

 **SUMITOMO BAKELITE CO., LTD.**

Environmental Report

# Environmental Report 2004

(April 2003–March 2004)

Tomitaro Ogawa  
President



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## Message from the President

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The Sumitomo Bakelite Group has the mission of achieving sustainable growth and maximizing its corporate value over the long term by leveraging its plastics processing expertise to develop and provide society with products that feature new types of functionality. In its core plastics processing businesses, the Group is seeking to provide products with characteristics that meet customers' various needs and enable customers to increase the value of their products and businesses. In other words, our mission entails developing new types of functionality that customers find highly valuable, incorporating that functionality into plastics products, and supplying those products to customers.

We are striving to step up our development and marketing of environmentally friendly products—products that neither contain hazardous or harmful substances nor entail the use of such items in their manufacture, that do not require our customers to use such substances, and that are easily recyclable with basic constituent materials that are easily recoverable—and we view these activities as integral to our functionality-oriented mission of creating what are essentially plastics products with additional environmental functionality. Our current objective is to expand the share of total net sales accounted for by environmentally friendly products to 20% by proceeding with the development of new products with environmental functionality. In fiscal 2003, ended March 31, 2004, we raised this percentage to 13%, and it reached 18% in the first quarter of fiscal 2004.

The Sumitomo Bakelite Group has continued to implement “society- and environment-compatible management” as a crucial policy for its business activities, and it has implemented Responsible Care measures and participated in the Japan Responsible Care Council since that body's establishment in 1995. A voluntary endeavor, Sumitomo Bakelite's Responsible Care program involves implementing and improving environmental protection measures aimed at ensuring health and safety over a product's entire life cycle, from development through production, distribution, use, final consumption, and disposal. In addition, Sumitomo Bakelite proactively participates in university programs, enlightenment activities at exhibitions, and other such projects.

Topics covered in this report include the following:

- We are proceeding with measures to ensure strict compliance with Japanese and overseas environmental laws and regulations throughout the worldwide business activities of the parent company and more than 60 Group companies. To further increase the rigorousness of our compliance performance, we established a clear-cut code of Compliance Regulations as well as a Compliance Committee in October 2003. Regarding the ISO 14001 environmental management system, 22 production plants (58% of the 38 plants of 32 Sumitomo Bakelite Group manufacturing firms) have obtained certification, and an additional four plants are scheduled to be certified during fiscal 2004.
- Previously, the scope of our medium- and long-term plans for reducing environmental impact included only domestic Group companies; now, however, the scope has been expanded to encompass overseas Group companies. Moreover, the number of zero waste emissions facilities among domestic plants has been increased from one to three.
- We are continuing to implement occupational safety and health programs aimed at providing healthy and pleasant work environments as well as ensuring accident-free operations.
- Our contribution to the promotion of Green Sustainable Chemistry received official recognition, as our G Series of self-extinguishing epoxy resin materials for semiconductors was recognized as an environmentally friendly chemical product lineup by the Green Sustainable Chemistry Network through the Environment Minister Award.

We hope this environmental report will effectively promote a good understanding of the Sumitomo Bakelite Group's environmental conservation efforts, and we would be grateful to hear your comments and suggestions.

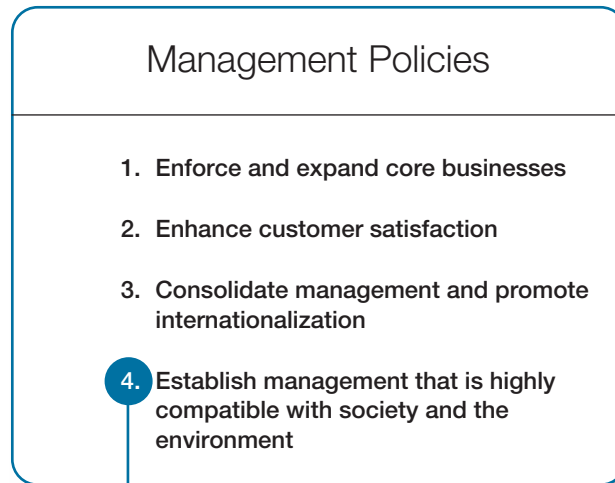
August 2004



Tomitaro Ogawa,  
President

# Management Policies

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.”



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

### Philosophy

In all its operations, Sumitomo Bakelite Co., Ltd., will endeavor to conform with the highest standards dictated by the Responsible Care concept and give due consideration to human health and safety as well as to the protection of the environment.

### Policies

In accordance with this philosophy, we will

1. Evaluate the safety, health, and environmental aspects of all corporate activities, from product design through product disposal, strive to minimize the environmental impact of corporate activities, and undertake to develop safer products and technologies;
2. Make sustained, Companywide efforts to promote resource and energy conservation, recycling, and waste reduction;
3. Implement operational safety management programs for our employees and neighbors;
4. Work to improve the safety of products and transportation operations and provide product safety information to customers and others;
5. 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; and
6. Perform inspections of environmental protection and safety activities as well as work to maintain and improve systems for administering such activities.

# Environmental Targets—Domestic Facilities

Under Sumitomo Bakelite's Corporate Policies for Safety, Health, and the Environment, the Company set medium- and long-term targets using fiscal 1999 as the standard for comparison and moved forward with Groupwide efforts starting in fiscal 2000.

## Medium- and Long-Term Environmental Impact Reduction Targets—Domestic Facilities

① Amount of waste generated	70% reduction	(Target date: 2006)
② Zero waste emissions	Complete elimination	(Target date: 2005)
③ Emissions of solvents and others	99% reduction	(Target date: 2005)
④ CO <sub>2</sub> emissions	14.6% reduction	(Target date: 2010)

We have established four environmental target areas: ① the amount of waste generated, ② zero waste emissions (complete elimination of wastes disposed of as landfill or externally incinerated), ③ emissions of solvents and others, and ④ carbon dioxide (CO<sub>2</sub>) emissions.

## Environmental Impact Reduction Results and Targets—Domestic Facilities

Action	Unit	1999 (Base year) Results	2002 Results	2003 Results	2004 Plan	2005 Targets	2006 Targets
(1) Amount of waste generated	Tons/year	12,800	8,471	7,449	51% reduction (6,300)	66% reduction vs 1999	70% reduction vs 1999
(2) Zero waste emissions	Tons/year	5,137	2,413	563	92% reduction (400)	100% reduction vs 1999	Same
(3) Emissions of solvents and others	Tons/year	3,164	1,398	1,018	87% reduction (400)	99% reduction vs 1999	Same
(4) CO <sub>2</sub> emissions*	Tons/year	130,769	127,169	123,585	7.3% reduction (121,200)	12.1% reduction vs 1999	12.6% reduction vs 1999

\* Due to the introduction of a co-generation system, CO<sub>2</sub> emission plans for 2004 and subsequent years have been revised.

The scope of the environmental impact data compilation includes:

- Sumitomo Bakelite Co., Ltd.
  - Amagasaki Plant (including subsidiaries and affiliated companies on the premises), Shizuoka Plant (including subsidiaries and affiliated companies on the premises), Utsunomiya Plant, Tsu Plant, Fundamental Research Laboratory, and Kobe Fundamental Research Laboratory
- Akita Sumitomo Bakelite Co., Ltd., Arlrite Kogyo Co., Ltd., Tokyo Kakohin Co., Ltd., Hokkai Taiyo Plastic Co., Ltd., Yamaroku Kasei Industry Co., Ltd., Kyushu Bakelite Industry Co., Ltd., and Sano Plastic Co., Ltd.\*

\*Sano Plastic included through June 2002

# Environmental Targets—Overseas Facilities

The Company has set medium- and long-term targets for reducing the environmental impact of overseas facilities, using fiscal 2003 as the standard for comparison. Improvement efforts based on the environmental impact plan were initiated in fiscal 2004.

## Medium- and Long-Term Environmental Impact Reduction Targets—Overseas Facilities

① Amount of waste generated	30% reduction	(Target date: 2006)
② Zero waste emissions	45% reduction	(Target date: 2006)
③ CO <sub>2</sub> emissions	1.5% reduction	(Target date: 2006)

We have established three environmental target areas: ① the amount of waste generated, ② zero waste emissions (complete elimination of wastes disposed of as landfill or externally incinerated), and ③ CO<sub>2</sub> emissions.



## Environmental Impact Reduction Results and Targets—Overseas Facilities

Action	Unit	2003 (Base year) Results	2004 Plan	2006 Targets	2009 Targets
(1) Amount of waste generated	Tons/year	13,703	3% reduction (13,300)	30% reduction vs 2003	50% reduction vs 2003
(2) Zero waste emissions	Tons/year	8,450	6% reduction (7,900)	45% reduction vs 2003	70% reduction vs 2003
(3) CO <sub>2</sub> emissions	Tons/year	127,761	5% increase* (134,700)	1.5% reduction vs 2003	3% reduction vs 2003

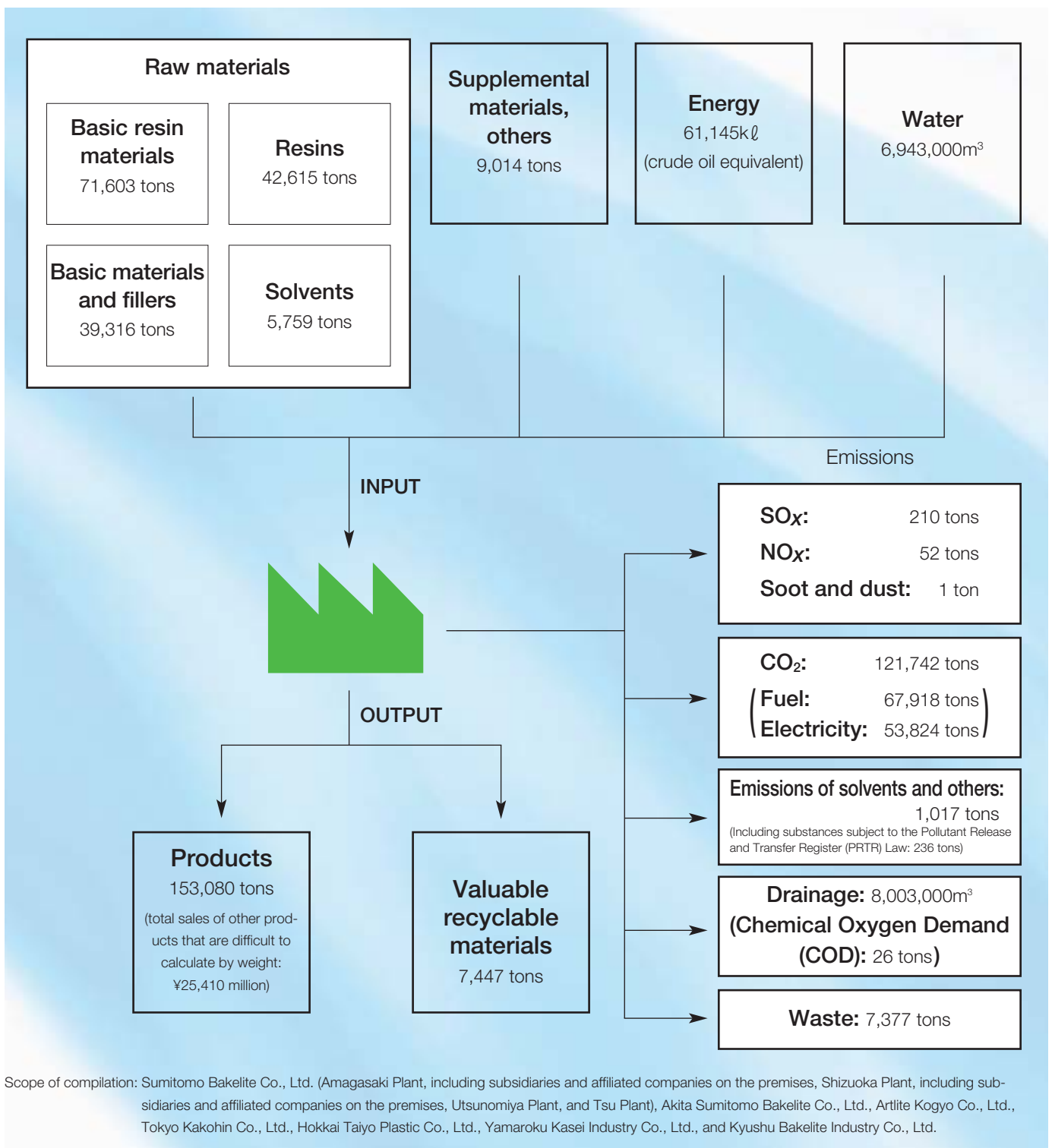
\* Plans call for the rise in CO<sub>2</sub> emissions to be restrained to 5% despite a 30% rise in production volume.

The scope of environmental impact data compilation includes the 16 manufacturing facilities of the following companies: Sumitomo Bakelite Singapore Pte. Ltd., Sumicarrier Singapore Pte. Ltd., SumiDurez Singapore Pte. Ltd., SNC Industrial Laminates Sdn. Bhd., BASEC Hong Kong Limited (Dongguan), P.T. Indopherin Jaya, Sumitomo Bakelite (Suzhou) Co., Ltd., SB Flex Philippines, Inc., 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 Vietnam Co., Ltd., Sumitomo Bakelite Macau Co., Ltd., and Fers Resins, S.A.

# Environmental Impact and Material Balance

The chart below illustrates the flow of materials at Sumitomo Bakelite in terms of the environment.

The chart indicates such input as raw materials and energy and such output as products and substances that are released into the environment. To reduce environmental impact, Sumitomo Bakelite strives to minimize emissions as well as conserve resources by curtailing consumption of such input as raw materials, energy, and water.



## Summary of Environmental Impact Reduction Activities

The Sumitomo Bakelite Group undertakes its environmental activities by setting specific targets for the reduction of environmental impact.

Item	Fiscal 2003 targets
<b>Amount of waste generated</b>	Reduce total waste amount, including wastes disposed of as landfill, externally incinerated, internally incinerated, or externally recycled (expenses paid), to 6,600 tons or less
<b>Zero waste emissions</b>	Reduce total amount, including wastes disposed of as landfill or externally incinerated, to 1,200 tons or less
<b>Emissions of solvents and others</b>	Reduce emissions into the atmosphere of solvents and other chemical substances covered by the PRTR Survey of the Japan Chemical Industry Association (JCIA) to 640 tons or less
<b>CO<sub>2</sub> emissions</b>	Reduce CO <sub>2</sub> emissions that result from energy consumption (fuel and electricity) in production operations to 127,500 tons or less



From fiscal 2002, two laboratories and five affiliates were newly included in these efforts, and currently these efforts encompass the 12 facilities and companies listed on page 4, with progress monitored on a monthly basis.

Targets and corresponding results for fiscal 2003 are indicated in the table below. The target for the reduction of waste generated was not attained, but such initiatives as those related to valuable recyclable materials enabled a year-on-year reduction of approximately 12% (1,022 tons). The Group was able to greatly exceed its target for reducing zero waste emissions (wastes disposed of as landfill or externally incinerated). Reflecting a two-month delay in the start-up of newly installed exhaust gas treatment equipment, emissions of solvents and others exceeded the target level, but exhaust gas treatment capacity was raised to the planned level by the end of fiscal 2003. CO<sub>2</sub> emissions were reduced by a greater amount than planned, due to proactive and persistent energy conservation efforts.

	Fiscal 2003 results	Target comparison	Self-evaluation	Related pages
	Amount of waste generated totaled 7,449 tons, approximately 850 tons more than the target	13% over	D	19
	Amount of zero waste emissions substances totaled 563 tons, approximately 640 tons less than the target	53% under	A	19
	Emissions totaled 1,018 tons, approximately 380 tons more than the target	59% over	D	16
	CO <sub>2</sub> emissions totaled 123,585 tons, approximately 3,900 tons less than the target	3% under	A	17

A: Below target  
 B: 0% to 5% over target  
 C: 5% to 10% over target  
 D: More than 10% over target

# Environmental Accounting

## Sumitomo Bakelite has adopted environmental accounting to promote more-efficient environmental management as well as to live up to its accountability to society.

In fiscal 2000, Sumitomo Bakelite introduced environmental accounting as an effective tool to implement business activities in line with the environment. Environmental accounting quantifies the costs and effects associated with environmental conservation activities. It is an excellent tool to promote environmentally conscious business activities more efficiently and to enhance the understanding of our efforts through the disclosure of information to our stakeholders.

With reference to *Environmental Accounting Guidelines 2000, 2002* released by the Ministry of the Environment, we established a framework for quantitatively measuring progress in our activities to help reduce the environmental burden. Under the framework, we continuously make efforts to evaluate the environmental conservation activities based on our own compilation methods. Moreover, we strive to enhance the effectiveness of our compilation methods through annual reviews and reassessments.

In fiscal 2000, we introduced environmental accounting at five plants and two laboratories. From fiscal 2001, we expanded the scope of environmental accounting to all of our domestic business facilities, including those of affiliated companies (listed below).

### Environmental Conservation Costs in Fiscal 2003

Item	Investment (Millions of yen)	Expenses (Millions of yen)	Description
(A) Reduction of emissions into the environment	57	187	<ul style="list-style-type: none"> <li>Renovation of wastewater-treatment equipment</li> <li>Construction of sewerage-use drainage paths</li> </ul>
(B) Energy conservation	28	27	<ul style="list-style-type: none"> <li>Introduction of co-generation system</li> <li>Maintenance of air conditioners</li> </ul>
(C) Reduction of industrial waste, promotion of recycling and waste treatment	10	560	<ul style="list-style-type: none"> <li>Dismantling and removal of incinerators</li> <li>Waste treatment</li> </ul>
(D) Product evaluation at R&D stage	—	1,173	<ul style="list-style-type: none"> <li>R&amp;D for environmentally friendly products</li> </ul>
(E) Reduction of environmental burden upstream and downstream	—	17	<ul style="list-style-type: none"> <li>Consignment fee to the Japan Containers and Recycling Association</li> </ul>
(F) Environmental management activities	0	258	<ul style="list-style-type: none"> <li>Personnel costs for environmental management activities</li> <li>Greening activities and maintenance of green space</li> </ul>
(G) Contributions to social activities	—	1	<ul style="list-style-type: none"> <li>Activities for external communications</li> </ul>
(H) Response to environmental damage	—	—	
Total	95	2,223	

Period: April 2003 through March 2004

Scope of Compilation: Sumitomo Bakelite Co., Ltd. (Amagasaki Plant, including subsidiaries and affiliated companies on the premises, Shizuoka Plant, including subsidiaries and affiliated companies on the premises, Utsunomiya Plant, Tsu Plant, Fundamental Research Laboratory, and Kobe Fundamental Research Laboratory), Akita Sumitomo Bakelite Co., Ltd., Artlite Kogyo Co., Ltd., Tokyo Kakohin Co., Ltd., Hokkai Taiyo Plastic Co., Ltd., Yamaroku Kasei Industry Co., Ltd., and Kyushu Bakelite Industry Co., Ltd.

## ● Compilation methods

- Compilations are based on the Company's Environmental Accounting Compilation Guidelines with reference to *Environmental Accounting Guidelines 2000, 2002* released by the Ministry of the Environment.
- Regarding investments with multiple cost items, including those unrelated to environmental conservation objectives, since fiscal 2002 environmental conservation costs have been compiled through proportional allocation of the environmental conservation-related costs.
- Regarding economic effects, only effects calculable based on clear-cut grounds are recorded. Effects calculable based on such presumptions as risk avoidance effects are excluded.
- Expenses do not include depreciation costs.
- With regard to R&D, investment outlays and expenses are compiled for each environment-related category.

### Effects of Environmental Conservation for Fiscal 2003

Reduction in Environmental Burden (Compared with previous fiscal year)		Environmental Burden	
Reduction in atmospheric emissions of solvents and others	380 tons	Atmospheric emissions of solvents and others	1,018 tons
Reduction in CO <sub>2</sub> emissions	3,584 tons	CO <sub>2</sub> emissions	123,585 tons
Reduction in industrial waste generated	1,022 tons	Industrial waste generated	7,449 tons
Reductions in landfill and external incineration of waste	1,850 tons	Landfill and external incineration of waste	563 tons

### Economic Benefits Effects for Fiscal 2003

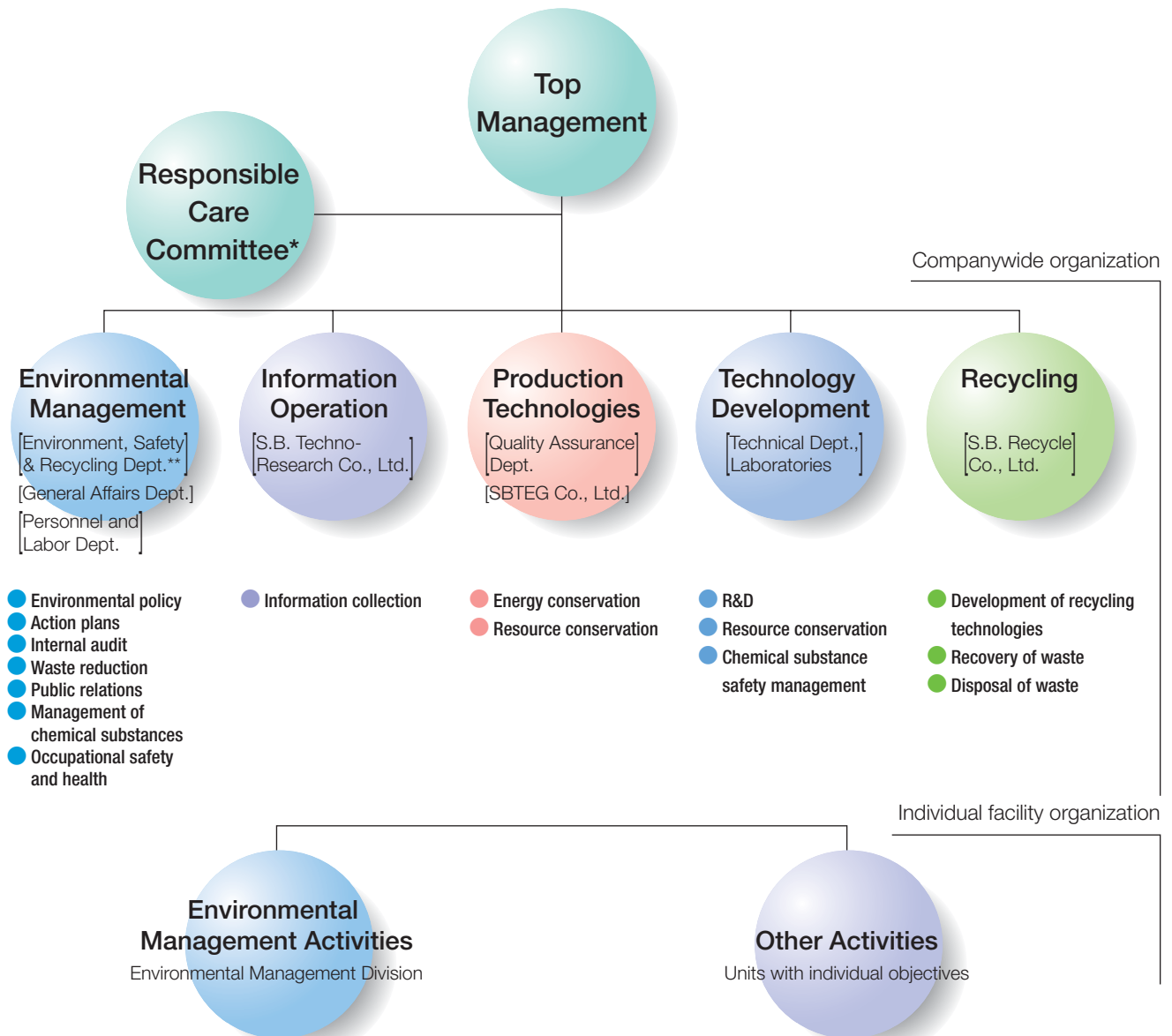
Item	Amount (Millions of yen)
(1) Reduction in costs due to energy conservation	42
(2) Reduction in costs by waste reduction	49
(3) Income from recycling	52
(4) Reduction in costs by internal recycling	290
(5) Reduction in costs by circulation of factory drain water	15
Total	448

- Fiscal 2003 sales of environmentally friendly products amounted to ¥13,117 million (up ¥5,105 million from fiscal 2002), accounting for approximately 13.3% of total non-consolidated net sales (up 4.9 percentage points from fiscal 2002).

# Promotional Organization

## Sumitomo Bakelite's organization for environmental conservation and the assurance of safety and health

Sumitomo Bakelite follows the policy of Responsible Care for safeguarding the environment, safety, and health throughout the full life cycle of chemical substances, from development to disposal. The Company has organized a Responsible Care Committee, made up of members of top management. Implementation of Responsible Care is handled by a Companywide organization that is centered around the head office and similar organizations at each office and facility that act through environmental management units as well as other units with individual objectives.



Notes: \* The Responsible Care Committee sets up plans and projects for Companywide Responsible Care activities and also considers and approves the activities of individual facilities.

\*\* The Environment, Safety & Recycling Dept. acts as the secretariat for Responsible Care activities and also coordinates the activities of individual facilities. It provides:

- Administration and assistance for environmental maintenance and improvement and safety assurance at individual facilities
- Internal auditing of environment- and safety-related Responsible Care efforts at individual facilities. (Audits are conducted annually for domestic facilities and once every three years for overseas facilities.)
- Support for attainment of ISO 14001 certification
- Handling of chemical substance safety in accordance with applicable laws and regulations
- Conducting of feasibility studies and planning of internal and external recycling activities

# Environment-Conscious Products

As one of the world's leading plastic manufacturers, Sumitomo Bakelite strives to develop and provide products that contain no hazardous or harmful substances and entail no use of such substances in their manufacture, that do not require its customers to use such substances, and that are easily recyclable and whose constituent materials are easily recoverable.

## ● SUMIKON® EME epoxy molding compound for semiconductors

Sumitomo Bakelite has developed an epoxy resin forming material for semiconductor sealing that uses no bromine- or antimony-based flame retardants with substantial impact on the environment and is compatible with lead-free solder mounting. Using a newly developed epoxy resin with superior combustion resistance, Sumitomo Bakelite has developed and begun marketing the SUMIKON® EME-G700 series for high-reliability applications as well as the SUMIKON® EME-G600 and EME-G500 series for general-purpose packaging. Moreover, we have launched the SUMIKON® EME-E series of products specially designed for discrete applications. Leveraging our material design technologies for environmental impact reduction, we strive to reduce the burden on the environment by offering a green product range that covers leading-edge semiconductor packaging through general-purpose packaging.



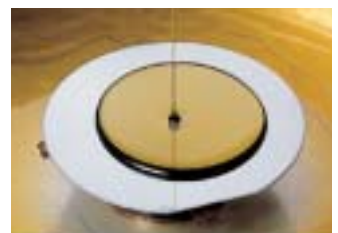
## ● SUMIRESIN EXCEL® CRM semiconductor die attach paste

Among its high-reliability die attach paste products compatible with the higher mounting temperatures associated with lead-free soldering, Sumitomo Bakelite offers the SUMIRESIN EXCEL® CRM-1076 series and CRM-1033 series of products for lead frame packages as well as the CRM-1500 series for area mounting. Our CRM-1300 series of die attach paste products contains no mutagens, while the superior thermal conductivity of our CRM-1290 series has enabled it to prove itself as a replacement for die attach materials that entail the use of solder.



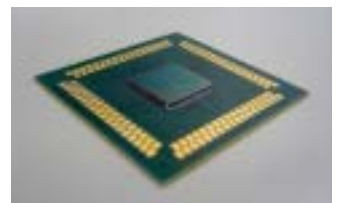
## ● SUMIRESIN EXCEL® CRC wafer coating material

Due to the rapid increase in semiconductor memory capacity and demand for high-speed compatibility, circuit widths have narrowed and demands for reliability have become ever more exacting. To meet these demands, Sumitomo Bakelite has developed the CRC-8000 series of positive-type photosensitive wafer coating resins. This new series enables the use of alkaline aqueous solution as developing fluid and pure water as rinse fluid, eliminating the need for semiconductor manufacturers' use of special solutions. Furthermore, a new use for the series has been developed as an alternative to the traditional plastic sealing of certain wafer-level packages, thus enabling energy conservation by reducing the number of semiconductor manufacturing processes.



## ● SUMIRESIN EXCEL® CRP liquid epoxy resin for semiconductors

Sumitomo Bakelite's SUMIRESIN EXCEL® CRP is an underfill resin for increasing the reliability of flip-chip connections and is compatible with lead-free solder. While lead-free solder is inferior to conventional solder in terms of mechanical strength, underfill resin securely holds and hardens lead-free solder between chips and circuit boards. SUMIRESIN EXCEL® CRP greatly increases connection reliability even in such severe conditions as those created by extreme temperature cycles while being an outstanding product with regard to facilitating continuous work processes.



## ● LOC Adhesive Film ITA semiconductor adhesive film/ Semiconductor Adhesive Film IBF

LOC Adhesive Film ITA and Semiconductor Adhesive Film IBF offer greater resistance to high temperatures than conventional adhesive films. They have been developed and marketed as semiconductor adhesive film products compatible with lead-free solder reflow.



● **SUMILITE® PLC, ELC, and APL (GS series) “green” laminates**

Sumitomo Bakelite has developed and now markets its GS series of halogen- and antimony-free environment-friendly laminates for use as electric circuit boards. The series consists of a full range of grades, from paper phenol material for single-sided boards to materials for semiconductor package substrates. We have also developed materials compatible with lead-free-solder, double-sided reflow mounting and have become the first in the world to initiate mass production of these materials.



● **SUMILITE® TFP flexible printed circuit boards (PCBs)**

Sumitomo Bakelite has developed and currently sells environmentally friendly halogen- and antimony-free flexible PCBs and an epoxy adhesive for use in flexible copper laminates and cover lays as well as environmentally friendly PCBs that use lead-free solder plating on connector terminals and surface mounting. Furthermore, in addition to our traditional single- and dual-sided flexible PCBs, we have developed and now market halogen- and lead-free environmentally friendly multilayer flexible PCBs.



● **SUMIZAC® SZF solder-replacing curing films**

Sumitomo Bakelite's SUMIZAC® SZF is a lineup of curable anisotropic conductive films that provide an alternative to solder for circuit electrode connection. Since these films enable the one-stop connection of minute circuits, they have become indispensable for connecting glass panels to circuit boards in flat panel displays, which are rapidly growing in size and clarity of definition. They also eliminate the need for solder reflow and enable shorter work time and lower temperatures in the connection of ICs and electronic components to circuit boards. We are also working to develop acrylic resin-based non-mutagenic materials.



● **SUMILITERESIN® ECP epoxy coating powder for electronic components**

Having developed electronic component use epoxy coating powder products that enable lead-free laser marking, Sumitomo Bakelite has completely eliminated the use of lead in these products. We have also developed and begun marketing halogen- and antimony-free epoxy coating powder products. Moreover, we have developed and launched electronic component use epoxy coating powder products that harden in half the time of conventional products and offer high reliability. The reduced hardening time enables heat energy conservation and higher manufacturing productivity. To realize even greater environmental friendliness, we are proceeding with the development of coating powder products that harden at lower temperatures.



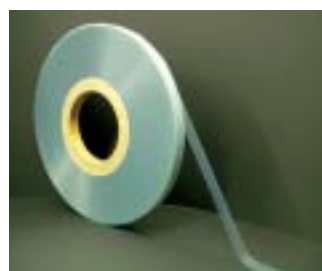
● **SUMIMAC® ECR liquid epoxy resin for electric and electronic components**

Sumitomo Bakelite has developed and now markets liquid epoxy resin for SMD components that are compatible with lead-free solder mounting as well as environment-friendly halogen- and antimony-free products. Furthermore, to enhance the connective reliability of BGAs and PCBs (motherboards), we have newly developed low-temperature quick-curing liquid epoxy resin for use as a secondary mounting underfill material that contributes to energy conservation and does not require cold storage.



● **SUMILITE® CSL semiconductor cover tape for electric and electronic components**

SUMILITE® CSL cover tape has been developed and marketed to protect electric and electronic components from static electricity. In addition to adding electrical conductivity to the layer connected to carrier tape, it is an environmentally friendly, halogen-free product.



● **SUMILITERESIN® PR phenolic resins**

Leveraging catalytic and reaction technologies, Sumitomo Bakelite has developed and begun marketing environmentally sound phenolic resins that are friendly to both the global environment and the work environment and fulfill the requirements of the PRTR Law, the Industrial Safety and Health Law, and the Poisonous and Deleterious Substances Control Law. Products in the lineup include resins with extremely low levels of unreacted monomers and dimer content, completely aqueous low-monomer types that contain no organic solvents, and dust-free powder resins with an extremely low-level emission of dust particles.



● **SUMIKON® PM sprue-free and runner-free phenolic resin molding compounds**

Making the most of the superior heat resistance, dimensional characteristics, and mechanical strength of phenolic resins, Sumitomo Bakelite supplies phenolic resin molding compounds for diverse structural component applications related to automobiles and other products. They have enabled the plasticization and modularization of brake pistons, pulleys, and other metal automobile components, thereby contributing to vehicle weight reduction along with improved fuel efficiency and lower CO<sub>2</sub> emissions. We also operate a material recycling system that reuses by-products of molding processes and are developing sprue-free and runner-free forming technologies that reduce the volume of such by-products generated.



● **P-Plus® freshness maintenance film**

Sumitomo Bakelite has developed P-Plus® freshness maintenance film to help preserve the quality of fruit and vegetables during their distribution and storage. The film's quality maintenance capability enables the reduction of loss due to spoilage at each stage of the distribution process. It also helps reduce the environmental burden by enabling a reduction in the number of shipments to stores and by facilitating the use of cardboard boxes and containers, which are easier to recycle than polystyrene containers.



● **SUMILITE® OBL polyethylene shoe tree blocks**

Sumitomo Bakelite has established a resource recycling system for manufacturing SUMILITE® OBL polyethylene shoe trees made from used shoe trees obtained from customers as well as polyethylene block shavings and filings generated in the course of customers' manufacturing processes. Reflecting this, we received an award for promoting the "reduce, reuse, and recycle" policy from Japan's Ministry of Economy, Trade, and Industry (METI) in 2002.



● **MYKITCHEN® polyethylene chopping boards**

Sumitomo Bakelite has established a resource recycling system for recovering MYKITCHEN® polyethylene chopping boards from customers for use in manufacturing such other products as planters and civil engineering use pipe pilings as well as in its HEALTHY ELEVEN® floor mat products.



● **SUMIHAT® FAV organic PVA fiber safety helmets**

Sumitomo Bakelite has developed and marketed fiberglass-free FRP safety helmets and established a system for their thermal recycling.

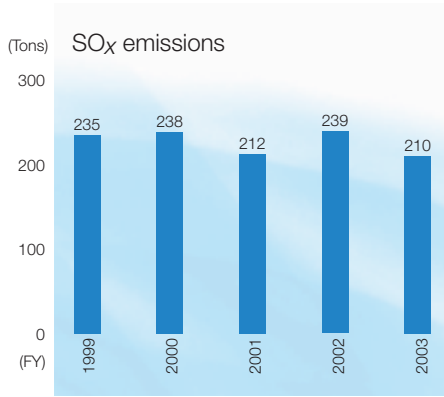


# Reduction of Environmental Impact Substances

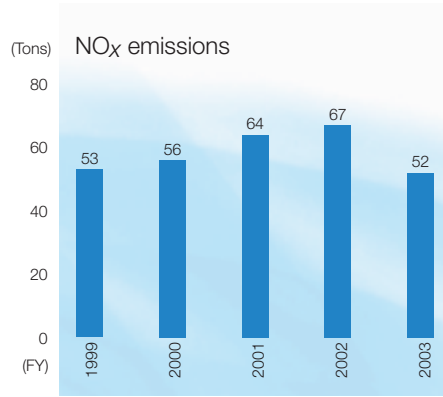
Sumitomo Bakelite strives to reduce the volume of substances impacting the environment that are released into both the air and water in the course of manufacturing operations.

## Air

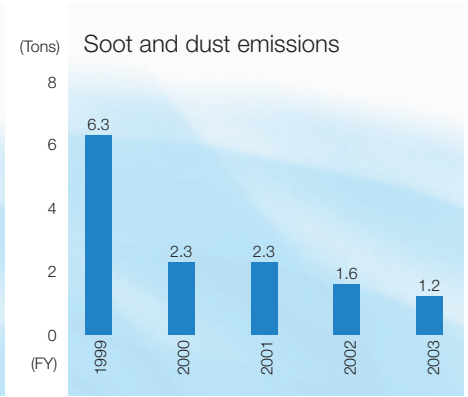
Sumitomo Bakelite observes domestic emissions standards as well as standards based on agreements with local communities on SO<sub>x</sub> emissions and other soot particles emitted by boilers and other installations. In addition, in fiscal 2003, the Company installed a natural-gas-fueled co-generation system at the Shizuoka Plant. This plant accounts for approximately 50% of the Group's total domestic energy consumption, and measures are being taken to utilize the new co-generation system to further reduce the Group's total emissions of SO<sub>x</sub>, NO<sub>x</sub>, as well as soot and dust.



Note: Figures are for the facilities and companies listed on page 4.



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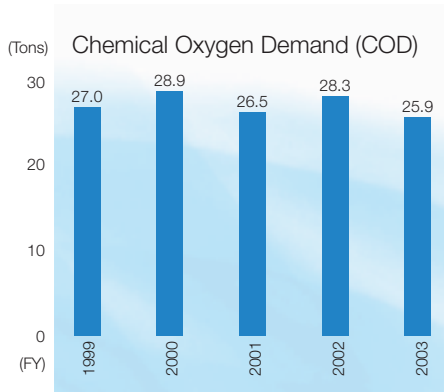


Note: Figures are for the facilities and companies listed on page 4.

## Water

Water discharged from manufacturing plants consists primarily of wastewater from operational processes and human use and rainwater (including cooling water). Sumitomo Bakelite strives to conserve water resources and reduce water release by recirculating cooling water.

As for wastewater, we operate treatment installations, including high-precision phenol collection units, activated sludge treatment equipment, and neutralizing agglutinate precipitation units (metal disposition). Having established a constant monitoring system employing surveillance equipment, we are striving to maintain rigorous compliance with domestic wastewater standards and local agreements on pollution prevention.



Note: Figures are for the facilities and companies listed on page 4.

Note: COD: When the oxidizing agent potassium permanganate oxidizes organic matter in water, it alters the amount of consumable oxygen volume, which is used as an indicator of organic matter pollution in water.



Activated sludge treatment equipment (Shizuoka Plant)



Water recirculation equipment (Amagasaki Plant)



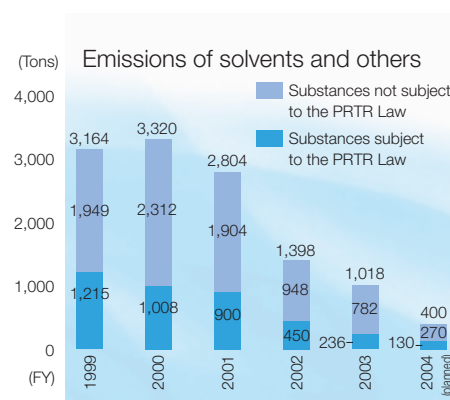
## ● Reduction of emissions of solvents and others

As a member of the JCIA, Sumitomo Bakelite has been engaged since 1996 in PRTR activities aimed at measuring emissions and transfers of substances covered by the JCIA, and the Company has set medium- and long-term targets that place particular emphasis on progressively reducing emissions of solvents and other pollutants into the atmosphere. The accompanying graph shows such emissions since fiscal 1999. In fiscal 2003, we achieved an approximately 27% (380 tons) year-on-year reduction in these emissions, while emissions of substances covered by the PRTR Law amounted to 236 tons, a drop of almost half from fiscal 2002.

Our emissions and transfers of 33 substances covered by the PRTR Law are listed in the table below.



Exhaust gas treatment equipment



Note: Figures are for the facilities and companies listed on page 4.

## Emission and Transfer Volumes of Substances Subject to the PRTR Law\* (Fiscal 2003 actual results)

Government order no.	Substance	Amount used (manufactured)	Amount released			Amount transferred	
			Into air	Into water	Into soil	As waste matter	Into sewers
1	Zinc compounds (water-soluble)	40	0	0	0	0.6	0
15	Aniline	117	0	0	0	0	0
25	Antimony and its compounds	168	0	0	0	10	0
29	Bisphenol A	442	0	0	0	0	0
30	Bisphenol A-type epoxy resin (liquid)	974	0	0	0	0	0
43	Ethylene glycol	819	0	0	0	2.2	0
44	Ethylene glycol monoethyl ether	17	0	0	0	0	0
45	Ethylene glycol monomethyl ether	245	156	0	0	4.2	0
63	Xylene	55	17	0	0	0.9	0
64	Silver and its water-soluble compounds	10	0	0	0	0	0
67	Cresol	1,249	0	0	0	0	0
129	Diuron	1	0	0	0	0	0
172	N,N-dimethyl formamide	489	11	0	0	3.8	0
176	Organic tin compounds	23	0	0	0	0.5	0
177	Styrene	12	0.7	0	0	0	0
198	Hexamethylenetetramine	1,178	0	0	0	16	0
202	Tetrahydromethylphthalic anhydride	96	0	0	0	0	0
207	Copper salts (water soluble, except complex salts)	(77)	0	0.3	0	0	0
224	1,3,5-trimethylbenzene	3	0	0	0	0	0
227	Toluene	401	47	0	0	6.2	0
232	Nickel compounds	2	0	0	0	0	0
242	Nonylphenol	2	0	0	0	0	0
243	Barium and its water-soluble compounds	49	0	0	0	0	0
266	Phenol	25,031	2.7	0	0	18	0
270	Di-n-butyl phthalate	8	0	0	0	0	0
272	Bis (2-ethylhexyl) phthalate	26	0	0	0	0.6	0
299	Benzene	(2)	0	0	0	2.5	0
300	1,2,4-benzenetricarboxylic 1,2-anhydride	15	0	0	0	1.4	0
304	Boron and its compounds	20	0	0	0	0.3	0
310	Formaldehyde	10,854 (16,726)	1.2	0.1	0	6.8	0
313	Maleic anhydride	2	0	0	0	0	0
340	4,4'-methylenedianiline	2	0	0	0	0	0
354	Tri-n-butyl phosphate	4	0	0	0	0	0

Class I Designated chemical substances

\* Based on the PRTR Law, by ascertaining their emissions of various harmful chemical substances, companies handling these substances are urged to improve their own independent controls in order to forestall any hindrances to environmental conservation.

# CO<sub>2</sub> Emissions and Energy Conservation

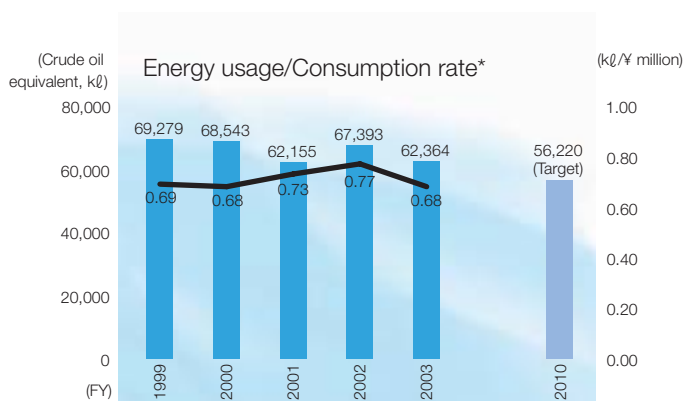
## Sumitomo Bakelite implements energy conservation activities and strives to reduce CO<sub>2</sub> emissions.

The reduction of greenhouse gases is required to help achieve a solution to global warming, a worldwide environmental issue of the greatest concern. To reduce emissions of the greenhouse gas CO<sub>2</sub>, the Sumitomo Bakelite Group strives to conserve energy by the following three means:

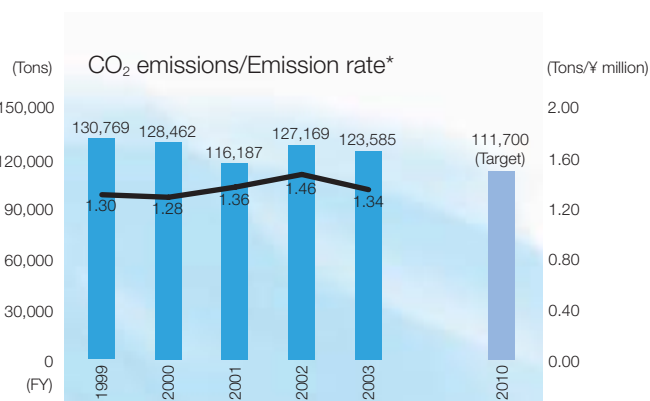
- ① Prevention of wasteful use of energy by all employees
- ② Promotion of energy-conserving production by rearranged producing processes
- ③ Adoption of new energy conservation technologies and equipment

Currently, in addition to reductions achieved through the introduction of a co-generation system, we are striving to make further progress in energy conservation with the long-term objective of reducing CO<sub>2</sub> emissions by 14.6% from the fiscal 1999 level by fiscal 2010.

In fiscal 2003, steady progress in energy conservation programs at each Group facility enabled a drop in CO<sub>2</sub> emissions to 2.8% below the fiscal 2002 level, or 5.5% below the fiscal 1999 level.



\* The consumption rate is calculated as consumption per evaluated production unit as follows: consumption per output unit = energy consumption / (production volume x sales unit value)  
Note: Figures are for the facilities and companies listed on page 4.



\* The emission rate is calculated as emissions per evaluated production unit as follows: emissions per output unit = CO<sub>2</sub> emissions / (production volume x sales unit value)  
Note: Figures are for the facilities and companies listed on page 4.

Principal energy conservation measures implemented in fiscal 2003 were:

- ① Introduction of inverter controllers for such equipment as pumps, fans, and compressors
- ② Introduction of partitions for such spaces as refrigerated containers and air-conditioned rooms
- ③ Introduction of water cooling for external air-conditioner units
- ④ Recovery of steam from steam drains
- ⑤ Elimination of unneeded steam conduits
- ⑥ Repairs of steam and air leakage sites
- ⑦ Adoption of energy-saving lighting fixtures
- ⑧ Optimization of facility operation conditions
- ⑨ Optimization of air-conditioning conditions
- ⑩ Installation of heat-rejection sheets



#### **Inverter controller for process fan of waste gas combustion unit**

The amount of electric power and fuel used by the exhaust gas treatment unit of an impregnating machine was reduced by providing for processing stream volume to be adjusted in line with exhaust gas volume. (Shizuoka Plant)



#### **Water cooling for external air-conditioner units**

The introduction of water cooling for external air-conditioner units has made it possible to control the rise of coolant gas pressure, thereby reducing electric power consumption. (Tsu Plant)



#### **Partitions for air-conditioned rooms**

Rather than air-conditioning entire rooms, vinyl curtain partitions have been installed to focus the flow of air on spaces where it is required for quality control purposes, thereby reducing electric power consumption. (Akita Sumitomo Bakelite Co., Ltd.)



#### **Heat-rejection sheets**

The placement of translucent blue plastic sheets over walls and windows has created air buffer areas that insulate facilities from external heat sources, thereby increasing air-conditioning efficiency. (Amagasaki Plant)

### **● Introduction of co-generation system**

In fiscal 2003, Sumitomo Bakelite installed a co-generation system in its Shizuoka Plant with support from the New Energy and Industrial Technology Development Organization (NEDO), which subsidizes efforts by businesses to rationalize their energy usage. Pilot operation of the system was initiated in mid-July 2004, and it is currently operating smoothly. The system generates electric power with a liquefied natural gas fueled turbine, while the turbine's waste heat is used to generate steam that is employed to further boost the efficiency of electric power generation, thereby making it possible to reduce CO<sub>2</sub> emissions. Based on the NEDO-certified project plan, the system will decrease CO<sub>2</sub> emissions by 11,000 tons per year, a volume corresponding to 8.9% of the total emissions of the Group's domestic facilities in fiscal 2003.



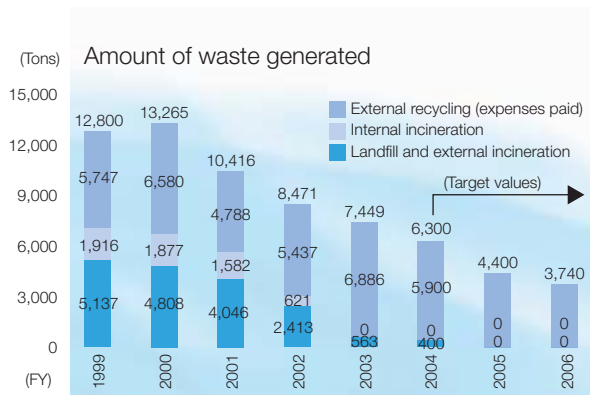
Co-generation system (Shizuoka Plant)

# Waste Disposal

## The Sumitomo Bakelite Group strives to reduce the amount of waste generated and achieve zero waste emissions.

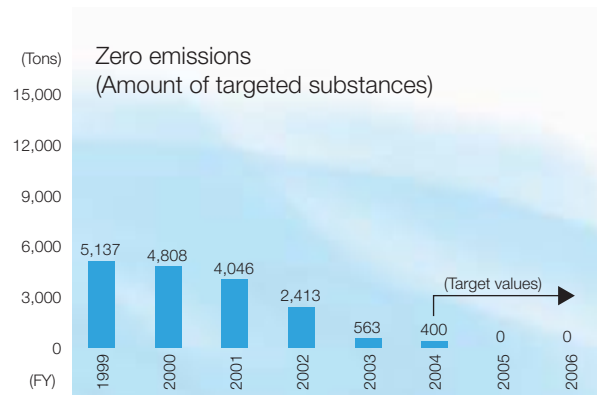
The Sumitomo Bakelite Group is giving priority to reducing waste generation by increasing production yields and recycling waste materials during manufacturing processes. We are also aiming to recycle all waste generated, rather than using landfill or simple incineration, thereby achieving zero waste emissions.

The graphs below illustrate progress in the reduction of waste generation and zero waste emissions efforts as well as the target figures. We have steadily reduced our waste generation since fiscal 2000 by increasing production yields, recycling wastes, and converting wastes into valuable resources. In fiscal 2003, we achieved a year-on-year waste reduction of approximately 1,000 tons (down 12% from fiscal 2002). We also reduced the wastes covered by our zero waste emissions programs by approximately 1,900 tons (down 77% from fiscal 2002) through both internal and external recycling and valuable resource conversion. Our goal is to achieve zero waste emissions by fiscal 2005.



Note: Figures are for facilities listed on page 4.

Waste products included in figures consist of waste disposed of as landfill, externally and internally incinerated waste, and externally recycled waste (expenses paid).



Note: Figures are for facilities listed on page 4.

Substances covered by zero emissions programs include waste disposed of as landfill and waste that is incinerated externally.

## Zero Emissions Achieved at Three Plants

In fiscal 2003, the plants of Yamaroku Kasei Industry Co., Ltd., and Kyushu Bakelite Industry Co., Ltd., as well as the parent company's Amagasaki Plant were recognized within the Group as zero emissions facilities. Each of the facilities attained the zero emissions facility status by sorting its waste products into finely defined categories of materials and



Susumu Yamane,  
General Affairs  
Department

finding routes for the recycling of each category of waste. The following sections present the views of zero emissions promotion staff at two of the zero emissions facilities.

### Kyushu Bakelite Industry Co., Ltd.

“Our company manufactures epoxy resin molding compounds for use with semiconductors. We attained zero emissions status through such initiatives as those to transform waste materials generated in the course of our manufacturing processes into raw materials for manufacturing cement; internally recycle waste acetone; and thermally recycle other waste products. Waste sorting is a fundamental part of zero emissions programs, and

we have increased consciousness of the importance of sorting and recycling through such measures as the placement of signs explaining post-sorting processing methods and the introduction of a beverage container deposit payment system for products dispensed by vending machines. We are currently working on various projects—such as one aimed at using shredded paper for composting cow manure and another aimed at transforming the sacks used for transporting raw material into useful products—and we expect to continue helping make Japan a truly recycling oriented society.”



A bulletin board in the Zero Emissions Office



Equipment used to refund beverage container deposits



Seio Nishi,  
Environmental  
Administration  
Section

**Amagasaki Plant**

“It goes without saying that sorting waste into narrowly defined categories is crucial for promoting progress in zero emissions, but increasing and establishing a consciousness of the importance of sorting requires considerable time. We have had to work resolutely and relentlessly to correct such simple but recurrent problems as the disposal of heterogeneous types of waste plastic mixed together, the placement of properly sorted waste in the wrong recycling location, and the mislabeling of properly sorted waste. But, at this point, we have inculcated a pervasive consciousness that waste products are resources rather than trash, and we are pleased to see that compliance with sorting rules is now the standard practice. As the next stage in zero emissions, I believe it important to work assiduously to promote a drop in the volume of waste products that are generated.”



A scrap recycling station



A recycling bin for fluorescent light bulbs

**● Elimination of dioxins**

Depending on combustion conditions, waste incinerators may generate dioxins. The Law Concerning Special Measures against Dioxins and the revised Waste Disposal and Public Cleaning Law have made regulations governing incinerators more stringent, and Sumitomo Bakelite had shut down or suspended operations at all of its incinerators by November 30, 2002. Since then, the dismantling and removal of the incinerators has proceeded steadily, and the removal of 11 of 12 incinerators had been completed by August 2004.

## Sumitomo Bakelite proactively uses recycling to make the most effective use of resources.

Regarding recycling initiatives, for many years, Sumitomo Bakelite has been pulverizing phenolic resin copper-clad laminates and melamine resin decorative laminates and using the powder as filler in phenolic resin molding compounds as well as using re-pelletized sprue, runner, and other waste plastic from molded products as raw materials.

Some of Sumitomo Bakelite's other recycling initiatives include:

- Use of circuit etching waste liquid (copper chloride) as a base material for ship bottom paint
- Reuse of epoxy resin molding products as raw material and fuel for cement
- Use of reactive waste liquid in raw fuel for cement (for caloric adjustment)
- Use of recovered methanol as boiler fuel
- Distillation, recycling, and reuse of waste acetone
- Reuse of waste isopropyl alcohol
- Recovery and recycling of used plastic shoe trees
- Use of paper and plastic scrap as refuse-derived fuel
- Use of film sheet discard in trays, mats, planters, etc.
- Recovery of copper from organic and inorganic sludge
- Separation and recovery of metal and plastic materials from plastic molded products with metal attachments

To improve recycling efficiency, in 1992, we established the subsidiary S.B. Recycle Co., Ltd., whose missions are to research recycling technologies and the reuse of by-products and to build waste collection and processing systems for the Group and its customers. The subsidiary is also conducting research into wastewater treatment systems for phenol resin dehydrate using biodegradation.



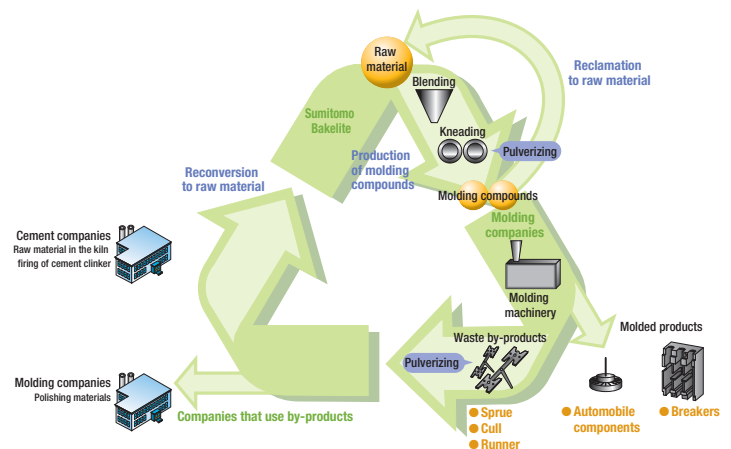
Equipment for distilling and recovering acetone



A pulverizer used for separating and recovering materials from plastic molded products with metal attachments

### Recycling system for phenolic resin molding compound

Together with the collection of powder generated during molding production, a manufacturer engaged in molding generates sprue, cull, and runner as by-products. Sumitomo Bakelite has established a recycling system that converts these by-products into raw material and fuel for cement plants and also pulverizes some of them for reuse as polishing materials. We are also conducting research into the chemical recycling of thermoset resin molding materials using super-critical technologies.



# Soil and Groundwater Contamination Investigations

## Sumitomo Bakelite conducts investigations of soil and groundwater contamination.

The following table contains the results of soil and groundwater investigations conducted at each office and facility. As of these investigations, no contaminants that exceeded the limits set by environmental standards have been detected.

Site		Investigation item	Result <sup>1</sup>	Comments	Investigation date
Fundamental Research Laboratory	Groundwater	1,1,1-trichloroethane Trichloroethylene Tetrachloroethylene	A A A		12/1998
	Soil	1,1,1-trichloroethane Trichloroethylene Tetrachloroethylene 1,2-dichloroethane Dichloromethane	A A A A A		5/2004
Amagasaki Plant	Groundwater	1,1,1-trichloroethane Trichloroethylene Tetrachloroethylene Carbon tetrachloride 1,1-dichloroethylene Cis-1,2-dichloroethylene	A A A A A ★	Although 0.13mg/l of cis-1,2-dichloroethylene was detected (environmental standard: 0.04mg/l), a municipal investigation found the cause to be upstream of the plant.	9/2003
	Soil	Cadmium and its compounds Lead and its compounds Hexavalent chromium compounds Arsenic and its compounds Mercury and its compounds	A A A A A		11/2000
Shizuoka Plant	Groundwater	24 substances covered by environmental standards <sup>2</sup>	A		5/2003
	Soil	Trichloroethylene	A		2/1999
Utsunomiya Plant	Groundwater and soil	Trichloroethylene	A		5/2000
Tsu Plant	Groundwater	23 substances covered by environmental standards	A		2/2000
	Soil	25 substances covered by environmental standards <sup>3</sup>	A	At a site near an outdoor hazardous material storage facility, 230mg/kg of copper was detected (2/2000) (environmental standard: 125mg/kg), but this is presumed to have leaked during processing of waste oil containing copper. Subsequent investigations detected only 67mg/kg (7/2002), 62mg/kg (6/2003), and 20mg/kg (7/2004).	2/2000
Yamaroku Kasei Industry Co., Ltd.	Groundwater	22 substances, including trichloroethylene	A		1/2002
	Soil	Phenols	A		10/2001
Akita Sumitomo Bakelite Co., Ltd.	Groundwater	Total cyanide, lead, copper, soluble manganese, phenols, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, tetrachloroethylene, dichloromethane, trichloroethylene	A A A A		7/2001
	Soil	Cyanide Phenols Copper Manganese n-hexane extract	A A A A A		8/2000
(Former Sano Plastic Co., Ltd.)	Groundwater	Trichloroethylene	A		7/1998

Notes: 1. "A" marks indicate that limits set by environmental standards have been cleared or, in the case of substances for which environmental standards have not been set, that the minimum measurable amount was not detected.

2. Cadmium, total cyanide, lead, hexavalent chromium, arsenic, total mercury, dichloromethane, carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, tetrachloroethylene, 1,3-dichloropropene, thiuram, simazine, thiobencarb, benzene, selenium, nitrate nitrogen and nitrite nitrogen, fluorine, and boron

3. Cadmium, total cyanide, organic phosphorus, lead, hexavalent chromium, arsenic, total mercury, alkyl mercury, PCBs, copper, dichloromethane, carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, tetrachloroethylene, 1,3-dichloropropene, thiuram, simazine, thiobencarb, benzene, selenium

# Site-Specific Environmental Impact Data—Domestic Facilities

The tables below provide environmental impact data related to air quality and water quality for each individual Sumitomo Bakelite site in Japan.

## Amagasaki Plant

(Air)

Facility	Item	Unit	Regulatory limit	Measured data
Boiler	SO <sub>x</sub>	m <sup>3</sup> N/h	2.93	0.14
	NO <sub>x</sub>	ppm	250	61.3
	Soot and dust	g/m <sup>3</sup> N	0.3	0.04

(Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	7.0–7.8
BOD	mg/l	25	10.2
COD	mg/l	25	6.5
Suspended substances	mg/l	20	2.8
n-hexane extract	mg/l	20	1.0

## Utsunomiya Plant

(Air)

Facility	Item	Unit	Regulatory limit	Measured data
Drying furnace	SO <sub>x</sub>	m <sup>3</sup> N/h	1.22	0.03
	Soot and dust	g/m <sup>3</sup> N	0.2	Less than 0.001

(Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	7.5–7.8
BOD	mg/l	25	1.7
COD	mg/l	25	3.9
Suspended substances	mg/l	25	Less than 1
n-hexane extract	mg/l	5	Less than 1

## Fundamental Research Laboratory

(Air)

No relevant facilities

(Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5–9	7.3–7.4
Copper	mg/l	3	0.06
Soluble iron	mg/l	10	0.2
Nickel	mg/l	1	Less than 0.05

## Shizuoka Plant

(Air)

Facility	Item	Unit	Regulatory limit	Measured data
Boiler	SO <sub>x</sub>	m <sup>3</sup> N/h	17.72	12.0
	NO <sub>x</sub>	ppm	140	100
	Soot and dust	g/m <sup>3</sup> N	0.1	0.004

(Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	6.7–7.6
BOD	mg/l	15	2.8
COD	mg/l	—	5.4
Suspended substances	mg/l	30	3.4
n-hexane extract	mg/l	3	1.1
Phenols	mg/l	1	Less than 0.2
Formaldehyde	mg/l	5	0.8

## Tsu Plant

(Air)

No relevant facilities

(Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	6.8–7.6
BOD	mg/l	130	19
COD	mg/l	130	20
Suspended substances	mg/l	130	27
Phenols	mg/l	1	Less than 0.1
Copper	mg/l	1	Less than 0.05
Total chromium	mg/l	2	Less than 0.05
Zinc	mg/l	5	0.25
Soluble iron	mg/l	10	0.12
Soluble manganese	mg/l	10	Less than 0.05
Total nitrogen	mg/l	60	23.0
Total phosphorus	mg/l	8	2.30

## Kobe Fundamental Research Laboratory

(Air)

No relevant facilities

(Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5–9	7.2–7.6
BOD	mg/l	2,000	12
COD	mg/l	—	11
Suspended substances	mg/l	2,000	20
n-hexane extract	mg/l	5	Less than 1.0
Phenols	mg/l	5	Less than 0.2
Zinc	mg/l	0.7	0.01



### Akita Sumitomo Bakelite Co., Ltd.

#### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Boiler	SO <sub>x</sub>	m <sup>3</sup> N/h	10.5	1.12
	NO <sub>x</sub>	ppm	110	100
	Soot and dust	g/m <sup>3</sup> N	0.09	Less than 0.01

#### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	6.0–8.5	6.8–7.4
BOD	mg/l	30	14
COD	mg/l	30	8.8
Suspended substances	mg/l	40	5
Phenols	mg/l	0.5	Less than 0.01
Copper	mg/l	1.0	0.63
Cyanide	mg/l	0.1	Less than 0.01
Lead and lead compounds	mg/l	0.1	Less than 0.01
Soluble manganese	mg/l	5	Less than 0.03

### Tokyo Kakohin Co., Ltd.

#### (Air)

No relevant facilities

#### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	7.1–8.6
BOD	mg/l	20	6.7
COD	mg/l	—	8.8
Suspended substances	mg/l	50	16.0

### Kyushu Bakelite Industry Co., Ltd.

#### (Air)

No relevant facilities

#### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	7.3–7.6
BOD	mg/l	30	8.9
COD	mg/l	20	9.3
Suspended substances	mg/l	20	Less than 5
n-hexane extract	mg/l	2	Less than 1

### Artlite Kogyo Co., Ltd.

#### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Boiler	SO <sub>x</sub>	m <sup>3</sup> N/h	4.86	0.01
	NO <sub>x</sub>	ppm	180	91
	Soot and dust	g/m <sup>3</sup> N	0.30	0.0005

#### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	6.5–8.2
BOD	mg/l	160	4.6
COD	mg/l	30	12.5
Suspended substances	mg/l	200	3.3
n-hexane extract	mg/l	5	3.9
Phenols	mg/l	5	Less than 1

### Yamaroku Kasei Industry Co., Ltd.

#### (Air)

No relevant facilities

#### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.8–8.6	7.2–7.4
BOD	mg/l	25	1.2
COD	mg/l	25	3.0
Suspended substances	mg/l	90	5.6
Phenols	mg/l	1	Less than 0.01

- Notes: 1. Regarding facilities related to air quality, when there are multiple facilities subject to regulations, the facility producing the largest volume of gas emissions is listed.  
 2. Regarding limits placed by the various regulations stipulated by prefectural ordinances, community agreements, and administrative guidance, the most rigorous are listed.  
 3. For actual measurements, the largest figures for fiscal 2003 have been listed. For pH measurements, the range from smallest to largest is listed.  
 4. Actual measurements that are listed as "less than" indicate a measurement smaller than the lowest measurable value.

# Site-Specific Environmental Impact Data—Overseas Facilities

The tables below provide environmental impact data related to air quality and water quality for each individual Group company site overseas.

## Sumitomo Bakelite Singapore Pte. Ltd. (Singapore)

### (Air)

No relevant facilities

### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	6–9	6.1–6.9
BOD	mg/l	400	180
COD	mg/l	600	250
Suspended substances	mg/l	400	46
Phenols	mg/l	0.5	0.5
Temperature	C°	45	26.7
Chlorine	mg/l	1,000	30
Hydrosulfate	mg/l	1,000	38
Sulfur	mg/l	1	0.01
Cyanide compounds	mg/l	2	0.001
Linear alkylate sulphonate	mg/l	30	2
Oil and grease	mg/l	60	2
Arsenic and its compounds	mg/l	5	Less than 1
Barium	mg/l	10	Less than 1
Tin	mg/l	10	Less than 1
Soluble iron	mg/l	50	1
Beryllium	mg/l	5	Less than 1
Boron	mg/l	5	Less than 1
Soluble manganese	mg/l	10	Less than 1
Cadmium	mg/l	1	Less than 0.1
Trivalent chromium	mg/l	5	Less than 0.1
Hexavalent chromium	mg/l	5	Less than 0.1
Copper	mg/l	5	Less than 1
Lead	mg/l	5	Less than 1
Mercury	mg/l	0.5	Less than 0.1
Nickel	mg/l	10	Less than 1
Selenium	mg/l	10	Less than 1
Silver	mg/l	5	Less than 1
Zinc	mg/l	10	Less than 1

## P.T. Indopherin Jaya (Indonesia)

### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Generator	NO <sub>x</sub>	ppm	0.05	0.01
	SO <sub>2</sub>	ppm	0.1	0.001
	Soot and dust	mg/m <sup>3</sup> N	0.26	0.24
	NH <sub>3</sub>	ppm	2	0.16
	CO	ppm	20	0.97
	H <sub>2</sub> S	ppm	0.03	0.002
	O <sub>x</sub>	ppm	0.1	0.06

### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	6–9	7–8
BOD	mg/l	100	23.8
COD	mg/l	300	55.2
Suspended substances	mg/l	100	4.6
Total nitrogen	mg/l	30	1.9
Phenols	mg/l	1	0.08

## SNC Industrial Laminates Sdn. Bhd. (Malaysia)

### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Exhaust gas combustion unit	SO <sub>x</sub>	g/m <sup>3</sup> N	0.2	0.0120
	NO <sub>x</sub>	g/m <sup>3</sup> N	2.0	0.1060
	Soot and dust	g/m <sup>3</sup> N	0.4	0.0201
	Formaldehyde	g/m <sup>3</sup> N	—	0.6100

### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.5–9.0	6.8–9.0
BOD	mg/l	50	45
COD	mg/l	100	95
Suspended substances	mg/l	100	70
Phenols	mg/l	1.0	Less than 0.1
Temperature	C°	40	30
Mercury and its compounds	mg/l	0.05	Less than 0.02
Cadmium and its compounds	mg/l	0.02	Less than 0.02
Hexavalent chromium compounds	mg/l	0.05	Less than 0.05
Arsenic and its compounds	mg/l	0.10	Less than 0.05
Cyanide compounds	mg/l	0.10	Less than 0.05
Lead and its compounds	mg/l	0.5	0.1
Trivalent chromium compounds	mg/l	1.0	Less than 0.1
Copper	mg/l	1.0	0.1
Soluble manganese	mg/l	1.0	0.1
Nickel	mg/l	1.0	0.1
Tin	mg/l	1.0	Less than 0.1
Zinc	mg/l	1.0	0.6
Boron	mg/l	4.0	Less than 0.2
Soluble iron	mg/l	5.0	0.9
Chlorine	mg/l	2.0	Less than 0.1
Sulfur	mg/l	0.50	Less than 0.4
Oil and grease	mg/l	10.0	5

## Fers Resins, S.A. (Spain)

### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Generator	SO <sub>x</sub>	mg/m <sup>3</sup> N	4,300	Not detected
	NO <sub>x</sub>	ppm	300	83.9
	CO	ppm	500	0.14

### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	6–10	7.7–9.9
COD	mg/l	1,500	537
Suspended substances	mg/l	750	28
Phenols	mg/l	2	1.36
Formaldehyde	mg/l	—	Not detected
Conductivity	μs/cm	5,000	2,520
Total chlorine	mg/l	2,000	328
Total sulfide	mg/l	5	1
Total phosphorus	mg/l	50	Not detected

## Sumitomo Bakelite (Taiwan) Co., Ltd. (Taiwan)

### (Air)

No relevant facilities

### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	6–9	7.5–7.6
BOD	mg/l	300	130
COD	mg/l	600	324
Suspended substances	mg/l	300	45

## N.V. Sumitomo Bakelite Europe S.A.

### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Boiler	NO <sub>x</sub>	mg/m <sup>3</sup> N	425	217

### (Water)

Item	Unit	Regulatory limit	Measured data
ppH	—	6–9	6.4–7.5
BOD	mg/l	—	Less than 5
COD	mg/l	136	Less than 20
Suspended substances	mg/l	1,000	Less than 8
TOC	mg/l	50	1.3
Phenols	mg/l	3	Less than 1
Chlorendic acid	mg/l	3	Less than 0.1
Hexachloro-cyclopentadiene	mg/l	0.005	Less than 0.005
Monochloro-benzene	mg/l	5	Less than 1
Total nitrogen	mg/l	15	Less than 1.7
Total phosphorus	mg/l	3	0.22

## SB Flex Philippines, Inc. (Philippines)

### (Air)

No relevant facilities

### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	6.5–9.0	6.8–7.3
BOD	mg/l	500	469
COD	mg/l	800	645
Suspended substances	mg/l	350	56

## Sumitomo Bakelite Vietnam Co., Ltd. (Vietnam)

### (Air)

Facility	Item	Unit	Regulatory limit	Measured data
Boiler	CO	mg/m <sup>3</sup> N	500	225
	NO <sub>x</sub>	mg/m <sup>3</sup> N	1,000	74
	SO <sub>x</sub>	mg/m <sup>3</sup> N	500	277
	Soot and dust	mg/m <sup>3</sup> N	400	141

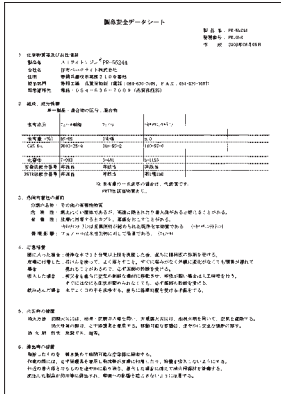
### (Water)

Item	Unit	Regulatory limit	Measured data
pH	—	5.5–9	6.2–8.2
BOD	ppm	50	46
COD	ppm	100	79
Suspended substances	ppm	100	64
Copper	ppm	1.0	0.997
Lead	ppm	0.5	0.337
Nickel	ppm	1.0	0.48
Soluble iron	ppm	5.0	0.52

- Notes:
1. Regarding facilities related to air quality, when there are multiple facilities subject to regulations, the facility producing the largest volume of gas emissions is listed.
  2. Regarding limits placed by the various regulations stipulated by laws and regulations, community agreements, and administrative guidance, the most rigorous are listed.
  3. For actual measurements, the largest figures for fiscal 2003 have been listed. For pH measurements, the range from smallest to largest is listed.
  4. Actual measurements that are listed as "less than" indicate a measurement smaller than the lowest measurable value. Actual measurements that are listed as "not detected" indicate a measurement smaller than the lowest detectable value.

# Chemical Product Safety, Audits, Education, and Training

## Material Safety Data Sheets (MSDSs)



An MSDS

An MSDS provides significant information to ensure the safe use and handling of chemical substances and products. The enactment of the PRTR Law and the revision of the Industrial Safety and Health Law and the Poisonous and Deleterious Substances Control Law have made the provision of MSDSs a legal obligation. Sumitomo Bakelite has always drawn up and distributed MSDSs based on JCIA guidelines. However, with the revision of these laws as well as the adoption of the JIS Z 7250 for the preparation of MSDSs, we revise our MSDS procedures at regular intervals (once every two years). For products that are exported, we are working to prepare MSDSs in the local language as well as provide information pertaining to applicable local laws and regulations. We also demand MSDSs for all raw materials that we purchase. These MSDSs are made constantly available to the site where these materials are handled, and MSDS-based safety education is provided for all employees involved.



A yellow card

## Yellow cards (emergency contact cards)

To ensure safety during transport, drivers carry “yellow cards” at all times. These cards contain information about emergency measures and contacts.

## Environmental and safety audit

Since 1973, Sumitomo Bakelite has been implementing annual environmental and safety auditing of its facilities through the Environment, Safety & Recycling Dept. In 1978, the scope of these audits was expanded to include domestic affiliates. The scope was further expanded in 1993 to include audits of manufacturing affiliates in other parts of Asia. In accordance with the principles of Responsible Care, audits are conducted on the state of maintenance and improvement of environment- and safety-related administration systems as well as on observance and implementation of compliance. These audits are implemented through documentation as well as on-site inspections. Each individual site also implements regular audits and strives to maintain and improve its systems in compliance with ISO 14001-based environmental management systems.



Environmental and safety audits conducted by the Environment, Safety & Recycling Dept.



### Fiscal 2003 Safety and Environment Audit Results (Conducted at four plants, two laboratories, and six domestic affiliates)

	No. of items	Current progress
Action pointed out	9	Situations corrected
Action advised	12	Situations corrected
Action demanded	46	Situations corrected

### Fiscal 2003 ISO 14001 Audit Results

Audit by “Approved Registration Body”	Initial assessment	Approval registered for one establishment
	Surveillance	Registration maintained at nine establishments
Internal audits		Implemented at 10 establishments All situations pointed out have been corrected.

## ● Environmental education

Each Sumitomo Bakelite office and facility conducts environmental education courses geared for personnel at three levels: new recruits, middle-ranking employees, and veteran employees. The Company makes every effort to ensure that these curricula result in structured and continual education. The primary content of these courses includes environmental issues surrounding the Company (and individual offices and facilities), environmental policies, targets, and objectives at the office and departmental level, the handling of hazardous substances, organic solvents, poisonous materials, and the MSDS-based handling of chemical substances. S.B. Techno-Research Co., Ltd., has compiled textbooks for education on laws and regulations pertaining to chemical substances and the correct handling of chemical products. The Company will be putting these textbooks to use in its environmental education programs.



Internal education related to the acquisition of ISO 14001 certification (Fers Resins, S.A.)



A recycling competition in which teams compete for accuracy in the sorting of waste materials (Sumitomo Bakelite Singapore Pte. Ltd.)

## ● Emergency training

In anticipation of fires, leakage, and other environmental accidents, each site conducts training to counter such emergencies.



Initial fire-extinguishing training (Sumitomo Bakelite Singapore Pte. Ltd.)



Leakage prevention training (Akita Sumitomo Bakelite Co., Ltd.)



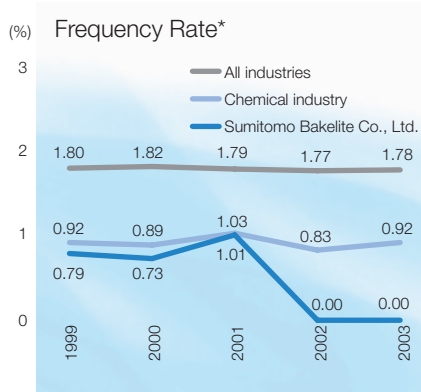
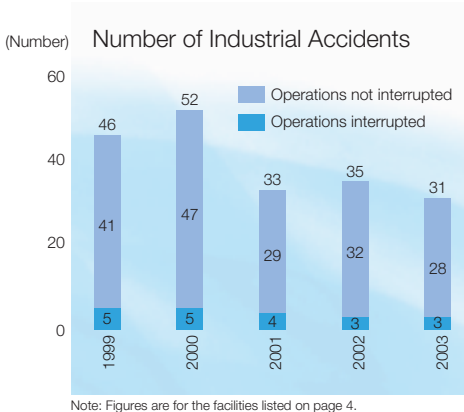
Emergency action training (SB Flex Philippines, Inc.)

# Occupational Safety and Health

We are continuing to implement occupational safety and health programs aimed at providing healthy and pleasant work environments as well as ensuring accident-free operations.

For many years, Sumitomo Bakelite and its employees have cooperated closely in promoting such safety programs as hazard prediction training, pointing and calling confirmation, the 5S campaign, and near-miss prevention as well as comfortable workplace creation programs. Moreover, after an accident occurs, we immediately convene a meeting of the Safety and Health Committee at the relevant site, determine the cause of and countermeasures for such an accident, and quickly send an accident report to all Group facilities to prevent any recurrence.

Each year, despite the implementation of activities aimed at realizing a zero accident record, the total number of accidents at the parent company and its principal affiliates has remained unchanged. However, the parent company achieved the maintenance of zero incidence of accidents resulting in serious injuries or death in 2002 and 2003.



\* The frequency rate represents the number of deaths and injuries due to industrial accidents per 1 million worker hours. It is calculated as follows:  

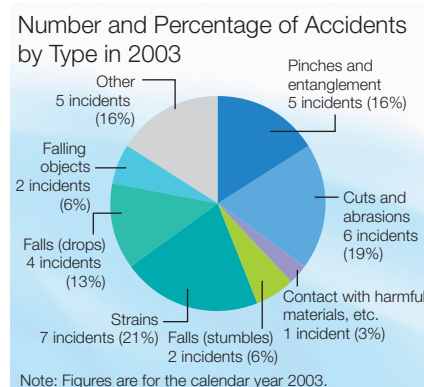
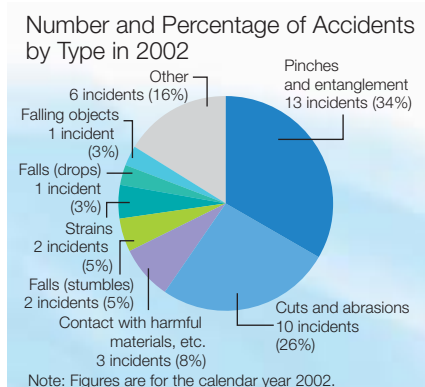
$$\text{frequency rate} = (\text{number of deaths and injuries} / \text{number of worker hours}) \times 1,000,000$$
 Note: Years are calendar years.



Recital of a zero accident pledge at the conclusion of a safety meeting (Shizuoka Plant)

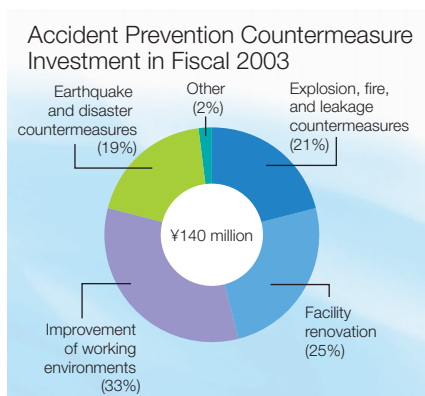
The graphs below show the number and percentage of industrial accidents at the parent company and its principal affiliates by type of accident during the past two years. In 2002, “pinches and entanglement” and “cuts and abrasions” accounted for 60% of the accidents. In response, we made an appeal for additional caution with respect to “rollers and other revolving objects” and “cutter knives and other sharp objects” and we also established a specialized committee to focus on eliminating such accidents.

As a result, the number of the above types of accidents was nearly halved in 2003, although the number of accidents involving “strains” increased. In 2004, we are implementing a program focused on ensuring that workers do not attempt unreasonable physical efforts, such as those involving passage through excessively narrow spaces or the unassisted handling of excessively heavy objects.

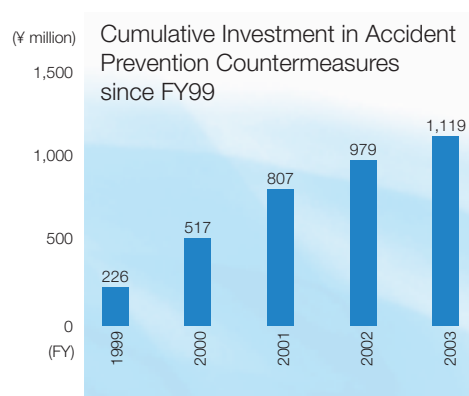


## ● Investment in safety and accident prevention countermeasures

The Sumitomo Bakelite Group continuously invests in safety and accident prevention countermeasures. In fiscal 2003, ¥140 million was used for such investment, principally in facility renovation and work environment improvement. Since fiscal 1999, the Group has invested a total of ¥1.1 billion in such countermeasures.



Note: Figures are for the facilities listed on page 4.



Note: Figures are for the facilities listed on page 4.



Structural reinforcement as an earthquake countermeasure (Shizuoka Plant)



Safety fence installed to prevent potential danger from contact with a roller (Utsunomiya Plant)

## ● Safety initiatives overseas



Education aimed at preventing accidents involving pinches and entanglement (Sumitomo Bakelite (Taiwan) Co., Ltd.)



Shower and eye-rinsing unit installed as safety equipment (Fers Resins, S.A.)



Internal triathlon competition organized as part of a health promotion campaign (Sumitomo Bakelite Singapore Pte. Ltd.)

# Elimination of CFC Usage, Management of PCBs, and Responses to Environmental Complaints

## ● Elimination of CFC usage

The chlorofluorocarbon CFC-113 and 1,1,1-trichloroethane have been identified as ozone-layer-depleting substances, and the Sumitomo Bakelite Group ceased using these substances in 1994. Both were used as cleansers, but they have been replaced with alcohol- and hydrocarbon-based alternatives. Furthermore, although the chlorofluorocarbon substitute HCFC-22 and the chlorofluorocarbon CFC-12 have been used as coolants in refrigeration units, in accordance with the Law Concerning the Recovery and Destruction of Fluorocarbons, we are steadily working to replace these substances with alternatives.

## ● Management of PCBs

There are four Sumitomo Bakelite facilities that have electric machinery (condensers) that contains PCBs in use or in storage. Condensers in storage are kept in specialized vaults and strictly monitored to prevent any leakage or misplacement. In the near future, in accordance with the Law Concerning Special Measures against PCB Wastes, we will steadily dispose of these condensers. We are also currently working to replace lighting fixtures with stabilizers that use PCB alternatives.

### PCB condensers

Site	Units in use	Units in storage
Shizuoka Plant	1	61
Tsu Plant	4	0
Hokkai Taiyo Plastic Co., Ltd.	0	2
Yamaroku Kasei Industry Co., Ltd.	0	4
Total	5	67

### Lighting fixtures with PCB stabilizers

Site	Units in use	No. of units in use converted to alternative stabilizers
Fundamental Research Laboratory	0	123
Amagasaki Plant	0	39
Shizuoka Plant	52	178
Tsu Plant	0	131
Artlite Kogyo Co., Ltd.	0	6
Total	52	477



PCB storage

## ● Responses to environmental complaints

Each Group facility has adopted rules that stipulate the methods used to respond to environment-related complaints. Two such complaints were received during fiscal 2003, and they were responded to as described below.

Category	Date	Facility	Details of complaint	Cause and Countermeasures
① Odor	June 2003	Shizuoka Plant	Report of odor received from local resident via the municipal government	The odor was reduced by increasing the processing temperature of an exhaust gas treatment unit that was believed to be the cause. No complaint was received subsequently.
② Noise	October 2003	Kyushu Bakelite Industry Co., Ltd.	Complaint regarding excessive noise at night received from local resident	It was determined that the cause was the exhaust noise from a blower within a device that removes cinders and other particulates from exhaust fumes. A related silencer unit was cleaned and the direction of the particulate removal device was changed. Upon query, the complainant confirmed that the countermeasures were effective.



## The Sumitomo Bakelite Group engages in “green purchasing,” which is the placing of priority on goods with low environmental impact in purchasing operations.

Purchasing operations that place priority on goods and services with low environmental impact, rather than simply price and quality, are known as “green purchasing.” The Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Law on Promoting Green Purchasing) went into effect in April 2001, thus establishing green purchasing as the responsibility of the state and other institutions. Sumitomo Bakelite has been conducting green purchasing for several years, primarily of office supplies. However, without any unified standard, these efforts were implemented on an individual basis by each department. Now, with the enforcement of the Law on Promoting Green Purchasing, a basic policy has been disclosed, which we used as the basis for our Green Purchasing Standards that we enacted in April 2001. The table below outlines the purchasing standards for three items: paper, office supplies, and OA equipment. Under our Environmental Accounting Compilation Guidelines, the cost for green purchasing is categorized in “Reduction of environmental burden upstream and downstream,” and it is recognized only when the green product is more expensive than the conventional product owing to the additional cost associated with being environmentally friendly. However, since the price differences have narrowed to negligible levels, such additional costs for green purchasing were not identified in our environmental conservation costs for fiscal 2003.

Item		Purchasing standards
Paper	Data paper (copier paper, etc.)	100% recycled paper content with 70% or lower degree of whiteness
	Printing paper	70% or greater recycled paper content
Office supplies	Overhead projector film	30% or greater recycled plastic content
	Business envelopes	40% or greater recycled paper content
	Notebooks	70% or greater recycled paper content
OA equipment	Copiers	Units with energy conservation, sleep mode, and double-sided printing features
	Printers, facsimile machines	Selected based on level of energy conservation

### Green procurement response



Certificate of Green Partner

Moves in Europe to prevent environmental pollution from cadmium, mercury, lead, hexavalent chromium, and other substances related to the disposal of manufactured products has spurred environmental protection initiatives on the parts of manufacturers of electric and electronic products and automobiles throughout the world. In view of this, the Sumitomo Bakelite Group has positioned itself to work as a “Green Partner” with its customers by carefully managing its products’ content of problematic substances and striving to design and provide products that do not cause environmental pollution even following their disposal.

## Social Activities

Each facility of the Sumitomo Bakelite Group strives to be a corporation with an open attitude toward society and proactively implements interaction with its surrounding communities through a variety of activities.



The Amagasaki Plant held a tour of its facilities for the local government council to deepen understanding of the plant's operations.



The Amagasaki Plant held school tours as part of the local junior high school environmental education program.



Students from a school for children with special needs participated in an internship program aimed at providing factory work experience. (Utsunomiya Plant)



SB Flex Philippines, Inc., donated old wooden cargo pallets to a local elementary school, which then used the wood to make desks, chairs, shelves, and other items.



Each summer, the Shizuoka Plant hosts "cool evening festivals" to promote social interaction with local residents.



The Utsunomiya Plant participated in a fire-fighting competition with other local companies.

**We received a number of environmental and safety awards.**



The Information and Telecommunication Material Laboratories and NEC both received the Environment Minister Award in recognition of their contributions to the promotion of green sustainable chemistry (GSC) programs.



The Amagasaki Plant received the Fire Defense Agency Director Award in recognition of the high quality of its disaster prevention activities over many years.



P.T. Indopherin Jaya received an award from Indonesian President Megawati Sukarnoputri for the achievement of four consecutive accident-free years of operations.

# ISO 14001 Certification

## Sumitomo Bakelite is building a highly effective environmental management system by obtaining ISO 14001 certification.

As part of its Responsible Care activities, the Sumitomo Bakelite Group has built an ISO 14001-based environmental management system and is promoting the receipt of additional ISO 14001 certifications. Ten domestic sites and nine overseas sites have already been certified, and we are preparing to obtain certification for an additional three facilities in Japan and three overseas during fiscal 2004.

Sites that were certified as of March 31, 2004, are indicated on the map below.



■ N.V. Sumitomo Bakelite Europe S.A. (1/2001)

Notes: 1. Dates of certification are indicated in parentheses.  
2. Sites in bold are those of the parent company.

# History of Environmental Conservation Activities

## History of the Sumitomo Bakelite Group's environmental conservation activities

Year	Sumitomo Bakelite's initiatives	Social developments
1967		• Basic Law for Environmental Pollution Control enacted
1968		• Air Pollution Control Law and Noise Regulation Law enacted
1969	• Pollution countermeasure secretariat established	
1970		• Water Pollution Control Law and Waste Management and Public Cleansing Law enacted
1971		• Environmental Agency established
1972		• Club of Rome announces "the limit to growth" • United Nations Conference on the Human Environment held in Stockholm; Declaration of the United Nations Conference on the Human Environment adopted
1973	• Environmental Management Division established • Environmental auditing of domestic in-house facilities commenced	
1974	• Environmental Management sections established for each business facility	
1978	• Environmental auditing of domestic affiliates commenced	
1979		• Law Concerning the Rational Use of Energy enacted
1985		• The Vienna Convention for the Protection of the Ozone Layer adopted
1987		• Montreal Protocol on Substances That Deplete the Ozone Layer adopted
1989		• Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal adopted
1990	• Environment Issue Action Committee established • Directors in charge of safety and environment appointed	
1991	• Recycling Technologies Action Office established	• Law Promoting the Use of Recycled Resources enacted
1992	• S.B. Recycle Co., Ltd., established	• U.N. Conference on Environment and Development ("Earth Summit") held
1993	• Environment and Safety Volunteer Plan formulated • Environment and Safety Management Regulations drawn up • Environmental auditing of overseas affiliates commenced	• The Basic Environment Law enacted
1994	• Use of specific CFCs and 1,1,1-trichloroethane eliminated	
1995	• Responsible Care Committee established • The Company joins the Japan Responsible Care Council as a founding member	• The Japan Responsible Care Council established • Law for Promotion of Sorted Collection and Recycling of Containers and Packaging enacted
1996		• ISO 14001 issued
1997	• "Corporate Policies for Safety, Health and the Environment" revised • The Utsunomiya Plant and Sumitomo Bakelite Singapore Pte. Ltd. attain ISO 14001 certification	• 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	• ISO 14001 certification attained by all Sumitomo Bakelite plants	• Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management enacted • Law Concerning Special Measures against Dioxins enacted
2000	• Environmental accounting adopted	• Basic Law for Establishing the Recycling-based Society enacted
2001	• Environmental Report issued (with independent review report)	
2002	• Scope of Environmental Report coverage expanded to include facilities of domestic affiliates • Tokyo Kakohin Co., Ltd., receives an award for promoting the reduce, reuse, and recycle policy • Risk Management Committee established	• Soil Contamination Countermeasures Law enacted • Japan accepted COP3 Kyoto Protocol
2003	• Yamaroku Kasei Industry Co., Ltd., becomes the Sumitomo Bakelite Group's first zero waste emissions plant. Subsequently, Kyushu Bakelite Industry Co., Ltd., and the Amagasaki Plant also attain zero waste emissions status • Compliance Committee established	• Building Code revised as a means to counter the "sick house" phenomenon
2004	• Shizuoka Plant introduces a co-generation plant • 23 Sumitomo Bakelite production bases in Japan and overseas attain ISO 14001 certification (as of August 2004)	• Air Pollution Prevention Law revised to reduce VOC emissions

Items in blue print are worldwide developments.



## Independent Review Report on the “Environmental Report 2004”

To the Board of Directors of SUMITOMO BAKELITE CO., LTD.

### 1. Purpose and Scope of our Review

We have reviewed the “Environmental Report 2004” (the “Environmental Report”) of SUMITOMO BAKELITE CO., LTD. (the “Company”) for the year ended March 31, 2004. The Environmental Report is the responsibility of the Company’s management. Our responsibility is to independently report the results of our review, which consists of performing certain procedures as described below in relation to the collection, compilation and calculation of the information included in the Environmental Report. As this is the fourth year of our review, any indicators for years prior to the year ended March 31, 2001 were not subject to these procedures.

Our work does not constitute an audit or examination. We therefore do not express an opinion on the accuracy or completeness of the indicators or databases used to compile the information or the representations made by the Company in the Environmental Report.

### 2. Procedures Performed

We have performed the following review procedures agreed to by the Company’s management;

- 1) Obtained the environmental, safety and health (the “ESH”) information supporting the ESH performance indicators and the ESH accounting indicators for the purpose of understanding the processes and the procedures of the Company for collecting the data information used to compile the Environmental Report.
- 2) With respect to the ESH performance indicators and the ESH accounting indicators in the Environmental Report, tested quantitative accuracy of the indicators on a sample basis and compared them on a sample basis with the supporting data compiled from the information collected by the Company.
- 3) With respect to the descriptive information in the Environmental Report other than the indicators referred to in the above procedures, interviewed the Company’s responsible personnel, made an on-site inspection and compared such descriptive information with the data collected by the Company or the data found in certain published materials.

We believe that the procedures performed provide a reasonable basis for the following.

### 3. Results of the Procedures Performed

As a result of the procedures performed;

- 1) We are not aware of any material modifications that should be made to the ESH performance indicators or the ESH accounting indicators in the Environmental Report in order for them to comply with the Company’s policies and procedures for gathering and reporting such information.
- 2) We are not aware of any material modifications that should be made to the descriptive information other than the indicators in the Environmental Report to be consistent with the information the Company collected and other information we obtained.

*AZSA Sustainability Co., Ltd.*

AZSA Sustainability Co., Ltd.

Tokyo, Japan  
September 14, 2004

# Corporate Data

## ● Name

Sumitomo Bakelite Co., Ltd.

## ● President

Tomitaro Ogawa

## ● Established

January 25, 1932

## ● Capital (as of March 31, 2004)

¥27.1 billion

## ● No. of shareholders

(as of March 31, 2004)

21,780

## ● No. of employees

(as of March 31, 2004)

2,349

## ● Net sales (fiscal 2003)

¥98.4 billion (non-consolidated)

¥170.2 billion (consolidated)

## ● Major products (categorized by division)

### Semiconductor and display materials

- Epoxy resin molding compounds
- Liquid resin for semiconductors
- Carrier tape for semiconductor surface mounting
- Adhesive tape for semiconductor chip devices

### Materials for circuitry and electronic components

- Epoxy resin copper clad laminates
- Phenolic resin copper clad laminates\*
- Flexible printed circuits\*

### Advanced plastics

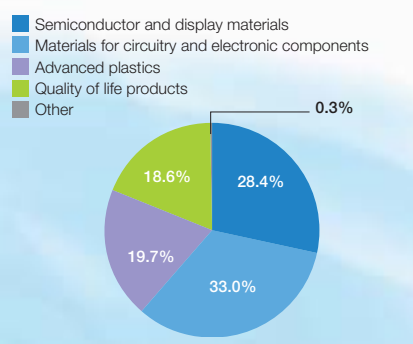
- Phenolic resin molding compounds
- Polyvinyl resin molding compounds\*
- Urea and melamine resin adhesives\*
- Industrial-use phenolic resins
- Formalin
- Precision molded products
- Precision molding dies

### Quality of life products

- Medical instruments\*
- Melamine resin decorative laminates\*
- Polyvinyl resin sheets\*
- Multilayer film sheets

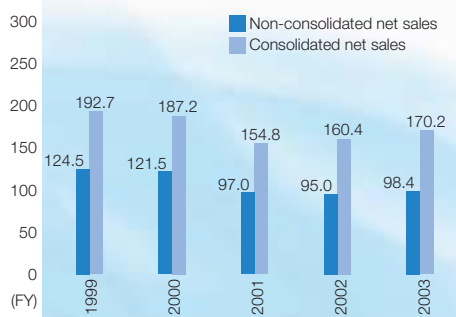
\*Products of affiliates

Fiscal 2003 net sales (non-consolidated)



(Unit: ¥ billion)

Net sales



## Scope of the *Environmental Report 2004*

### ● Period

Fiscal 2003

(April 2003 to March 2004)

### ● Offices and facilities

Sumitomo Bakelite Co., Ltd.  
 Amagasaki Plant (and consolidated affiliates on plant grounds)  
 Shizuoka Plant (and consolidated affiliates on plant grounds)  
 Utsunomiya Plant  
 Tsu Plant  
 Fundamental Research Laboratory  
 Kobe Fundamental Research Laboratory

Akita Sumitomo Bakelite Co., Ltd.  
 Artlite Kogyo Co., Ltd.  
 Tokyo Kakohin Co., Ltd.  
 Hokkai Taiyo Plastic Co., Ltd.  
 Yamaroku Kasei Industry Co., Ltd.  
 Kyushu Bakelite Industry Co., Ltd.

## Sumitomo Bakelite Co., Ltd.

### ● Head Office

Tennoz Parkside Building, 2-5-8, Higashi-Shinagawa,  
Shinagawa-ku, Tokyo 140-0002

☎ +81-3-5462-4111

### ● Fundamental Research Laboratory

495 Akiba-cho, Totsuka-ku, Yokohama, Kanagawa 245-0052

☎ +81-45-811-1661 FAX: +81-45-812-4898

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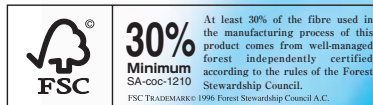
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