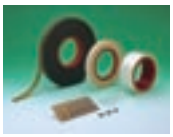
Yamazaki Works

The Yamazaki Works is engaged in the manufacture of products, including semiconductor materials, display and optical materials, printed wiring board processing materials, inorganic chemical materials and products, and medical and pharmaceutical products.

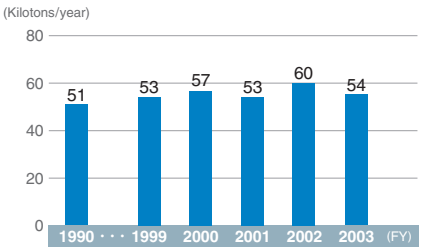
Locations ····· 13-1, Higashi-cho 4-chome, Hitachi-shi, Ibaraki, Japan
Yamazaki Works (Sakuragawa)
3-1, Ayukawa-cho 3-chome, Hitachi-shi, Ibaraki, Japan
Yamazaki Works (Katsuta)
1380-1, Nishihara, Tarasaki, Hitachinaka-shi, Ibaraki, Japan
Yamazaki Works (Kashima)
5-1, Sunayama, Hazaki-cho, Kashima-gun, Ibaraki, Japan
Site area ····· 740,049 m²
Employees ····· 913



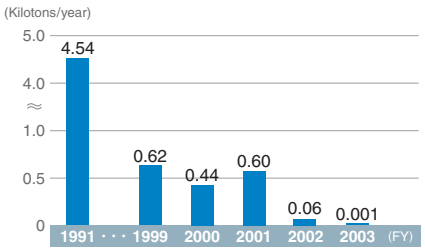




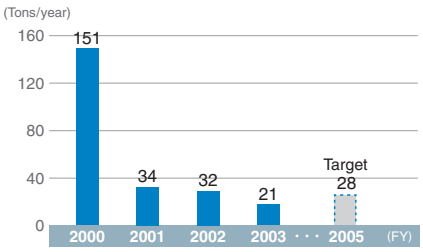
CO_2 emissions



Wastes to landfill



Atmospheric discharges in PRTR-compliant substances



Atmospheric discharge and transfer of PRTR-compliant substances (Atmospheric discharge: 1 ton or more/year)

(FY 2003, in tons/year)

Chemical substance	Atmospheric discharge	Transfer	Total
Toluene	6.6	29.7	36.3
Ethyl benzene	3.3	59.3	62.6
Methyl methacrylate	3.1	1.9	5.0
Xylene	2.8	59.3	62.1
Styrene	2.1	15.8	17.9
Vinyl acetate	1.2	0	1.2

2003 Topics

1. Reduction of chemical substance emissions
In September 2002, we installed an ultra-low-temperature condenser. This condenser cools waste gases containing acetone and other organic solvents to −60°C or lower, so that the gases can be condensed and recovered. By reducing the emission of organic solvent gases into the air, the Works succeeded in reducing offensive odors and reusing the recovered gases in manufacturing processes.

2. Achievement of zero emission
The Yamazaki Works achieved the zero emission of waste as a result of various measures, such as reviewing waste generation processes, strengthening monitoring measures (including inspecting the contents of all plastic rubbish bags for non-burnable waste), complete sorting of waste materials, and recycling of burnt residue from incinerators.

3. Clean-up Campaign
Since 1991, the employees of the Yamazaki Works have been carrying out clean-up campaigns on the streets around the premises. In 2003, these activities were carried out on a monthly basis.

Measures to reduce environmental impact

Reduction of chemical substance emissions combined with odor control

1) Installation of an ultra-low-temperature condenser
Solvents: 48 tons /year (recovered)
Concentration of odor: 99% (reduced)

2) Installation of a film regenerative deodorizing system
Solvents: 129 tons /year (recovered)

3) Improvement of painting method for disk brake
Solvents: 4 tons /year (reduced)

Promotion of energy-saving and waste reduction activities through improving manufacturing methods

1) Improvement of speed and yield of photosensitive dry film coating
Energy-saving: 4.8 kilotons CO_2/year (recovered)

2) Improvement of packaging method for photosensitive dry films
Waste: 120 tons /year (reduced)

3) Continuous graphitization of carbon
Energy-saving: 15.4 kilotons /year (recovered)

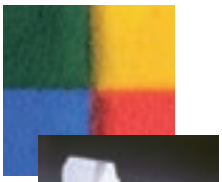
Goi Works

The Goi Works is engaged in the manufacture of products, including semiconductor materials, materials for protective coat of semiconductors and electronic parts, advanced performance resin and materials, molding resin and materials for molding, and automotive-related products.

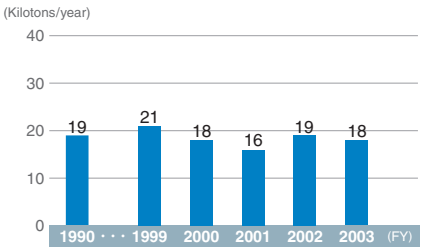
Locations ····· 14, Goiminamikaigan, Ichihara-shi, Chiba, Japan
Site area ····· 105,853 m²
Employees ····· 236



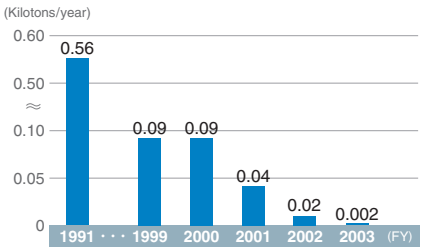




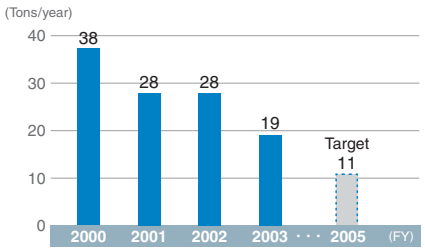
CO_2 emissions



Wastes to landfill



Atmospheric discharges in PRTR-compliant substances



Atmospheric discharge and transfer of PRTR-compliant substances (Atmospheric discharge: 1 ton or more/year)

(FY 2003, in tons/year)

Chemical substance	Atmospheric discharge	Transfer	Total
Styrene	6.3	0	6.3
Methyl methacrylate	3.3	6.9	10.2
Acrylonitrile	3.2	0	3.2
Isoprene	2.3	0	2.3
Maleic anhydride	1.8	1.9	3.7
Toluene	1.1	31.2	32.3

2003 Topics

1. Achievement of zero emission
An activated sludge treatment system for waste liquid was installed in February 2003. The system can transform waste liquid containing a large amount of salts into a cement material, which used to be incinerated by external waste treatment companies, with the burnt residue then sent to landfills. The installation of the system allowed the Works to recycle the sludge into a cement material, thereby achieving zero emission.

2. Streamlining of ISO 9001 and ISO 14001 procedures
By using the same certifying organization (JACO) for ISO 9001 (for the quality management system) and ISO 14001 (for the environmental management system), same-day surveillance became available. This action has increased the efficiency of various procedures. Costs were also reduced by approximately 10%.

3. Improvement of the emergency alarm system
A new fire alarm system was installed to (1) facilitate the accurate location of an accident; (2) allow simultaneous notice of the incident to the whole worksite; and (3) expand the monitoring area to cover the entire Works, including partner companies. As a result, speedier emergency measures became available.

Measures to reduce environmental impact

Promotion of zero emission by activated sludge treatment of waste liquid

1) Implementation of fluidized carrier method → Activated sludge treatment capacity: 30% (improved)

2) Activated sludge treatment of waste liquid → Amount of waste treated by external companies: 600 tons /year (reduced); Amount of waste sent to landfills: 53 tons /year (reduced)

Reduction of chemical substance emissions to the atmosphere

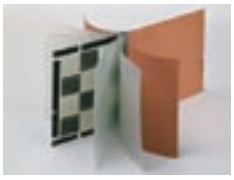
1) Installation of an ammonia absorption refrigerator → Emissions of isoprene: 5 tons /year (reduced)

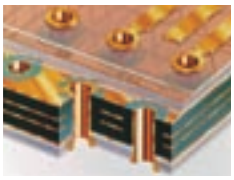
2) Installation of an absorption and desorption system → Emissions of isoprene: 2.5 tons /year (reduced)

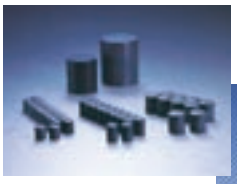
Shimodate Works

The Shimodate Works is engaged in the manufacture of products, including printed wiring board materials, printed wiring boards, semiconductor materials, molding resins, and materials.

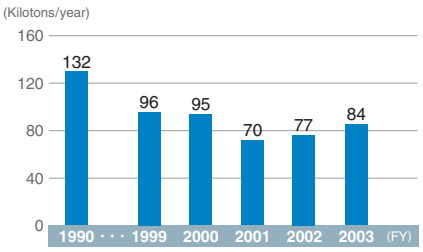
Locations ·····1500, Ogawa, Shimodate-shi, Ibaraki, Japan
Shimodate Works (Minamiyuki)
1772-1, Kanokubo, Yuki-shi, Ibaraki, Japan
Shimodate Works (Shimodate kita)
1150, Goshomiya, Shimodate-shi, Ibaraki, Japan
Site area ····· 433,862 m²
Employees ····· 664



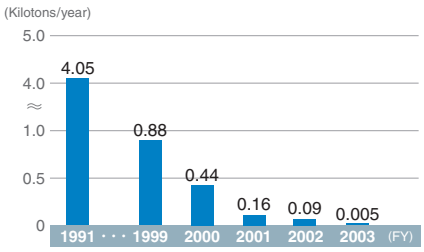




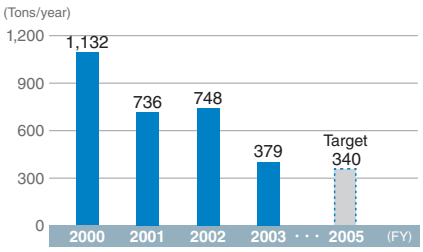
CO_2 emissions



Wastes to landfill



Atmospheric discharges in PRTR-compliant substances



Atmospheric discharge and transfer of PRTR-compliant substances (Atmospheric discharge: 1 ton or more/year)

(FY 2003, in tons/year)

Chemical substance	Atmospheric discharge	Transfer	Total
EGME	330.9	230.9	561.8
N,N-dimethyl formamide	21.5	95.3	116.8
Formaldehyde	12.3	25.5	37.8
Toluene	11.5	4.4	15.9
Xylene	2.2	0	2.2
Phenol	1.3	50.7	52.0

2003 Topics

1. **Reduction of emission of solvent gases to the atmosphere by installing a waste solvent gas combustion system**
   By installing a waste solvent gas combustion system, combustion of waste gases containing EGME,*1 MEK,*2 and other organic solvents became possible, and chemical substance emissions were reduced. Also, the recovery of heat from combustion is contributing to energy-saving practices.
2. **Lowering environmental impact by increasing the sales share of green products**
   The sales share of green products, such as halogen-free multilayer board materials and epoxy molding compounds, was increased to 67% of total sales (9% higher than the previous year). The Works will continue to increase the sale share of green products.
3. **120 employees from the Works participated in biannual clean-up campaigns in the local community.**

Measures to reduce environmental impact

Reduction of chemical substance emissions by waste gas treatment measures combined with resource circulation

1) Installation of solvent recovery and recycling system	Solvents:	1,500 tons	/year (reduced)
2) Installation of combustion system for waste gases from solvents	Solvents:	300 tons	/year (reduced)
3) Coating thinner type of copper clad laminates for printed wiring boards	Solvents:	28 tons	/year (reduced)

Energy-saving through the ESCO system and reduction of waste by changing manufacturing methods

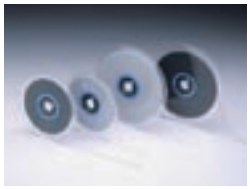
1) Energy-saving through a second co-generation (ESCO) system	Energy-saving:	2,100 kiloliters	/year (reduced)
2) Improvement of boiler combustion efficiency	Energy-saving:	300 kiloliters	/year (reduced)
3) Changing the manufacturing method for printed wiring boards (from solder separation method to tenting method)	Waste:	6 tons	/year (reduced)

*1 EGME: Ethylene glycol monomethyl ether
*2 MEK: Methyl ethyl ketone

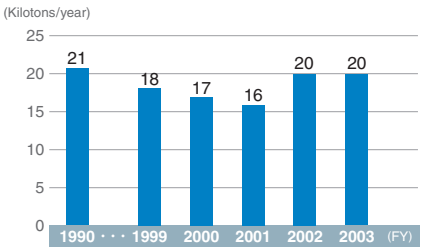
Goshomiya Works

The Goshomiya Works is engaged in the manufacture of products, including display and optical materials, automobile-related products, resin-finished products, and films.

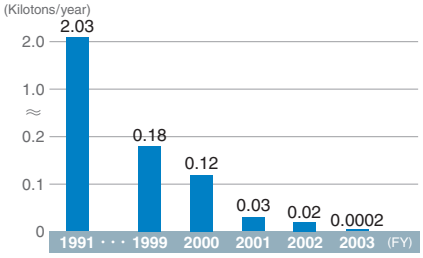
Locations ..... 1150, Goshomiya, Shimodate-shi, Ibaraki, Japan
Goshomiya Works (Shimodate)
1500, Ogawa, Shimodate-shi, Ibaraki, Japan
Site area ..... 259,229 m^2
Employees 468



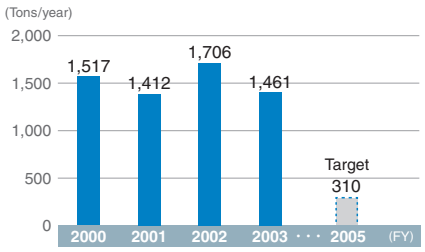
CO_2 emissions



Wastes to landfill



Atmospheric discharges in PRTR-compliant substances



Atmospheric discharge and transfer of PRTR-compliant substances (Atmospheric discharge: 1 ton or more/year)

(FY 2003, in tons/year)

Chemical substance	Atmospheric discharge	Transfer	Total
Toluene	1440.4	442.5	1882.9
Xylene	12.3	0.8	13.1
Ethyl benzene	5.2	0.3	5.5
2-Ethoxyethyl acetate	1.0	0.1	1.1

Measures to reduce environmental impact

Reduction of chemical substance emissions

1) Installation of the second waste solvent gas treatment system — Solvents: 1,320 tons /year of emission (reduced)

2) Discontinuation of use of alternative CFCs by changing manufacturing methods, etc. — CFCs: Total discontinuation of use

3) Promotion of use of alternative, lower hazardous substances in place of organic tin catalysts — Organic tin: 240 kg /year (expected to be substituted)

Energy-saving and waste reduction

1) Improvement of paint liquid treatment and compressor drain treatment — Waste generation: 5 tons /year of emission (reduced)

2) Use of heat from waste solvent gas treatment system — Vapor recovery: 900 kiloliters /year (improved)

3) Construction of energy-saving systems (e.g., ventilation system and 60% recovery of waste heat) in the new guest house, etc. — Energy-saving: 1,500 kwh /year (improved)

2003 Topics

1. Reduction of emissions of toluene to the atmosphere by installing a waste solvent gas treatment system
Following the installation of the first waste solvent gas treatment system in October 2000, a second system was completed in December 2003 to further reduce the environmental impact. The installation of this system allows the Works to treat more than 90% of the toluene emitted to the atmosphere from the Advanced Film Division.

2. Achievement of zero emission
In fiscal 2003, zero emission was achieved by reviewing the waste generation processes, recycling of composite plastics, and other measures.

3. New guest house recognized in the Comfortable Workplace Promotion Plan
The new guest house (completed in March 2004) was recognized in the Comfortable Workplace Promotion Plan by the Ministry of Health, Labor and Welfare. The Works received a certificate from the Director of the Ibaraki Labor Bureau.