



Tsuneo Moriya President

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The 21st Century has come to be known as the century of the environment, and even at the individual company level, voluntary efforts to achieve a recycling-based society are becoming increasingly crucial. Thus far in 2002, at the national level, in March Guideline of measure to prevent Global Warming were finalized, in May the Soil Contamination Countermeasures Law was enacted and the Construction Materials Recycling Act went into effect, and in June the cabinet decided to accept the COP3 Kyoto Protocol. With these developments, Japan has established the basic framework for the formation of anti-global warming measures and has taken its first great step toward the achievement of a recycling-based society that will be capable of sustainable development.

Since fiscal 2001, Sumitomo Bakelite Co., Ltd., has continued to implement "Society and environment-compatible management" as an important policy for its business activities and has implemented "Responsible Care" measures, which, in every aspect, are mindful of environmental conservation as well as safety and health.

Responsible Care is a voluntary program for implementing and improving measures to protect safety, health, and the environment over a product's entire life cycle, from development through production, distribution, use, final consumption, and disposal, for companies handling chemical substances. We have undertaken communication initiatives and striven to enhance society's trust. The Company has participated in the Japan Responsible Care Council since its foundation in 1995.

For this fiscal year's environmental report, we have expanded the scope of offices and facilities covered from last year's total of seven locations—primarily those of the parent company—to 13 locations, including domestic affiliates. Among the environmental activities of Sumitomo Bakelite included in this report are, first and foremost, the setting of such long-term objectives as zero emissions, their achievement, and self-evaluations. Second, in the area of environment-friendly products, this report will present our activities to develop and sell products that contain no hazardous or harmful substances in their manufacture, that do not require our customers to use such substances, and that are easily recyclable and whose basic constituent materials are easily recoverable. Third, this report will provide environmental impact data for each manufacturing plant on air and water quality.

Furthermore, Sumitomo Bakelite is moving forward actively in overseas development with the objective of becoming an international excellent company. The business activities of Sumitomo Bakelite and the 40 companies, both domestic and overseas, which comprise the Sumitomo Bakelite Group observe both domestic and overseas environment-related laws, and the Group is engaged in environmental conservation activities through the environmental management systems it has established. As part of these activities, 18 Group companies comprising a total of 24 manufacturing plants have attained ISO 14001 certification.

We consider this environmental report to be a valuable tool for communication and promotion of understanding of the environmental conservation efforts of the Sumitomo Bakelite Group. We welcome your opinions and suggestions.

August 2002

Tsuneo Moriya

Tsuneo Moriya President

Management Policies and Environmental Targets



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 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

- 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

Under Sumitomo Bakelite's environmental and safety management policies, the Company set medium- and long-term objectives 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 Goals

Solvents and other air emission volume

Volume of waste generated Zero emissions

CO₂ emission volume

50% reduction (Target date: 2004)
Complete elimination (Target date: 2005)
60% reduction (Target date: 2002)
6% reduction (Target date: 2010)

Environmental target areas include volume of waste generated, zero emissions (complete elimination of landfill disposal and external incineration), solvents and other air emission volume, and carbon dioxide (CO₂) emission volume.

Environmental Impact Reduction Results and Targets

Action	Unit	1999 (base year) Results	2000 Results	2001 Results	2002 Projections	2004 Targets
Volume of waste generated	Tons/year	10,906	11,587	8,884	30% reduction (7,454)	50% reduction vs. 1999
Zero emissions	Tons/year	3,923	3,843	3,127	50% reduction (2,035)	85% reduction vs. 1999
Solvents and other air emission volume	Tons/year	3,163	3,307	2,796	60% reduction (1,275)	95% reduction vs. 1999
CO ₂ emission volume	Tons/year	115,017	114,029	102,344	2% reduction* (124,979)	3% reduction vs. 1999*

* Base volume was 130,769 tons in fiscal year 1999 calculated based on total emissions from five plants, two R&D centers, and six affiliates. Calculated based on emissions from five plants + two R&D centers + six affiliates

Until fiscal 2001, with respect to environmental impact reduction, action plans, including reduction measures and their respective timetables, were implemented at the Amagasaki, Shizuoka, Utsunomiya, and Tsu plants as well as the Akita Sumitomo Bakelite Co., Ltd., plant. Total emission volume for the standard year, 1999, is derived from the total emissions of these five plants.

Starting in fiscal 2002, two R&D centers and six affiliated companies were added to expand the range of facilities covered in environmental impact reduction calculations. However, calculated volume reduction targets for waste emission volume, zero emissions (complete elimination of landfill disposal and external incineration), and airborne solvent emission volume have not been changed. The emissions volume of the newly added facilities is only indexed for calculation of CO₂ emission volume.

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 the safeguarding of the environment, safety, and health throughout the full life cycle of chemical substances, from their development through to their disposal. The Company has organized a Responsible Care Committee, staffed by 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 divisions as well as other divisions with individual objectives.



- * The Responsible Care Committee works out plans and projects for Companywide Responsible Care activities and holds the authority to grant approval to individual office and facility activities.
- ** The Environmental Protection and Recycling Initiatives Division acts as the secretariat for Responsible Care activities and also handles the coordination of individual office and facility activities.
 - Administration and assistance for environmental maintenance and improvement and safety assurance at offices and facilities
 - Internal auditing of environment and safety-related Responsible Care efforts at offices and facilities. (Audits are conducted annually for domestic offices and facilities and once every three years for those overseas.)
 - Support for attainment of ISO 14001 certification
 - Handling of surveys and applications related to safety management and legal regulations related to chemical substances
 - · Feasibility studies and planning of internal and external recycling activities

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 emitted into the environment at Sumitomo Bakelite's four manufacturing plants in Amagasaki, Shizuoka, Utsunomiya, and Tsu. To reduce environmental impact, Sumitomo Bakelite strives to decrease 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 2001 targets
Volume of waste generated	Reduce total waste volume, including landfill, external incineration, internal incineration, and external recycling (expenses paid) to 10,300 tons or less
Zero emissions	Reduce total volume, including landfill and external incineration, to 3,200 tons or less
Solvents and other air emission volume	Reduce volume emissions to the atmosphere of solvents and other chemicals designated by the PRTR of the Japan Chemical Industry Association (JCIA) to 2,800 tons or less
CO ₂ emission volume	Reduce CO_2 emissions that result from energy consumption (fuel and electricity) in production operations by 1.2% of fiscal 1999 volumes



Targets and corresponding results for fiscal 2001 are indicated in the table below. The Company was successful in meeting targets for reduction of both volume of waste generated and substances designated by its zero emissions activities. Although we also reduced CO_2 emission volume by 11% of that for fiscal 1999, this reduction also reflects a decline in production volume.

From fiscal 2002, two laboratories and six affiliates will be newly included in these efforts, with progress monitored on a monthly basis.

Fiscal 2001 results	Self- evaluation	Related pages
Volume of waste generated reduced to 8,884 tons, thus meeting target	0	17–18
Volume of zero emissions substances reduced to 3,127 tons, thus meeting target	0	17–18
Emissions reduced to 2,796 tons, thus meeting target	0	12
CO_2 emission volume reduced by 11% of that for fiscal 1999 (due in part to decline in production)	0	13–14

Environmental Accounting



Sumitomo Bakelite adopted environmental accounting in fiscal 2000.

In fiscal 2000, Sumitomo Bakelite adopted environmental accounting as a means to implement business activities that are in harmony with the environment. Environmental accounting quantifies the results and costs associated with environmental conservation. It is an excellent tool for advancing environment-friendly business activities more efficiently and enhancing the understanding of the Company's efforts through the disclosure of information to stakeholders.

Statistics for environmental accounting are compiled based on the guidelines of the Ministry of the Environment (versions 2000 and 2002). In addition, the Company has established its own framework for quantitatively measuring progress in its activities to reduce its environmental impact. Furthermore, this framework is constantly upgraded to achieve greater accuracy.

In fiscal 2000, we first applied environmental accounting to five plants and two laboratories. In 2001, an additional six affiliates (listed below) were added.

	Environmental conservation costs		
Category	Investment (Millions of yen)	Expenses (Millions of yen)	Description
(A) Emissions reduction	103	122	Installation of exhaust gas processingInstallation of scrubber
(B) Energy conservation	39	2	 Renovation of air conditioner Replacement of energy-saving transformers
(C) Reduction of industrial waste, promotion of recycling, and waste disposal	23	462	Facilities for recyclingWaste disposal
(D) Product evaluation at R&D stage	_	320	R&D for environment-friendly products
(E) Environmental management	_	174	 Maintenance of ISO 14001 certification Personnel costs for environmental management activities
(F) Contributions to social activities	3	59	Greening activities and maintenancePollution burden fund
(G) Response to environmental damage	_	_	
Total	168	1,139	

Environmental conservation costs for fiscal 2001

Period: April 2001 through March 2002

Facilities included above: Sumitomo Bakelite Co., Ltd.

Amagasaki Plant (including affiliated companies on the same property), Shizuoka Plant (including affiliated companies on the same property), Utsunomiya Plant, Tsu Plant, Basic Research Institute, Kobe Basic Research Institute

Akita Sumitomo Bakelite Co., Ltd., Artlite Kogyo Co., Ltd., Tokyo Kakohin Co., Ltd., Hokkai Taiyo Plastic Co., Ltd., Sano Plastic Co., Ltd., Yamaroku Kasei Industry Co., Ltd., Kyushu Bakelite Industry Co., Ltd. The underlined companies were the ones newly added in fiscal 2001.

Compilation

- The compilation was based on the Company's Environmental Accounting Guidelines with reference to the Ministry of the Environment's guidelines, released in 2000 and 2002.
- Costs were limited to expenses used exclusively for environmental conservation purposes.
- Among various effects, only economic effects with substantial conclusive evidence were recorded. On the other hand, subjective calculations such as risk avoidance effects were excluded in this compilation process.
- Expenses do not include depreciation.
- With regard to R&D, investment outlays and expenses were complied along specific environment-related categories.
- With regard to green procurement, no environmental conservation costs were recorded since there was no difference in costs compared with regularly procured items.

Effects of environmental conservation for fiscal 2001

Decrease in environmental burden (Compared with previous fiscal year)*		Environmental burden (fiscal 2001)		
Reduction in atmospheric emissions of solvents and others	509 tons	Atmospheric emissions of solvents and others	2,802 tons	
Reduction in CO ₂ emissions	12,275 tons	CO ₂ emissions	116,187 tons	
Reduction in industrial waste generated Waste reduction in landfill and external incineration	2,849 tons 762 tons	Industrial waste generated Waste sent to landfill and external incineration	10,416 tons 4,046 tons	

*Includes adjustments for the companies to which environmental accounting was applied for the first time in fiscal 2001

Economic effects for fiscal 2001

Category	Amount (Millions of yen)
(1) Cost reduction due to energy conservation	45
(2) Income from recycling	41
(3) Cost reduction by circulation of factory drain water	298
Total	384

• Total sales of environment-friendly products were ¥6,377 million, accounting for approximately 6.6% of total net sales. (The definition of environment-friendly products was revised in fiscal 2001.)

Impact on the Environment

In conjunction with its production operations, Sumitomo Bakelite strives to reduce substances that are emitted into both the air and water that impact on the environment.

Smoke and soot volumes

Sumitomo Bakelite observes national emission standards as well as standards based on agreements with local communities on volumes of SO_X and other soot particles emitted by boilers and other installations. In addition, to achieving further reductions in such substances, we will strive to carefully select fuels and keep appropriate combustion conditions.



Chemical Oxygen Demand (COD)

Water effluents are mainly classified as disposal water from operational processes, household use, and other sources, and rainwater (including cooling water). Among these, cooling water is basically recirculated. As for disposal water, we operate treatment installations, including high-precision phenol collection units, activated sludge process equipment, and neutralizing agglutinate precipitation units (metal disposition) and, with surveillance equipment, have established an ongoing monitoring system in compliance with national wastewater standards and local agreements for pollution prevention.



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



Activated sludge process equipment

Because the scope of facilities included in this compilation has been broadened, results have been presented here from fiscal 1998, the time from which data has been collected. Moreover, since calculation methods have been revised, data included in the *Environmental Report 2001* has been partially amended.

Volume of emissions into the atmosphere of substances subject to the PRTR Law*

With the enforcement of the PRTR Law in April 2001, reporting to the Japanese government of the emission and transfer volumes of 354 designated substances is now required by law. As a member firm of the JCIA, Sumitomo Bakelite has been complying with the PRTR Law since 1996 and striving to ascertain emission and transfer volumes and, in particular, to reduce the volume of emissions into the atmosphere.

Data for substances of which more than 100 tons have been emitted into the atmosphere in fiscal 2001, along with corresponding data from fiscal 1998 onward, is indicated in the graphs below. We have been working steadily since fiscal 2001 to install exhaust gas-processing units for toluene and N,N-dimethyl formamide, and we expect to achieve substantial reductions in these substances in the future. Target figures for fiscal 2002 and beyond have been revised to reflect advancements in the installation of such facilities.



Emission and transfer volumes of substances subject to the PRTR Law* (Fiscal 2001 actual results)

Government order no.SubstanceVolume used (manufactured)Emission volumesInto soilAs waste matterInto Into air1Zinc compounds (water-soluble)58000011Aniline8400000025Anilinony and its compounds134000011129Bisphenol A33590000011130Bisphenol A type epoxy resin (liquid)1,19300000142Ethylene glycol848000000143Ethylene glycol monoethyl ether16000001144Ethylene glycol monoethyl ether664500001145Ethylene glycol monoethyl ether6645000111 <th>ewers)))</th>	ewers)))						
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227 Toluene 671 159 0 0 11	j						
242 Nonylphenol 13 0 0 0 0	1						
243 Barium and its water-soluble compounds 52 0 0 0 0	j						
266 Phenol 24,445 1.9 0.9 0 13	j						
270 Di-n-butyl phthalate 10 0 0 0 0	j						
272 Bis (2-ethylhexyl) phthalate 23 0 0 0.2	j						
300 1,2,4-benzenetricarboxylic 1,2-anhydride 12 0 0 0 0	j						
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*Based on the PRTR Law, by ascertaining their emission volumes 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.

**TEQ (toxicity equivalence quantity)

This is the toxic equivalent conversion volume of 2, 3, 7, 8-tetrachloride dibenzo dioxin (TCDD), the most harmful dioxin.

***Dioxins generated during waste incineration

CO₂ Emissions and Energy Conservation

Sumitomo Bakelite implements energy conservation activities and strives to reduce carbon dioxide emissions.

The reduction of greenhouse gasses is required to help prevent global warming, a worldwide environmental issue of the greatest concern. To reduce emissions of the greenhouse gas CO₂, the Sumitomo Bakelite Group strives to conserve energy by the following three means:

- ① Prevention by all employees against wasteful use of energy
- ② Promotion of energy-conserving production by rearranged processes
- ③ Use of new energy conservation measures and manufacturing method conversion

We are further striving for energy conservation under the long-term objective of reducing CO_2 emission volume by 6% from the fiscal 1999 level by fiscal 2010.

In fiscal 2001, we reduced CO_2 emission volume to 11% below the fiscal 1999 level. However, this result reflects a decline in production volume, and the actual production evaluation balance (production volume × selling price) consumption rate worsened.



Sumitomo Bakelite will continue to strive to meet its targets by implementing such measures as conversion to energyconserving processes and exhaust heat recovery, as well as considering the installation of cogeneration systems.

Principal energy conservation measures implemented in fiscal 2001 were:

- ① Renovation of air-conditioning units
- (2) Conversion to energy-conserving transformers (amorphous transformers)
- ③ Renewal of activated sludge facilities and aerating tank diffusion piping
- ④ Adoption of thermal storage air-conditioning units
- (5) Renovation of cooling air intakes of impregnating machines



① Renovation of air-conditioning units

The installation of automatic intermittent mist sprayers on the cooling fins of the outdoor portions of these air-conditioning units (the condensers) has increased capacity and yielded a 7% to 8% reduction in energy consumption. (Shizuoka Plant)



③ Renewal of activated sludge facilities and aerating tank diffusion piping

By replacing older activated sludge facilities and aerating tank diffusion piping with newer, more efficient models, the volume of energy required by blowers has been reduced. (Shizuoka Plant)





② Conversion to energy-conserving transformers (amorphous transformers)

The Company continued to install energy-conserving transformers at its Tsu Plant and Akita Sumitomo Bakelite, thereby reducing energy consumption volumes.



Adoption of thermal storage air-conditioning units

Thermal storage air-conditioning units have been installed in the Information and Telecommunication Material Laboratories of the Utsunomiya Plant. Thermal storage air-conditioning enables operation at high efficiency ratings year-round, day and night, by applying thermal storage to variations in air-conditioning requirements, thus contributing to energy conservation.

(5) Renovation of cooling air intakes of impregnating machines By modifying paint sprayers to make use of external air for the cooling air required, energy consumption volumes have been reduced. These modifications also contribute to the stable operation of impregnating machines by lowering cooling air temperatures. (Shizuoka Plant)



The tables below provide environmental impact data for each individual Sumitomo Bakelite site.

Amagasaki Plant

(Air)

Facility	Item	Unit	Regulation limit	Actual measurement
	SO _X	m³N/h	3.07	0.16
Boiler	NO _X	ppm	250	98.3
	Soot and dust	g/m³N	0.3	0.05

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	7.3–7.8
BOD	mg/l	25	5.0
COD	mg/l	25	3.6
SS	mg/l	20	1.9
n-hexane extract	mg/l	20	1.0

Utsunomiya Plant

(Air)

No relevant facilities

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8-8.6	7.4–7.7
BOD	mg/l	25	0.9
COD	mg/l	25	2.9
SS	mg/l	25	Less than 1
n-hexane extract	mg/l	5	Less than 1

Fundamental Research Laboratory

(Air)

Facility	Item	Unit	Regulation limit	Actual measurement
Diesel	Heavy oil S content	%	Less or equal to 0.1	0.07
electric	NO _X	ppm	950	750
generator	Soot and dust	g/m³N	0.080	0.070

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5–9	6.9–7.9
Copper	mg/l	3	Less than 0.2
Soluble iron	mg/l	10	0.6
Nickel	mg/l	1	Less than 0.2

Shizuoka Plant

(Air)

Facility	Item	Unit	Regulation limit	Actual measurement
Boiler	SO _X	m³N/h	17.72	13.0
	NO _X	ppm	140	109
	Soot and dust	g/m³N	0.1	0.004

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	6.7–7.7
BOD	mg/l	15	3.6
COD	mg/l	—	5.4
SS	mg/l	30	13.2
n-hexane extract	mg/l	3	0.9
Phenols	mg/l	1	Less than 0.2
Formaldehyde	mg/l	5	1.0
Copper	mg/l	0.05	Less than 0.05
Total chromium	mg/l	0.05	Less than 0.05
Hexavalent chromium	mg/l	0.05	Less than 0.05
Zinc	mg/l	0.1	Less than 0.05
Dichloromethane	mg/l	0.02	Less than 0.02

Tsu Plant

(Air) No relevant facilities

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	6.2–7.2
BOD	mg/l	130	27
COD	mg/l	130	28
SS	mg/l	130	26
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	0.24
Soluble iron	mg/l	10	0.4
Soluble manganese	mg/l	10	Less than 0.05
Nitrogen	mg/l	60	33.0
Phosphorus	mg/l	8	3.10

Kobe Fundamental Research Laboratory

(Air)

No relevant facilities

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5–9	7.7–7.8
BOD	mg/l	2,000	10
COD	mg/l	_	6
SS	mg/l	2,000	12
n-hexane extract	mg/l	5	Less than 1.0
Phenols	mg/l	5	Less than 0.2
Zinc	mg/l	0.7	0.03

Akita Sumitomo Bakelite Co., Ltd.

(Air)

Facility	Item	Unit	Regulation limit	Actual measuremen
Boiler	SO _X	m³N/h	10.36	0.859
	NO _X	ppm	Less or equal to 110	54
	Soot and dust	g/m³N	Less or equal to 0.09	Less than 0.01

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	6.0-8.5	7.1–7.5
BOD	mg/l	30	14
COD	mg/l	30	22
SS	mg/l	40	Less than 5
Phenols	mg/l	0.5	0.012
Copper	mg/l	1.0	0.93
Cyanide	mg/l	0.1	Less than 0.1
Lead and lead compounds	mg/l	0.1	Less than 0.01
Soluble manganese	mg/l	5	Less than 0.05

Tokyo Kakohin Co., Ltd.

(Air)

No relevant facilities

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	8.1–8.6
BOD	mg/l	20	2.9
COD	mg/l	—	4.4
SS	mg/l	50	Less than 5

Kyushu Bakelite Industry Co., Ltd.

(Air)

No relevant facilities

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	7.2-7.4
BOD	mg/l	30	3.1
COD	mg/l	20	7.7
SS	mg/l	20	Less than 5
n-hexane extract	mg/l	2	Less than 1

Notes: 1. Regarding facilities related to air quality, in cases where there are multiple facilities subject to regulations, the facility with the largest volume of gas emissions is listed. 2. Regarding limits placed by the various regulations stipulated by prefectural ordinances, community agreements, and government counsel, the most rigorous are listed.

3. For actual measurements, the largest figures for fiscal 2001 have been listed. For pH measurements, the range from smallest to largest measurements is listed.

4. Actual measurements that are listed as "less than" indicate a measurement smaller than the lowest fixed value.

Artlite Kogyo Co., Ltd.

(Air)

Facility	Item	Unit	Regulation limit	Actual measurement
Boiler	SO _X	m³N/h	7.47	0.10
	NO _X	ppm	180	74
	Soot and dust	g/m³N	0.30	0.0025

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	6.5–7.3
BOD	mg/l	160	2.3
COD	mg/l	30	3.7
SS	mg/l	200	2.4
n-hexane extract	mg/l	5	1.9
Phenols	mg/l	5	Less than 0.2

Yamaroku Kasei Industry Co., Ltd.

(Air)

No relevant facilities

(Water)

Item	Unit	Regulation limit	Actual measurement
рН	—	5.8–8.6	6.8–7.3
BOD	mg/l	25	2.1
COD	mg/l	25	4.6
SS	mg/l	90	2.7
Phenols	mg/l	1	Less or equal to 0.01

Sumitomo Bakelite strives to reduce the volume of waste generated and achieve zero emissions.

To make effective use of limited resources and counter strained waste disposal sites and other serious waste problems, Sumitomo Bakelite makes a significant effort to reduce the volume of waste generated and recycle generated waste. We undertake this effort through the 3Rs approach: Reduce, Reuse, and Recycle, as stated in The Basic Law for Establishing a Recycling-based Society. In particular, we place top priority on reducing the volume of waste generated in manufacturing processes by improving yields. We are also concentrating on establishing routes for the recycling of the entire volume of generated waste, rather than landfilling or simple incineration, thereby achieving zero emissions. The graphs below illustrate progress in the reduction of waste generation and zero emissions efforts as well as target figures. Substances that count as waste are the total volume of waste that is disposed of in landfills, external incineration, internal incineration, and external recycling (expenses paid), and substances that count as zero emissions-targeted substances are the total volume of landfill waste and waste that is incinerated externally.





Recycling initiatives

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 re-pelletized sprue, runner, and other waste plastic from molded products as raw material.

To recycle more efficiently, 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.

Recycling system for phenolic resin molding compound

Together with the collection of powder generated during molding production, a molding company also 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.



Other examples of Sumitomo Bakelite's recycling achievements include:

- Use of circuit etching waste liquid (copper chloride) as a base material for ship bottom paint
- Use of pre-preg from copper-clad laminates in fishing rods and rackets
- Use of epoxy resin molding products as raw material and fuel for cement
- Use of recovered methanol as boiler fuel
- Distillation, recycling, and reuse of waste acetone
- Distillation, recycling, and reuse of isopropyl alcohol
- Recovery and recycling of used plastic shoe trees
- Use of paper and waste plastic as refuse derived fuel

Dioxin countermeasures

Waste incinerators are one of the sources of dioxin emissions. With the Law Concerning Special Measures against Dioxins and the revision of the Waste Disposal and Public Cleaning Law, regulations governing incinerators have become more stringent, and Sumitomo Bakelite will have eliminated all of its incinerators by November 30, 2002.

Site	Number of incinerators	Condition (as of Aug. 2002)	Future plans
Fundamental Research Laboratory	1	Use halted	
Shizuoka Plant	5	Use of 3 halted, remaining 2 operating	All 5 to be eliminated by Nov. 30, 2002
Utsunomiya Plant	2	Eliminated	
Tsu Plant	1	Eliminated	
Artlite Kogyo Co., Ltd.	1	Eliminated	
Akita Sumitomo Bakelite Co., Ltd.	1	Operating	To be eliminated by Nov. 30, 2002
Yamaroku Kasei Industry Co., Ltd.	1	Eliminated	

Products That Provide Environmental Solutions

The Sumitomo Bakelite Group strives to develop products that safeguard the environment, safety, and health at all stages, from development through disposal.

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

Epoxy molding compound SUMIKON[®] EME

In addition to the SUMIKON[®] EME-G700 series of molding compounds that are free of such generally used flame retardants as halogen and antimony compounds, Sumitomo Bakelite has now developed and introduced the EME-G600 series for general-purpose packages. Furthermore, with the completion of the E series, which uses environment-friendly metallic hydroxide compounds for flame retardants, we have now prepared environment-friendly materials for a wide range of fields, from high-end to general use.

Wafer coating material SUMIRESIN EXCEL[®] CRC

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 more and 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. It also eliminates the need for semiconductor manufacturers' use of special solutions. Furthermore, its high resolution helps conserve energy by reducing semiconductor manufacturing processes.

SUMILITE[®] PLC, ELC, and APL (GS series) "green" laminates

Sumitomo Bakelite has developed and now markets its GS series of halogen-free and antimonyfree environment-friendly laminates for use as electric circuit boards, which are essential electric products. The series features materials to suit every field, including phenolic PLC and epoxy ELC products for general use and APL products for use as buildup materials to enable high-density wiring. Sumitomo Bakelite has developed and brought into the market a full lineup of environmentfriendly materials from general use to high-end applications. In the high-end range, our halogenfree PLC materials are compatible with lead-free solder mounting, while we also provide low permittivity materials for use in high-speed signals and packaging materials for high-performance semiconductors.

SUMILITE® TFP flexible printed circuit boards

Sumitomo Bakelite has developed and currently sells environment-friendly halogen- and antimonyfree flexible printed circuit boards and an epoxy adhesive for use in flexible copper laminates and cover lays. We also offer environment-friendly printed circuit boards that use lead-free solder plating on connector terminals and surface mounting.









SUMIZAC[®] SZF solder-replacing curing film

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 one-stop connection of minute circuits, they have become indispensable materials for connecting glass panels with 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

High-speed laser marking has replaced traditional ink sealing as the primary method of marking electronic components. Although lead compounds have been widely used as laser color fixing agents, Sumitomo Bakelite has developed and now sells lead-free epoxy coating powder using copper and nickel compounds. We also provide halogen-free and antimony-free epoxy coating powder.

SUMIMAC[®] ECR liquid epoxy resin for use in electric and electronic components

Sumitomo Bakelite has developed and now markets liquid epoxy resin for SMD components, which are compatible with lead-free solder mounting. We also provide environment-friendly halo-gen- and antimony-free flame-resistant products.

SUMILITERESIN[®] PR phenolic resins

Leveraging its independently developed reaction technology, Sumitomo Bakelite has brought to market phenolic resins that are friendly to the global environment as well as work environments. These environment-friendly phenolic resins include completely aqueous types that contain no organic solvents and low-environmental impact types with extremely low levels of unreacted monomers, thus fulfilling the requirements of the Industrial Safety and Health Law and the Poisonous and Deleterious Substances Control Law.

SUMIKON[®] PM sprue-free and runner-free phenolic resin molding compounds

Phenolic resin molding compounds usually produce such waste by-products as sprue and runner during the molding process. Sumitomo Bakelite has already perfected a material recycling system that reuses such material—including molded products collected from its customers—as molding material as well as raw material and fuel for cement. Going one step further, it has now developed a technology for substantially reducing the volume of such waste material itself. By combining our die, molding, and materials technologies, we offer comprehensive sprue-free and runner-free forming technologies. We are also currently developing a material that produces no burr, which is another by-product of the molding process.











Education and Training

Internal auditing

Since 1973, Sumitomo Bakelite has been implementing annual environmental and safety auditing of its facilities through the Environment, Safety, and Recycling Department. 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, which are implemented once every three years. 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 legal regulations. 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, and Recycling Department

Environmental education

Each Sumitomo Bakelite office and facility conducts environmental education courses at three levels geared for new recruits, middle-ranking employees, and veteran employees. Rather than mere one-time events, these courses comprise yearlong curricula for diligent 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 Material Safety Data Sheet (MSDS)-based handling of chemical substances.

環境方針 (重点実施	(項目抜粋)
(41)電力エネルギー、差エネルギーの省エネ)	レギー化を推進する
(4.2)原薬物排出の抑制を図ると共に、廃棄物(カ有助利用化を積極的に推進する
(43)地域社会に影響を与えうる、騒音及び悪き	4発生の防止困難を.
積極的に取り組む	
(44)意識・有害物の使用量を的確に把握する。	とおに、取扱いいに伴う環境への
様は原制と安全の確保を図る	
(45) 省エネルギー、危険有害物の使用削減品	び楽堂物の御出削減を配達
した高度で保護性の高い製品・技術の影	俺を推進する
(44)緊急時においても、地域社会に迷惑をかり	†ない汚染の防止と、安全確保
のための教育、訓練を実施する	2001年4月25日
	住まペークライト報幹回工場
	工場長

Cards such as this are carried by each Company employee to promote awareness of environmental policies.



Environmental education course

Emergency training

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



Initial fire-extinguishing training



Leakage prevention training

Material Safety Data Sheet (MSDS)



MSDS

Yellow Cards (Emergency Contact Cards)

To ensure safety during transport, drivers carry "yellow cards" at all times. These

cards contain information on emergency measures and contact information.

An MSDS provides all personnel involved with reference data 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 to these laws as well as the adoption of the JIS Z 7250 for the preparation of MSDSs, we are currently revising our MSDS procedures. For products that are exported, we are working to prepare MSDSs in the local language as well as provide information pertaining to local laws. We also demand MSDSs for all raw materials that we purchase. These MSDSs are made con-

stantly available to the site where these materials are handled, and MSDS-based safety education is provided for all employees involved.

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Yellow card

Results of Groundwater and Soil Contamination Surveys



Sumitomo Bakelite conducts surveys of groundwater and soil contamination.

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

Site	Survey item		Result ^{⁺1}	Comments	Survey date
Fundamental Research	Groundwater	1,1,1-trichloroethane	0		12/98
Laboratory	and soil	trichloroethylene	0		
		tetrachloroethylene	0		
Amagasaki Plant	Groundwater	1,1,1-trichloroethane	0	Although 0.24mg/l of cis-1,2-dichloroethyl-	9/00
		trichloroethylene	0	ene was detected (environmental standard:	
		tetrachloroethylene	0	0.04mg/l), a municipal survey found the	
		carbon tetrachloride	0	cause to be upstream of the plant.	
		1,1-dichloroethylene	0		
		cis-1,2-dichloroethylene	Δ		
	Soil	cadmium and cadmium compounds	0		11/00
		lead and lead compounds	0		
		hexavalent chromium compounds	0		
		arsenic and arsenic compounds	0		
		mercury and mercury compounds	0		
Shizuoka Plant	Groundwater	23 substances designated by environmental standards ⁻²	0		3/00
	Soil	trichloroethylene	0		2/99
Utsunomiya Plant	Groundwater and soil	trichloroethylene	0		5/00
Tsu Plant	Groundwater	23 substances designated by environmental standards ²	0		2/00
	Soil	25 substances designated by environmental standards ^{*3}		Taken from near an outdoor hazardous material storage facility. 230mg/kg of copper was detected (environmental standard: 125mg/kg), but this is presumed to have leaked during processing of waste oil containing copper. Although a subsequent survey (7/02) detected 67mg/kg, further surveys will continue to be conducted.	2/00
Sano Plastic Co., Ltd.	Groundwater	trichloroethylene	0		7/98
Yamaroku Kasei Industry	Groundwater	22 substances including trichloroethylene	0		1/02
Co., Ltd.	Soil	phenols	0		10/01
Akita Sumitomo Bakelite	Groundwater	total cyanide, lead, copper, soluble manganese,	0		7/01
Co., Ltd.		phenols, cis-1,2-dichloroethylene,	0		
		1,1,1-trichloroethane, tetrachloroethylene,	0		
		dichloromethane, and trichloroethylene	0		
	Soil	cyanide	0		8/00
		phenols	0		
		copper	0		
		manganese	0		
		n-hexane extract	0		

*1. O Indicates that limits set by environmental standards have been cleared.

*2. cadmium, total cyanide, lead, hexavalent chromium, arsenic, total mercury, alkyl mercury, PCB, dichloromethane, carbon tetrachloride, 1,2-dichloroethane, 1,1dichloroethylene, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, tetrachloroethylene, 1,3-dichloropropene, tiuram, simazine, thiobencarb, benzene, selenium

*3. cadmium, total cyanide, organic phosphorus, lead, hexavalent chromium, arsenic, total mercury, alkyl mercury, PCB, 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-dichloro-propene, tiuram, simazine, thiobencarb, benzene, selenium

CFC countermeasures

The chlorofluorocarbon CFC-113 as well as 1,1,1-trichloroethane have been identified as ozone layer-depleting substances, and the Sumitomo Bakelite Group has ceased using these substances entirely since 1994. Both were used as cleansers, but 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, which was enacted in 2001, we are steadily working to replace these substances with alternatives.

PCB management

As of fiscal 2001, there were five Sumitomo Bakelite facilities that have electric machinery (condensers) that contain 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 for the Promotion of Environmentally Sound Destruction of PCB Waste, 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	56
Tsu Plant	4	—
Hokkai Taiyo Plastic Co., Ltd.	—	2
Sano Plastic Co., Ltd.	—	4
Yamaroku Kasei Industry Co., Ltd.	—	4
Total	5	66

Lighting fixtures with PCB stabilizers

Site	Units in use	No. of units in use converted to alter- native stabilizers
Fundamental Research Laboratory	121	121
Amagasaki Plant	43	43
Shizuoka Plant	230	8
Tsu Plant	125	125
Artlite Kogyo Co., Ltd.	6	6
Total	525	303



PCB storage

Overview of environmental claims and response for fiscal 2001

In accordance with ISO 14001, each Sumitomo Bakelite office and facility sets down rules for external communication. In fiscal 2001, the Company received a total of five complaints related to the environment. Three of these cases were related to foul odors, one to smoke and soot, and one to other issues. In response to the odor-related complaints, we have made improvements to the combustion treatment equipment corresponding to the exhaust gas that is believed to be the cause of the odors. Upon sampling and inspection of the smoke and soot in question, it was determined that it did not originate from Sumitomo Bakelite. These conclusions were explained to the parties that brought the situation to our attention. The remaining case was a request that we scale back the pruning of cherry trees on facility grounds so that local residents may enjoy the blooming of the cherry blossoms. We will continue to strive to enhance the environment of our surrounding communities by making every effort to accurately assess the issues and respond properly.

Green Purchasing



Purchasing operations that place priority on goods and services with minimum 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, which we enacted in April 2001. The following table shows one section of these standards.

Item		Purchasing standard			
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, fax machines	Selected based on level of energy conservation			



Contributions to Social Activities



Each office and 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.



Plant tours were held as part of the local junior high school environmental education program. (Shizuoka Plant)



Company employees served as judges in the local *Hana no Machitsukuri* contest. (Kyushu Bakelite Industry Co., Ltd.)



The Company welcomed local junior high school students as plant trainees for their work-study programs. (Shizuoka Plant)



The Company held a summer *bon-odori* festival, thus promoting interaction with the local community. (Shizuoka Plant)



Plant representatives participated in the local municipality's emergency training. (Amagasaki Plant)



The Company annually donates Japanese pears from an orchard on plant grounds to local welfare facilities. (Utsunomiya Plant)



The director general's award was bestowed upon these employees for their many years of outstanding service in security and accident prevention and safety management activities. (Fundamental Research Laboratory)



The Company has pledged to dispatch a lecturer to a local university to give an ongoing series of lectures on the plastics industry. (Shizuoka Plant)

ISO 14001 Certification



As part of its Responsible Care activities, the Sumitomo Bakelite Group has assembled an ISO 14001-based environmental management system and is pushing through ISO 14001 certification. Already, six domestic sites and eight overseas sites have been certified, and we are now making preparations to attain certification for our laboratories as well. Certified sites are indicated on the map below.



N.V. Durez Europe S.A. (1/2001)

Notes: 1. Dates of certification are indicated in parentheses.

2. Sites in bold are those of the parent company. All others are consolidated affiliates.

Independent Review Report

Asahi & Co

Independent Review Report on the "Environmental Report 2002"

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

1. Purpose and Scope of our Review

We have reviewed the "Environmental Report 2002" (the "Environmental Report") of SUMITOMO BAKELITE CO., LTD. (the "Company") for the year ended March 31, 2002. The review consisted 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 second 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 information supporting the environmental performance indicators and the environmental 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 environmental performance indicators and the environmental 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 of a factory and compared such descriptive information with the data collected by the Company or the data found in certain published materials.

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 environmental performance indicators, or the environmental 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.

Asahi & Co

Tokyo, Japan September 12, 2002

Corporate Data

		as of March 31, 2002	2) O NO. of	employees		
Sumitomo Bakelite Co., Ltd.	¥26.9 billion		(as of	(as of March 31, 2002)		
President & CEO	No. of sh	areholders	2,463			
I suneo Moriya	(as of Ma	arch 31, 2002)		ales (fiscal 2001)		
Established	15,742		¥97.0 bill	ion (non-consolida		
January 25, 1932			¥154.8 b	illion (consolidated		
Major products (categorized by displaying the second se	vision)					
Semiconductor and display material	S					
Epoxy resin molding compounds		\bigcap				
Liquid resin for semiconductors		Fiso	cal 2001 net sales (nor	n-consolidated)		
Carrier tape for semiconductor su	rface mounting	S	emiconductor and display mate laterials for circuitry and electror	rials nic components		
Adhesive tape for semiconductor	chip devices	A	dvanced plastics			
Materials for circuitry and electronic	components		ther	0.2%		
Epoxy resin copper-clad laminate	es					
Phenolic resin copper-clad lamin	ates*		21.1% 23.1	1%		
Flexible printed circuits						
Epoxy resin coating powder						
Advanced plastics			35.8%	^{′°}		
Phenolic resin molding compoun	ds					
Polyvinyl resin molding compoun	ds*					
Urea and melamine resin adhesiv	/es*					
Industrial-use phenolic resin			t oplog			
Formalin		(unit: ¥100 million)	Non-o	consolidated net sales		
Precision-molded products		3,000	Conse	olidated net sales		
Precision-molding dies		2,500				
Quality of life products		2,000	1,927 1,872			
Medical instruments		1,500		1,548		
Medical equipment		1,000	245 1,215	970		
Melamine resin decorative lamina	ntes*	500				
Polyvinyl resin sheets		0				
Multilayer film sheets			666	201		
Packaging products		(FY)	7	5		

Scope of the Environmental Report 2002

Period

Fiscal 2001 (April 1, 2001, to March 31, 2002)

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. Sano Plastic Co., Ltd. Yamaroku Kasei Industry Co., Ltd. Kyushu Bakelite Industry Co., Ltd.

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Japan Communication Accessories Mfg. Co., Ltd.
Tokyo Kakohin Co., Ltd.
SPD Co., Ltd.
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ST Film Sheet Co., Ltd. S.B. Recycle Co., Ltd. Nippon Denkai, Ltd. Advanced Plastics Compound Company SBTEG Co., Ltd. Otomo Chemical Co., Ltd. Sunbake Co., Ltd.



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