points as they experienced firsthand the basics of business processes and made this experience a part of their own knowledge. This is indicated by some of their comments, which included "I experienced firsthand that, given only a limited amount of time, it is important to set goals and manage time effectively to show results" and "I understood the importance of reporting to and main-

taining close communication with my immediate superior and discussing things with him."





# Educational Programs by Objective—Training in Logical Thinking

This course, which is conducted over a period of two days, has two objectives. The first is to learn to think proactively and master the basic methods for putting things in order. The second is to master the basic skills of problem solving. The content of this course is focused around "thinking for oneself and communicating your thoughts to other people" and involves considering a wide range of real life business themes. The employees attending this course come from a diversity of job categories, and they are divided into a number of groups. As the course proceeds, they engage in actual work situations that involve the application of many conceptual methods.

To apply the content of the course to actual business situations, employees attending engage in a range of activities, including preparing internal documents, learning the processes related to giving explanations to customers, formulating sales strategies and new plans, and preparing plans for experi-

ments. Therefore, many connections can be drawn between the content of this course and a range of activities that employees will be involved in after they complete the course.



#### Voices of the People in Charge

We of the secretariat of the Human Resources Development Department plan the necessary education and training programs, and then conduct them out systematically to meet the needs of a diversity of departments and levels that are engaged in implementing the Company's business activities. As we listen to the voices of employees attending the course, their superiors, and others, we review the content of the courses each year to make further improvements and substantially increase the SB School's

contribution to the future development of employees and, ultimately, to the development of Sumitomo Bakelite itself.

Hanae Sakai (left), Junji Takamoto (right), Human Resources Development Department



# Each Sumitomo Bakelite Group company works to deepen its relationship with local communities.

#### **Overseas**

#### Singapore

As a means of contributing to local communities, Sumitomo Bakelite Singapore Pte. Ltd. arranges for its employees to make annual visits to Singapore Red Cross facilities for physically challenged people, where they work to clean up the facility as well as make minor repairs to wheelchairs and other equipment. In addition, to provide lifestyle support for impoverished

seniors, the company organizes visits to individual senior citizens' homes, during which the senior citizens are presented with support products.







#### Indonesia

# Study Visits to Plant Arranged in Cooperation with Local Governments and High Schools

P.T. Indopherin Jaya (IPJ) recently hosted study visits to its plant by 40 Probolinggo City high school students who had won environmental awards from the government. After the plant managers explained to the visitors about the general features of the plant and its environmental protection efforts, the visitors were given a tour of the plant. Another group that made a study visit to the IPJ plant was an 80-member delegation of representatives of the International Center for Environmental Technology Transfer (ICETT) and of East Java Province (including Probolinggo City) that made the visit as part of their tour of companies in the region.





#### China

#### Dialog with Regional Governments

The Dongguan Plant of BASEC Hong Kong Limited, in China's Guangdong Province, hosted a delegation of top officials of Dongguan City and other local officials who were investigating the state of foreign-affiliated companies amid the global finan-

cial crisis. The delegation toured the health care product manufacturing facility and other parts of the plant, and the visit was covered by local television stations and newspapers.



#### **Europe**

#### Dialog with Regional Societies

As a part of the staff training programs of local governments' environment-related units, trainees were hosted by N.V. Sumitomo Bakelite Europe S.A., which provided a tour of its plant as well as a summary explanation of the plant.

In Belgium, because the Genk Plant occupies a site affected by soil pollution caused by a previous site user, the plant has begun regularly distributing a newsletter on the pollution situation to local residents.

#### Cooperating to Help Preserve Relics from the Roman Era

As a member of a regional industrial association, Sumitomo Bakelite Europe's Barcelona Plant is working to help preserve Roman-era archeological relics found nearby its location. In 2008, the representatives of the local municipal government made an official visit to the plant and were given a tour of the plant's facilities.





#### **North America**

#### **Dialog with Regional Societies**

Durez Corporation's plant in Fort Erie, Ontario, offers special Earth Day Tours of its plant for local high school students as well as organizes a campaign to tidy up nearby roads.



#### Japan

#### **Dialog with Regional Societies**

#### Plant Study Tours

The Amagasaki Plant is proactively arranging study tours as a means of promoting dialog with local communities.

In June 2008, IPC Environment Business Research Association\* members visited the plant to study its environmental protection measures. In October 2008, the plant invited representatives of local governments to participate in an annually implemented program involving an overview explanation and tour of the plant's facilities.

\* IPC was founded as the Institute for Printed Circuits and subsequently renamed the Institute for Interconnecting and Packaging Electronic Circuits and IPC. The new acronymic name is accompanied by an identity statement, "Association Connecting Electronics Industries."



#### **Special Service for Regional Society**

#### Support for Children's Activities

S.B. Techno Plastics Co., Ltd., cooperated with a "living organism study" program organized by a local nonprofit organization



and a local town association aimed at promoting children's development. The company gave the program support through measures that included the provision of a parking lot and wastewater pumps.

#### Plant Study Tours for Elementary Schoolchildren

As part of its programs for contributing to society, Kyushu Bakelite Industry Co., Ltd., provided a study tour of its plant to 25 students and two teachers from a local elementary school. The objective of the program was to provide the students with an opportunity to study the school district's geography and land use characteristics as well as to observe the way that family members and others are employed and thereby gain a better understanding of labor issues. Going forward, the company plans to proactively cooperate with such programs and otherwise demonstrate that it is a company open to local communities.





#### Internship Program

The Utsunomiya Plant accepted three local middle school students as interns for one week and provided those interns with training. While enabling the interns to leave their school and socialize with other people in their community as well as broadening the scope of their experience in society, the plant empha-

sized such measures to help the interns prepare for their adult lives in society as lessons in formal etiquette as is commonly practiced among businesspeople and other corporate employees in Japan.



#### **Environmental Conservation for Regional Society**

Each year, the Shizuoka Plant acts as a member of regional society by participating with other regional society members in a campaign to wipe out illegal dumping activities. In addition, as part of its programs for encouraging employees to make special contributions to regional society, the plant organizes campaigns in which employees clean up areas around the plant facilities and dormitories as well as local roads. Each year, the plant also cooperates with a local citizens' group with respect to that group's campaign to clean up nearby streams and rivers.





#### Responses to Environmental Complaints

Sumitomo Bakelite responds promptly to diverse complaints from residents of local communities.

Category	Date	Business site	Complaint	Cause and response
Odor	April 2008	Shizuoka Plant	A nearby factory complained of a strong smell of some- thing scorched or burning.	After the complaint, a visit was made to the nearby factory but it was impossible to directly perceive the smell at that time. From the circumstanc- es of the incident, it was determined that the smell was emitted from the deodorizing furnace of a drying machine. By reevaluating the operating procedure for that facility, the situation was improved.
Odor	June 2008	Tsu Plant	A nearby resident complained of an odor.	It was found that a large volume of rain had swept dead leaves and caterpil- lar carcasses into a sewage line on the plant's grounds, clogged it, and putrefied, causing the odor. A sewage line cleaning request was submitted to the municipal water and sewage authority. In addition, trees on the grounds were pruned to reduce the quantity of falling leaves.
Odor	September 2008	Shizuoka Plant	A nearby factory complained of a strong odor.	After the complaint, a visit was made to the nearby factory but it was impossible to directly perceive the smell at that time. Based on the results of a survey within the plant, it was discovered that there were some problems with a boiler before the incident occurred, and it was determined that that was the cause of the problem. In response, the boiler facility was repaired.
Odor	October 2008	Shizuoka Plant	A nearby resident reported a distinctive chemical odor.	It was determined that the odor stemmed from manufacturing process exhaust gas that was emitted from the plant after being subjected to com- bustion treatment. In response, the combustion unit was serviced to increase its combustion efficacy.
Odor	February 2009	Amagasaki Plant	A nearby resident reported an odor.	It was thought that the problem may have resulted from a deterioration of catalysts in a catalytic oxidation-type deodorizing unit used to treat exhaust fumes from welding processes. In response, the plant took such measures as those to cleanse the catalytic fluid employed by that unit.
Noise	April 2008	Shizuoka Plant	A nearby resident complained that a loud noise beginning early in the morning was problematic.	Although prior notice had been provided to residents regarding the imple- mentation of a tree-spraying process at the plant, a portion of residents complained about the process being implemented early in the morning. Because the process of spraying trees on the plant's grounds entailed the use of large-scale equipment on public roads with considerable pedestrian traffic, it was deemed necessary to implement the process early in the morning when there were few pedestrians. In response, the trees were shortened through pruning, enabling the spraying process to be performed from the inside of the plant during the daytime.
Other	April 2008	Amagasaki Plant	It was reported that, on the north side of the plant, tree branches had extended toward a byway alongside a pedes- trian road-crossing bridge so that they were brushing against large buses that passed through that byway. The bus company requested that the branches be cut.	In response, the tree branches in question as well as other tree branches extending toward the byway were cut, and this measure was reported to the bus company.
Other	June 2008	Fundamental Research Laboratory	The management association of a condominium building on the south side of the laboratory's grounds reported that tree branches had extended toward the building's parking lot so that nuts and sap were falling on parked cars in that lot. The management association requested that the branches be pruned.	Because of the beauty of the cherry trees in the Sakai area when they are in full blossom, the previous chairman of the management association had requested that they not be pruned and the Company had complied with that request. Currently, because the association (with a new chairman) was requesting that the trees be pruned, the Company complied with that request. After the trees were pruned, the association was appreciative of the pruning and contacted the Company to express its thanks.
Other	October 2008	Shizuoka Plant	A nearby factory reported that there was an oil film floating on the surface of a stream that passes through the grounds of the plant.	After an investigation, it was determined that the oil film was floating on the stream before it entered the plant's grounds, but that the source of the film was not clear. The city halls of Fujieda and Yaezu were contacted and asked to handle the situation.
Other	January 2009	Shizuoka Plant	A pedestrian walking on a sidewalk along the south side of the plant grounds reported that a fog-like cloud had emerged from the plant and come in contact with the pedestrian's head. This pedestrian was inquiring about the possibility that this cloud might cause health problems.	After an investigation, it was determined that a pinhole perforation in a water pipe extending from a water well was leaking water. In response, the pipe was immediately repaired and the situation was explained to the pedestrian who had made the inquiry, who was satisfied with that explanation.
Other	February 2009	Shizuoka Plant	The owner of a rice paddy on the northeast side of the plant grounds reported that branches of trees on the plant's grounds had grown, casting a shadow on his field. He requested that countermeasures be taken	In response, the trees in the relevant zone were pruned during April.

#### Amagasaki Plant

- 1. Address: 2-3-47, Higashi-Tsukaguchi-cho, Amagasaki-shi, Hyogo
- 2. Number of employees: 560
- 3. Commencement of operations: 1938
- 4. Site total area: 46,000m<sup>2</sup> (14,000 tsubo)
- 5. Date ISO 14001 certification received: October 1998



- 6. Principal products: Co-extruded, mul-
- tilayered films for food product packaging; PTP packaging materials for medical use; Wrapping tape for electronic parts
- 7. Attainment of zero-emission status: 2003





Water sprinkling (uchimizu)\* activities at the Amagasaki Plant

Prize received in wall greening contest

<sup>a</sup> Activities undertaken to lower pavement temperature in the summer months to minimize the urban "heat island effect"

#### <Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
Boiler	SOx	m³ N/h	1.15	Less than 0.03
	NOx	ppm	150	52.1
	NOx (total volume)	tonnes/year	13.8	2.15
	Soot and dust	g/m³ N	0.05	Less than 0.002

<Water> Emissions into public water areas

Item	Unit	Regulatory limit	Actual measurement
рН	_	5.8-8.6	7.3–7.8
BOD	mg/L	25	4.4
COD	mg/L	25	5.4
Suspended solids	mg/L	20	3.6
n-hexane extract	mg/L	20	2.1

<Water> Released into sewers

ltem	Unit	Regulatory limit	Actual measurement
рН	—	5.7-8.7	5.7–8.5
BOD	mg/L	300	390*
Suspended solids	mg/L	300	150
n-hexane extract	mg/L	30	53*

\* The grease traps and other equipment are cleaned periodically because grease and other substances enter effluent from the kitchens. In addition, as a stronger measure, plans call for the installation of a water purification tank in fiscal 2009.

At the Amagasaki Plant, we have prepared an Environmental Policy and are conducting environmental activities on a daily basis. In addition, we are promoting "energy conservation and CO<sub>2</sub> emission reduction activities" and "waste emission reduction activities" and reporting steady results from these initiatives

We are also taking care to communicate proactively with the community, including providing opportunities for periodic tours of the plant.





#### **Shizuoka Plant**

- 1. Address: 2100 Takayanagi, Fujieda-shi, Shizuoka
- 2. Number of employees: 687
- 3. Commencement of operations: 1962
- 4. Site total area: 287,000m<sup>2</sup> (87,000 tsubo)
- 5. Date ISO 14001 certification received:
  - March 1999
- 6. Principal products: Epoxy resin cop-
- per clad laminates, molding compounds, industrial phenolic resins, melamine resin decorative boards
- 7. Attainment of zero-emission status: 2005



(in Shizuoka)



Cleanup activities in Surugadai Staff perform community services at welfare facilities (rice cake pounding event).

>		

<Air

Regulatory Actual Facility Item Unit limit measurement Cogeneration boiler 100 NOx ppm Soot and dust Less than 0.013 g/m³ N 0.05

### <Water> Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
рН	—	5.8–8.6	7.2–8.1
BOD	mg/L	15	2.1
COD	mg/L	_	3.6
Suspended solids	mg/L	30	6.2
n-hexane extract	mg/L	3	Less than 0.5
Phenols	mg/L	1	Less than 0.05
Formaldehyde	mg/L	5	0.2

As one of Sumitomo Bakelite's key facilities, the Shizuoka Plant manufactures an extremely large number of products in varying lot sizes. As a result, the environmental impact of the plantincluding the consumption of energy, the level of waste emissions, and other indicators—is high compared to that of Sumitomo Bakelite as a whole. However, we have actively

implemented ISO 14001, and, with the participation of all staff members, we have reduced our CO<sub>2</sub> and waste emissions and attained zeroemission status.



Kazuhisa Hirano, Manager, Shizuoka Plant

#### Utsunomiya Plant

<air></air>				
Facility	Item	Unit	Regulatory limit	Actual measurement
Drying	SOx	m³ N/h	1.22	0.013 or less
furnace	Soot and dust	g/m³ N	0.2	0.001 or less

<Water> Emissions into public water areas

Item	Unit	Regulatory	Actual
На	_	5.8-8.6	7.4–7.9
BOD	mg/L	25	1.6
COD	mg/L	25	5.3
Suspended solids	mg/L	40	Less than 1
n-hexane extract	mg/L	5	Less than 1

#### Tsu Plant

<Air> No relevant facilities

<Water> Released into sewers

ltem	Unit	Regulatory limit	Actual measurement
рН		5.0-9.0	6.8-8.8
BOD	mg/L	600	160
n-hexane extract (mineral oil)	mg/L	5	2.4
n-hexane extract (animal and plant oils)	mg/L	30	9.2
Suspended solids	mg/L	600	220
Total nitrogen	mg/L	240	9.1
Total phosphorus	mg/L	32	0.66
Ammonium nitrogen	mg/L	380	10.0
Nitrate-nitrogen as well as nitrite-nitrogen	mg/L	380	0.6

#### **Kanuma Plant**

#### <Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
Dailar	NOx	ppm	180	110
bollel	Soot and dust	g/m³ N	0.30	0.009

**<Water>** Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
рН	—	5.8–8.6	7.1–7.5
n-hexane extract	mg/L	5	<1.0-1.9

### Nara Plant

Facility	ltem	Unit	Regulatory limit	Actual measurement
Deiler	NOx	ppm	100	78
DOILEI	Soot and dust	g/m³ N	0.10	0.009

<Water> Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
рН	_	5.6-8.4	6.6-7.5
BOD	mg/L	50	10.6
COD	mg/L	50	13.3
Suspended solids	ma/l	20	17

#### **Fundamental Research Laboratory**

<Air> No relevant facilities

<Water> Released into sewers

ltem	Unit	Regulatory limit	Actual measurement
рН	—	5–9	7.4-8.4
Total cyanide	mg/L	1	Less than 0.1
Phenols	mg/L	0.5	Less than 0.05
Fluorine and its compounds	mg/L	10	Less than 1
Boron and its compounds	mg/L	8	Less than 1
n-hexane extract	mg/L	5	Less than 1
Dichloromethane	mg/L	0.2	Less than 0.02
1,2-dichloroethane	mg/L	0.04	Less than 0.004

#### **Kobe Fundamental Research Laboratory**

<Air> No relevant facilities

<Water> Released into sewers

ltem	Unit	Regulatory limit	Actual measurement
pH	—	5–9	6.7 – 7.8
Suspended solids	mg/L	2,000	2
BOD	mg/L	2,000	1
n-hexane extract	mg/L	5	Less than 1.0

#### Kyushu Bakelite Industry Co., Ltd.

<Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
Boiler	SOx	m³ N∕h	0.63	0.37
	NOx	ppm	180	49
	Soot and dust	g/m³ N	0.3	Less than 0.01

<Water> Emissions into public water areas

Item	Unit	Regulatory limit	Actual measurement	
pH	—	5.8-8.6	7.1–7.8	
BOD	mg/L	160	15.0	
COD	mg/L	80	16.0	
Suspended solids	mg/L	100	10.0	
n-beyane extract (mineral oil)	ma/l	25	Not detectable	

\* Regulatory limits were relaxed beginning in December 2007, following a review of the agreement with the City of Nogata.

#### Akita Sumitomo Bakelite Co., Ltd. <Air>

Facility	ltem	Unit	Regulatory limit	Actual measurement
Boiler	SOx	m³ N∕h	3.18	0.34
	NOx	ppm	110	42
	Soot and dust	g/m³ N	0.09	Less than 0.01

<Water> Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
рН	—	6.0-8.5	7.0-7.4
BOD	mg/L	30	19.0
COD	mg/L	30	11.0
Suspended solids	mg/L	40	11.0
Phenols	mg/L	0.5	0.02
Copper	mg/L	1.0	0.54
Cyanide compounds	mg/L	0.1	Less than 0.01
Lead and its compounds	mg/L	0.1	Less than 0.01
Soluble manganese	mg/L	5	Less than 0.03

#### S.B. Techno Plastics Co., Ltd. (Head Office Plant) <Air> No relevant facilities

<Water> Emissions into public water areas

ltem	Unit	Regulatory	Actual measurement
рН	_	5.8-8.6	6.4-8.6
BOD	mg/L	20	8.9
Suspended solids	mg/L	50	48

#### Artlite Kogyo Co., Ltd. <Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
Boiler	SOx	m³ N/h	4.38	0.03
	NOx	ppm	180	78
	Soot and dust	g/m³ N	0.3	0.004

<Water> Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
pH	—	5.8-8.6	7.1–7.9
BOD	mg/L	160	1.9
COD	mg/L	30	3.81
COD (total)	kg/day	27.1	0.25
Suspended solids	mg/L	200	Less than 5
n-hexane extract	mg/L	5	Less than 2
Phenols	mg/L	5	Less than 1
Total nitrogen	mg/L	40	_
Total phosphorus	mg/L	2	_

#### Yamaroku Kasei Industry Co., Ltd.

<Air> No relevant facilities

<Water> Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
рН	_	5.8-8.6	6.8–7.1
BOD	mg/L	25	1
COD	mg/L	25	5
Suspended solids	mg/L	90	3
Phenols	mg/L	5	Less than 0.01

#### Kyodo Co., Ltd.

<Air> No relevant facilities

<Water> Emissions into public water areas

ltem	Unit	Regulatory limit	Actual measurement
рН	—	5.8-8.6	7.6–8.2
BOD	mg/L	25	1.0
COD	mg/L	25	1.0-2.0
Suspended solids	mg/L	90	1.0-4.0

\* Actual measurement: Tests are conducted voluntarily four times a year, and these are reported to the municipal office of Kashiwara City and to the Ministry of Land, Infrastructure, Transport and Tourism. Regarding water effluent, tests are conducted autonomously and by the municipal office on a periodic basis, and water is disposed of directly into the Yamato River system (exemption from the installation of an effluent processing facility).

Notes: 1. In cases where there are multiple facilities subject to regulations, we have listed the facility discharging the largest amount of gas emissions.
2. Regarding regulatory limits, we have listed the most stringent of municipal ordinances, community agreements, and administrative guidance.
3. Actual measurements are the largest values observed in fiscal 2008. Regarding pH, the lowest and highest values are listed.
4. Actual measurements listed as "less than" indicate a measurement smaller than the lowest measurable value. Actual measurements listed as "not detectable" indicate a measurement level detectable" indicate a measurement below the minimum detection level.

# Sumitomo Bakelite Singapore Pte. Ltd. (Singapore) <Air> No relevant facilities

<Water>

ltem	Unit	Regulatory limit	Actual measurement
рН	_	6–9	6.6
Temperature	°C	45	30
BOD	mg/L	400	130
COD	mg/L	600	380
Suspended solids	mg/L	400	21
TDS	mg/L	3,000	240
Phenols	mg/L	0.5	0.2
Chloride	mg/L	1,000	64
Sulfate	mg/L	1,000	27
Sulfur	mg/L	1	0.1
Cyanide	mg/L	2	0.02
Detergents	mg/L	30	7
Oil and grease	mg/L	60	1
Caustic alkalinity	mg/L	2,000	Not detectable
Fluorides	mg/L	15	1
Arsenic	mg/L	5	Less than 0.1
Barium	mg/L	10	Less than 0.1
Tin	mg/L	10	Less than 0.1
Iron	mg/L	50	1.2
Beryllium	mg/L	5	Less than 0.1
Boron	mg/L	5	0.3
Manganese	mg/L	10	Less than 0.1
Cadmium	mg/L	1	Less than 0.01
Chromium	mg/L	5	Less than 0.1
Copper	mg/L	5	Less than 0.1
Lead	mg/L	5	Less than 0.1
Mercury	mg/L	0.5	Less than 0.01
Nickel	mg/L	10	Less than 0.1
Selenium	mg/L	10	Less than 0.1
Silver	mg/L	5	Less than 0.1
Zinc	mg/L	10	0.7
Metals (toxic) in total	mg/L	10	1.04

# SNC Industrial Laminates Sdn. Bhd. (Malaysia) <Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
Exhaust gas	SOx	g/m³ N	0.2	0.050
combustion	NOx	g/m³ N	2.0	0.008
unit	Soot and dust	g/m³ N	0.4	0.230

#### <Water>

Item	Unit	Regulatory limit	Actual measurement
рН	—	5.5-9.0	5.5-9.0
BOD	mg/L	50	45
COD	mg/L	100	91
Suspended solids	mg/L	100	35
Phenols	mg/L	1.0	0.16
Temperature	°C	40	30.1
Mercury	mg/L	0.05	Less than 0.001
Cadmium	mg/L	0.02	Less than 0.005
Hexavalent chromium compounds	mg/L	0.05	Less than 0.01
Arsenic	mg/L	0.10	0.08
Cyanide compounds	mg/L	0.10	0.01
Lead	mg/L	0.5	0.12
Trivalent chromium compounds	mg/L	1.0	0.1
Copper	mg/L	1.0	0.58
Soluble manganese	mg/L	1.0	0.23
Nickel	mg/L	1.0	0.01
Tin	mg/L	1.0	0.2
Zinc	mg/L	2.0	1.50
Boron	mg/L	4.0	0.7
Soluble iron	mg/L	5.0	1.74
Chlorine	mg/L	2.0	Less than 0.1
Sulfur	mg/L	0.5	Less than 0.1
Oil and grease	mg/L	10.0	Less than 5

#### P.T. Indopherin Jaya (Indonesia)

<Air> No relevant facilities <Water>

Item	Unit	Regulatory limit	Actual measurement
рН	—	6–9	6.6–7.8
BOD	mg/L	100	27
COD	mg/L	300	83
Suspended solids	mg/L	100	37
Total nitrogen	mg/L	30	8.8
Phenols	mg/L	1	0.13

#### P.T. SBP Indonesia (Indonesia)

<Air> No relevant facilities

Item	Unit	Regulatory limit	Actual measurement
Temperature	°C	40	32.3
Total dissolved solids	mg/L	4,000	515
Suspended solids	mg/L	400	102
pH	_	5.5-9.5	8.59
Iron	mg/L	10	0.03
Manganese	mg/L	4	0.18
Barium	mg/L	4	Less than 0.1
Copper	mg/L	4	0.0079
Zinc	mg/L	10	0.179
Hexavalent chromium	mg/L	0.2	Less than 0.005
Chromium compounds	mg/L	1	0.0403
Cadmium	mg/L	0.1	0.009
Mercury	mg/L	0.004	Less than 0.001
Lead	mg/L	0.2	0.0235
Tin	mg/L	4	Less than 0.25
Arsenic	mg/L	0.2	Less than 0.15
Selenium	mg/L	0.1	Less than 0.06
Nickel	mg/L	0.4	0.0549
Cobalt	mg/L	0.8	Less than 0.011
Cyanogen	mg/L	0.1	0.007
Hydrogen sulfide	mg/L	0.1	0.159*1
Fluorine	mg/L	4	0.9
Chloride	mg/L	2	Less than 0.01
Ammonium nitrogen	mg/L	2	25.54*2
Nitrate-nitrogen	mg/L	40	1.1
Nitrite-nitrogen	mg/L	2	0.093
BOD	mg/L	200	67.33
COD	mg/L	400	168.32
Methylene blue active substance	mg/L	10	0.358
Phenols	mg/L	1	0.047
Oil and grease	mg/L	10	3.9

\* Regulatory limit: Standards are set by the industrial complex to which the facility belongs. \*\* Regarding the exceeding of regulatory limits 1 and 2: The authority in charge of the

\*\* Regarding the exceeding of regulatory limits 1 and 2: The authority in charge of the industrial complex has confirmed that hydrogen sulfide and ammonium nitrogen are present only in household water effluent (from kitchen sinks and other sources). There were no problems with the measurements of the final processing facilities owned by the industrial complex. (This plant does not use or dispose of hydrogen sulfide or ammonium nitrogen.) The industrial complex advised that the plant begin to clean the waste effluent conduit, and, as a result, the measurement following the cleaning was below the regulatory limit.

# Sumitomo Bakelite (Taiwan) Co., Ltd. (Taiwan) <Air> No relevant facilities

<Water>

ltem	Unit	Regulatory limit	Actual measurement
pH	—	6–9	7.3
COD	mg/L	600	152
Suspended solids	mg/L	300	34

# N.V. Sumitomo Bakelite Europe S.A. (Belgium) <Air>

Facility	ltem	Unit	Regulatory limit	Actual measurement
Boiler	NOx	mg/m³ N	425	102

<Water>

ltem	Unit	Regulatory limit	Actual measurement
pH	—	6–9	6.5-8.0
COD	mg/L	136	28
Suspended solids	mg/L	1,000	5
TOC	mg/L	50	Less than 1
Phenols	mg/L	3	Less than 1
Chlorendic acid	mg/L	3	Less than 0.1
Hexachlorocyclopentadiene	mg/L	0.005	Less than 0.005
Monochlorobenzene	mg/L	5	Less than 1
Total nitrogen	mg/L	15	1.2
Total phosphorus	mg/L	3	0.07

#### Vyncolit N.V. (Belgium) <Air>

Item	Unit	Regulatory limit	Actual measurement
Phenols	mg/m³ N	20	5.1
Ammonia	mg/m³ N	35	9.4
Formaldehyde	mg/m³ N	20	0
Soot and dust	mg/m³ N	150	22.5

#### <Water>

ltem	Unit	Regulatory limit	Actual measurement
Zinc	mg/L	1.4	0.725
Copper	mg/L	0.2	0.029
Phenols	mg/L	0.4	0.019
Molybdenum	mg/L	5	16.7*
Total phosphorous	mg/L	14	1.67
*The measurement increase	od tomporarily as a	rocult of aquipm	ont problems. To

ne measurement increased temporarily as a result of equipment problems. To remedy the situation, the unit was cleaned, and, as a result of testing, improvement has been confirmed.

# Sumitomo Bakelite Europe (Barcelona), S.L.U. (Spain) <Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
	SOx	mg/m³ N	4,300	Not detectable
Boiler	NOx	ppm	300	55
	CO	ppm	500	3

#### <Water>

ltem	Unit	Regulatory limit	Actual measurement
рН	_	6–10	6.5-8.6
COD	mg/L	1,500	338
Suspended solids	mg/L	750	137
Phenols	mg/L	2	1.25
Conductivity	µs/cm	5,000	3,518
Total chlorine	mg/L	2,000	763
Total sulfide	mg/L	1,000	472
Total phosphorus	mg/L	50	5.35

# Sumitomo Bakelite Vietnam Co., Ltd. (Vietnam) <Air>

Facility	Item	Unit	Regulatory limit	Actual measurement
Boiler	CO	mg/m³ N	1,000	20
	NO <sub>2</sub>	mg/m³ N	1,000	13
	NOx	mg/m³ N	1,500	21
	SOx	mg/m³ N	1,000	86
	Soot and dust	mg/m³ N	400	1

#### <Water>

Item	Unit	Regulatory limit	Actual measurement
Temperature	°C	40	29
Odor	_	No odor	No odor
Color	Co-Pt at pH7	20	11
рН	—	6–9	5.5-7.3*
BOD	mg/L	27	29*
Total suspended solids	mg/L	45	47*
COD (Chromium)	mg/L	45	62*
Arsenic	mg/L	0.045	0.0286
Mercury	mg/L	0.0045	0.0014
Lead	mg/L	0.09	0.0416
Cadmium	mg/L	0.0045	0.0063*
Copper	mg/L	1.8	0.549
Zinc	mg/L	2.7	0.313
Nickel	mg/L	0.18	0.263*
Manganese	mg/L	0.45	0.07
Iron	mg/L	0.9	0.596
Tin	mg/L	0.18	0.08
Hexavalent chromium	mg/L	0.045	0.009
Trivalent chromium	mg/L	0.18	0.092
Cyanogen	mg/L	0.063	0.069*
Ammonium nitrogen	mg/L	4.5	3.978
Phenols	mg/L	0.09	0.089
Mineral oil	mg/L	4.5	1
Animal and plant oils	mg/L	9	4.6
Sulfated compounds	mg/L	0.18	0.392*
Total nitrogen	mg/L	13.5	12.778
Total phosphorus	mg/L	3.6	0.77
Residual chlorine	mg/L	0.9	2.12*
Fluoride compounds	mg/L	4.5	0.84
Chlorides	mg/L	450	1,010*
Coliform bacteria	MNP/100ml	2,700	1,300

\* Beginning in 2008, there were changes in both items for regulation and regulatory limits, and the measures to be taken for a portion of the items that did not qualify are still under consideration. Since water effluent is disposed of in public waters after it is processed in the regulating pond of the industrial complex, measurements of the effluent from the regulating pond are below the regulatory limits. Water effluent in the unprocessed state is not discharged into the external environment.

#### Durez Corporation (Kenton Plant) (U.S.A.)

<Air> No relevant facilities </ar>

ltem	Unit	Regulatory limit	Actual measurement
Phenols	µg/L	20	Less than 10

#### Durez Corporation (Niagara Plant) (U.S.A.)

<Air> No relevant facilities </a>

ltem	Unit	Regulatory limit	Actual measurement
Phenols	lbs./day	35	0.142
Drainage volume	million gal./day	0.1	0.083
Suspended solids	lbs./day	75	28
Soluble organic carbon	lbs./day	800	415
Phosphorus	lbs./day	17	0.08
рН	—	5-10	9

#### Durez Canada Co., Ltd. (Fort Erie Plant) (Canada) <Air> No measurement data

<Water>

ltem	Unit	Regulatory limit	Actual measurement
рН	—	6.0-10.5	7.5–10.2
Suspended solids	mg/L	350	18–87
Phenols	mg/L	1.0	Less than 1.0

# Sumitomo Bakelite Macau Co., Ltd. (China) <Air> No measurement data

ltem	Unit	Regulatory limit	Actual measurement
рH	_	6–9	7.0-8.4
BOD	mg/L	40	139*1
COD	mg/L	150	293*1
Total suspended solids	mg/L	60	18
Oil and grease	mg/L	15.0	10
Phenols	mg/L	0.5	9.5*1
Lead	mg/L	1.0	Less than 0.005
Aluminum	mg/L	10.0	Less than 3
Arsenic	mg/L	1.0	Less than 0.01
Cadmium	mg/L	0.2	Less than 0.05
Copper	mg/L	1.0	Less than 0.1
Iron	mg/L	2.0	0.42
Manganese	mg/L	2.0	0.174
Mercury	mg/L	0.05	Less than 0.001
Zinc	mg/L	5.0	0.468
Nickel	mg/L	2.0	Less than 0.2
Selenium	mg/L	0.5	Less than 0.01
Carbon compounds	mg/L	1.0	1.57*1
Hexavalent chromium	mg/L	0.1	Less than 0.02
Chromium	mg/L	2.0	Less than 0.001
Sulfide	mg/L	1.0	Less than 0.1
Sulfate	mg/L	2,000	36
Subsulfate	mg/L	1.0	Less than 2.0*2
Phosphorus	mg/L	10.0	0.6
Ammonia	mg/L	10.0	3.79
Cyanide compounds	mg/L	0.5	Less than 0.2
Total nitrogen	mg/L	15.0	8
Nitrate	mg/L	50.0	0.91
Detergents	mg/L	2.0	Less than 0.5
Acetaldehyde	mg/L	1.0	<u>*</u> 3
HCH	mg/L	2.0	Less than 0.002
DDT	mg/L	0.2	Less than 0.002
PCP	mg/L	1.0	Less than 0.01
НСВ	mg/L	1.0	Less than 0.004
HCBD	mg/L	1.5	Less than 0.002
CBNTET	mg/L	1.5	Less than 0.005
Chloroform	mg/L	1.0	Less than 0.2
Tetrachloroethylene	mg/L	1.5	Less than 0.005
Aldrin	ug/L	2.0	Less than 0.5
Endrin	ug/L	2.0	Less than 0.5
Dieldrin	ug/L	2.0	Less than 0.5
Isodrin	ug/L	2.0	0
Heavy metals	mg/L	5.0	*4
Agricultural chemicals	pg/L	0.5	*4

 \*1 This measurement resulted from malfunctioning of the water effluent pipe. Remedial measures have already been completed.
 \*2 The capabilities of the current company conducting the measurements are

\*2 The capabilities of the current company conducting the measurements are inadequate in comparison with the environmental quality standard. A request has been made for improvement in measurement accuracy.

\*3 Following a change in the company conducting the measurements, some measurements were omitted unintentionally. We are scheduled to restart these measurements during fiscal 2009.

measurements during fiscal 2009. \*4 We are waiting for a reply regarding whether measurement is possible. In the event that measurement is not possible, we are planning to start using the services of another measuring company.

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# J-SUS

#### **Comment from an Independent Assurance Provider**

This year's report has been prepared with closer attention to the reader, as evidenced by the redesigning of the page content and layout from a universal design perspective and publication of the report at an earlier date. On the other hand, the number of indicators disclosed in this report is fewer than in the previous year's report. Your website could perhaps be better used in tandem with this report so as to continually improve the readability of the report without compromising the amount of information available to the reader.

Also, since some of the environmental performance data in the *Environmental & Social Report* are periodically reported to the relevant government authorities, centralized management of the data is becoming more important. I believe there is room for further improvement in this area.

In addition, as mentioned in my comment on the previous year's report, almost all of the initiatives disclosed in the *Environmental & Social Report 2009* are related to activities in

Japan. Since your initiatives and their results overseas are growing in importance, I would like to suggest again this year that disclosing information on overseas activities remains an important issue for the Sumitomo Bakelite Group to address in its CSR reporting activities.



Kazuhiko Saito, KPMG AZSA Sustainability Co., Ltd.

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