

Environmental Data by Murata Plants

In every Murata plant, either domestic or overseas, we maintain the control level satisfied by currently effective ordinances or agreements that are stricter than laws or regulations.

- ① The data for chemical substances in this report are in principle for those substances subjected to the laws or regulations currently effective in the country or region where the Murata plant in question is situated.
- ② The items lacking a target level are those being subjected to voluntary control.
- ③ The water quality data are the values measured at the final discharge point.
- ④ The air quality data are the values measured at the exhaust point.
- ⑤ Unless otherwise specified, the data listed below either with plants in Japan or overseas are those acquired in the period of April 1, 2003 to March 31, 2004.
- ⑥ The fuel consumption values have been obtained by converting the consumptions of heavy oil, kerosene and fuel gas into the equivalent consumption of petroleum. For this purpose, the conversion coefficient for plants in Japan and overseas is the one mentioned in the regular report per "Law Concerning the Rational Use of Energy in Japan".
- ⑦ "Recycling ratio" refers to a ratio of waste (including salable waste) sold or recycled to the total amount released (other than a waste that appears not to be coped with by the efforts of Murata). [See pages 7 and 8](#)
- ⑧ Target levels are taken from the strictest values stipulated by laws, regulations and agreements with local government, with plants either in Japan or overseas.
- ⑨ The "amounts released or transported of substance subjected to PRTR" have been calculated in compliance with the PRTR law in Japan. The results have been rounded off to the order of 0.1 ton.

Murata Manufacturing Co., Ltd. Head Office/Nagaoka Plant

26-10, Tenjin 2-chome, Nagaokakyo-shi,
Kyoto 617-8555, Japan
Electricity consumption: 7,327,209 kWh/year
Fuel consumption: 53 kL/year
Total waste released: 191 t/year
(Annual mean recycling ratio: 99.8%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.5	7.0-7.7*1
BOD	160	1.7	7.7
Zinc	5	0.013	0.013
Lead	0.1	0.001	0.014
Fluorine and its compounds	15*2	0.4	3.3
Nickel	2	0.007	0.028
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	0.003
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine and its compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	0.01	0.02
SOx	1	0.03	0.03
NOx	180	78	78

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Murata Manufacturing Co., Ltd. Yokaichi Plant

4-4-1, Higashiokino, Yokaichi-shi, Shiga 527-8558,
Japan
Electricity consumption: 90,142,320 kWh/year
Fuel consumption: 6,824 kL/year
Total waste released: 2,890 t/year
(Annual mean recycling ratio: 88.5%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.5	7.3	7.0-7.6*1
SS	20	N.D.	N.D.
COD	15	2.7	7.3
BOD	15	1.6	4.6
n-hexane (mineral oil)	3	0.08	0.7
Phenols	1	N.D.	N.D.
Copper	1	0.014	0.021
Zinc	1	0.10	0.23
Soluble iron	10	0.18	0.27
Soluble manganese	10	0.12	0.15
Total chromium	0.1	N.D.	N.D.
Number of coliform groups	3000	58	470
Total nitrogen	8	2.4	3.8
Total phosphorus	0.8	0.02	0.05
Lead	0.1	0.004	0.025
Fluorine and its compounds	8	0.1	0.2
Boron and its compounds	2	0.06	0.09
Ammonia			
Ammonium compounds	730*2	1.8	2.9
Nitrite compounds and nitrate compounds			
Nickel	—	0.024	0.058
Antimony	0.05	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	0.007	0.09
SOx	0.63	N.D.	N.D.
NOx	130	51	100
Lead	7	0.06	0.16
Lead (at border of site)	0.0015	N.D.	N.D.
Phenol (at border of site)	0.2	N.D.	N.D.
Fluorine (at border of site)	0.02	N.D.	N.D.
Cadmium (at border of site)	0.001	N.D.	N.D.
Antimony (at border of site)	0.005	N.D.	N.D.
Nickel (at border of site)	—	N.D.	N.D.
Hydrogen chloride (at border of site)	0.07	N.D.	N.D.
Chlorine (at border of site)	0.03	N.D.	N.D.
Suspended particulate matter (at border of site)	—	61	67

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm; lead, mg/Nm³; others, mg/Nm³
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted.
- [Target level]: No particular standard value per currently effective laws or regulations.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Antimony and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Ethylene glycol monomethyl ether	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Xylene	0.1	0.0	0.0	0.0	0.0	0.0	18.6
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.3	8.5
Chromium and trivalent chromium compounds	0.0	0.0	0.0	0.0	0.0	0.2	0.3
Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	1.2	0.1
Water-soluble copper salts (except complex salts)	0.0	0.0	0.0	0.0	0.0	0.3	2.0
Toluene	0.4	0.0	0.0	0.0	0.0	0.2	72.5
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.8	29.7
Nickel	0.0	0.0	0.0	0.0	0.0	3.0	0.5
Nickel compounds	0.0	0.0	0.0	0.0	0.0	3.2	2.2
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	0.8	0.1
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Formaldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manganese and its compounds	0.0	0.0	0.0	0.0	0.0	2.1	0.7

- Unit: t/year

**Murata Manufacturing Co., Ltd.
Yasu Plant**

2288, Oshinohara, Yasu-cho, Yasu-gun,
Shiga 520-2393, Japan
Electricity consumption: 22,151,751 kWh/year
Fuel consumption: 15,590 kL/year
Total waste released: 10,892 t/year
(Annual mean recycling ratio: 94.4%)

Water quality data:

[Outlets #1 and #2]

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.5	7.4	6.0-8.3*1
SS	25	0.25	3
COD	20	4.5	8.5
BOD	20	2.8	13.0
n-hexane (mineral oil)	3	N.D.	N.D.
Phenols	1	N.D.	N.D.
Copper	1	0.004	0.007
Zinc	1	0.042	0.073
Soluble iron	10	0.09	0.11
Soluble manganese	10	0.022	0.038
Total chromium	0.1	N.D.	N.D.
Hexavalent chromium	N.D.	N.D.	N.D.
Number of coliform groups	3000	4.5	23
Total nitrogen	8	0.41	4.3
Total phosphorus	0.6	0.01	0.05
Cadmium	N.D.	N.D.	N.D.
Cyanide	N.D.	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Arsenic	N.D.	N.D.	N.D.
Mercury	N.D.	N.D.	N.D.
Alkyl mercury compounds	N.D.	N.D.	N.D.
Fluorine and its compounds	6	N.D.	0.3
Boron and its compounds	2	0.04	0.27
Ammonia			
Ammonium compounds	730*2	0.1	2.1
Nitrite compounds and nitrate compounds			
Nickel	—	N.D.	N.D.
Tin	—	N.D.	N.D.
Antimony	0.05	N.D.	N.D.
Thiuram	N.D.	N.D.	N.D.
Simazine	N.D.	N.D.	N.D.
Benthiocarb	N.D.	N.D.	N.D.
Selenium	N.D.	N.D.	N.D.
PCB	N.D.	N.D.	N.D.
Organic phosphides	N.D.	N.D.	N.D.
Dichloromethane	N.D.	N.D.	N.D.
Carbon tetrachloride	N.D.	N.D.	N.D.
1,2-dichloroethane	N.D.	N.D.	N.D.
1,1,1-trichloroethane	N.D.	N.D.	N.D.
1,1,2-trichloroethane	N.D.	N.D.	N.D.
1,1-dichloroethylene	N.D.	N.D.	N.D.
Cis-1,2-dichloroethylene	N.D.	N.D.	N.D.
Trichloroethylene	N.D.	N.D.	N.D.
Tetrachloroethylene	N.D.	N.D.	N.D.
1,3-dichloropropene	N.D.	N.D.	N.D.
Benzene	N.D.	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

[Outlets #3 and #4]

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.5	7.7	6.6-8.4*1
SS	25	2.5	12
COD	15	4.4	8.1
BOD	15	1.9	8.9
n-hexane (mineral oil)	3	N.D.	N.D.
Phenols	1	N.D.	N.D.
Copper	1	0.010	0.025
Zinc	1	0.028	0.046
Soluble iron	10	0.31	0.49
Soluble manganese	10	0.11	0.18
Total chromium	0.1	N.D.	N.D.
Hexavalent chromium	N.D.	N.D.	N.D.
Number of coliform groups	3000	3	15
Total nitrogen	8	0.2	3
Total phosphorus	0.5	0.06	0.27
Cadmium	N.D.	N.D.	N.D.
Cyanide	N.D.	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Arsenic	N.D.	N.D.	N.D.
Mercury	N.D.	N.D.	N.D.
Alkyl mercury compounds	N.D.	N.D.	N.D.
Fluorine and its compounds	6	N.D.	0.2
Boron and its compounds	2	N.D.	0.06
Ammonia			
Ammonium compounds	730*2	N.D.	1.2
Nitrite compounds and nitrate compounds			
Nickel	—	0.017	0.063
Tin	—	N.D.	N.D.
Antimony	0.05	N.D.	N.D.
Thiuram	N.D.	N.D.	N.D.
Simazine	N.D.	N.D.	N.D.
Benthiocarb	N.D.	N.D.	N.D.
Selenium	N.D.	N.D.	N.D.
PCB	N.D.	N.D.	N.D.
Organic phosphides	N.D.	N.D.	N.D.
Dichloromethane	N.D.	N.D.	N.D.
Carbon tetrachloride	N.D.	N.D.	N.D.
1,2-dichloroethane	N.D.	N.D.	N.D.
1,1,1-trichloroethane	N.D.	N.D.	N.D.
1,1,2-trichloroethane	N.D.	N.D.	N.D.
1,1-dichloroethylene	N.D.	N.D.	N.D.
Cis-1,2-dichloroethylene	N.D.	N.D.	N.D.
Trichloroethylene	N.D.	N.D.	N.D.
Tetrachloroethylene	N.D.	N.D.	N.D.
1,3-dichloropropene	N.D.	N.D.	N.D.
Benzene	N.D.	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.05	N.D.	N.D.
NOx	70	13	13
NOx	150	53	77
Lead	7	N.D.	N.D.
Fluorine compounds	3	N.D.	N.D.
Antimony	3	N.D.	N.D.
Ethyl acetate	—	N.D.	N.D.

- Unit: soot and dust, g/Nm³; NOx, ethyl acetate, ppm; lead, fluorine compounds, antimony, mg/Nm³
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Ethylbenzene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ethylene glycol monomethyl ether	0.0	0.0	0.0	0.0	0.0	0.0	2.5
1-octanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Xylene	0.0	0.0	0.0	0.0	0.0	0.0	8.1
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	1.0	0.3
Tetrahydrofuran	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Toluene	0.9	0.0	0.0	0.0	0.0	0.0	20.2
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	5.4
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Hydrazine	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Formaldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- Unit: t/year

Environmental Data by Murata Plants

Murata Manufacturing Co., Ltd. Yokohama Technical Center

18-1, Hakusan 1-chome, Midori-ku Yokohama-shi,
Kanagawa 226-0006, Japan
Electricity consumption: 4,188,384 kWh/year
Fuel consumption: 580 kL/year
Total waste released: 55 t/year
(Annual mean recycling ratio: 98.6%)

Water quality data:

The management level is strictly enough to meet the target level.

Process wastewater

Item	Target level	Average	Max. value
pH	5.0-9.0	7.3	7.0-7.6*1
SS	—	0.6	4
COD	—	2.9	3.2
BOD	—	0.4	0.8
n-hexane (mineral oil)	5	N.D.	0.7
Copper	1	0.006	0.01
Zinc	1	0.007	0.019
Soluble iron	3	0.4	1.4
Soluble manganese	1	0.002	0.007
Total chromium	2	N.D.	N.D.
Hexavalentchromium	0.5	N.D.	N.D.
Lead	0.1	N.D.	0.01
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	15*2	0.1	0.2
Boron and its compounds	25*2	N.D.	0.04
Nickel	1	N.D.	0.007
Tin	—	N.D.	N.D.
Barium	—	N.D.	0.012
Palladium	—	N.D.	N.D.
Strontium	—	0.016	0.03
Zirconium	—	0.02	0.29
Antimony	—	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

Domestic wastewater

Item	Target level	Average	Max. value
pH	5.0-9.0	6.8	6.2-7.4*1
SS	—	81	130
COD	—	90	110
BOD	—	165	190
n-hexane (animal and vegetable oil and fats)	—	21	47

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
NOx B-1 boiler	0.13	0.127	0.127
NOx B-2 boiler	0.055	0.037	0.037
NOx chilled/hot water generator	0.046	0.016	0.028
NOx gas engine	0.111	0.019	0.028

- Unit: NOx, Nm³/h
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Murata Manufacturing Co., Ltd. Tokyo Branch

29-12, Shibuya 3-chome, Shibuya-ku,
Tokyo 150-0002, Japan
Electricity consumption: 1,161,336 kWh/year
Fuel consumption: 58 kL/year
Total waste released: 39 t/year
(Annual mean recycling ratio: 89.3%)

Water quality data:

There is no waste water subject to monitoring, and no measurement is performed for this purpose.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
NOx	45	43	43

- Unit: NOx, ppm
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Fukui Murata Manufacturing Co., Ltd.

1, 13-go, Okamoto-cho, Takefu-shi, Fukui 915-8601, Japan

Electricity consumption: 152,605,000 kWh/year

Fuel consumption: 9,266 kL/year

Total waste released: 6,428 t/year

(Annual mean recycling ratio: 91.9%)

[Takefu Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.4	6.8-7.8*1
SS	45	2	16
BOD	30	2.8	19
n-hexane (mineral oil)	5	N.D.	0.6
Phenols	5	N.D.	N.D.
Copper	3	0.025	0.11
Zinc	5	0.054	0.08
Soluble iron	10	0.064	0.069
Soluble manganese	10	0.06	0.13
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	N.D.	0.007
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.04	0.14
Ammonia			
Ammonium compounds	730*2	5.40	10.3
Nitrite compounds and nitrate compounds			
Nickel	5	0.009	0.075
Tin	5	N.D.	0.02
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Cis-1,2-dichloroethylene	0.4	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
1,3-dichloropropene	0.02	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
NOx	150	70	93

- Unit: soot and dust, g/Nm³; NOx, ppm
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Toluene	5.4	0.0	0.0	0.0	0.0	0.0	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	7.6	5.4
Nickel	0.0	0.0	0.0	0.0	0.0	9.6	6.8
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.5	0.1
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	0.8	0.2
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	8.0	1.6
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	1.8	1.3

- Unit: t/year

[Miyazaki Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.0	6.5-7.8*1
SS	45	1	9
BOD	30	1.5	5.7
n-hexane (mineral oil)	5	N.D.	0.6
Phenols	5	N.D.	N.D.
Copper	3	0.012	0.064
Zinc	5	0.039	0.078
Soluble iron	10	0.27	0.50
Soluble manganese	10	0.052	0.095
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	N.D.	0.009
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.05	0.09
Ammonia			
Ammonium compounds	730*2	1.5	3.0
Nitrite compounds and nitrate compounds			
Tin	5	N.D.	N.D.
Nickel	5	0.010	0.051
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Cis-1,2-dichloroethylene	0.4	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
1,3-dichloropropene	0.02	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
NOx	150	77	95

- Unit: soot and dust, g/Nm³; NOx, ppm
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	0.0

- Unit: t/year

[Shirayama Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.6	7.0-8.0*1
SS	45	1	6
BOD	30	1.6	3.8
n-hexane (mineral oil)	5	N.D.	N.D.
Phenols	5	N.D.	N.D.
Copper	3	0.005	0.005
Zinc	5	N.D.	N.D.
Soluble iron	10	0.42	0.42
Soluble manganese	10	0.035	0.035
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	N.D.	N.D.
Ammonia			
Ammonium compounds	730*2	0.23	0.23
Nitrite compounds and nitrate compounds			
Nickel	5	0.002	0.008
Tin	5	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	1	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.02	N.D.	N.D.
Cis-1,2-dichloroethylene	0.04	N.D.	N.D.
Trichloroethylene	0.03	N.D.	0.001
Tetrachloroethylene	0.1	N.D.	N.D.
1,3-dichloropropene	0.02	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Environmental Data by Murata Plants

Izumo Murata Manufacturing Co., Ltd.

2308, Kaminaoe, Hikawa-cho, Hikawa-gun,
Shimane 699-0696, Japan
Electricity consumption: 143,346,399 kWh/year
Fuel consumption: 4,498 kL/year
Total waste released: 7,336 t/year
(Annual mean recycling ratio: 91.5%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.5	7.4	7.1-7.7*1
SS	70	7	36
COD	50	5.9	21
COD (total pollutant load control)	114.4 kg/day	15.43	48.3
BOD	20	1.7	3.8
n-hexane (mineral oil)	5	N.D.	0.7
Copper	3	0.011	0.022
Number of coliform groups	3000	39	167
Total nitrogen	15	3.9	7
Total nitrogen (total pollutant load control)	84.3 kg/day	12.6	22
Total phosphorus	3	0.31	0.67
Total phosphorus (total pollutant load control)	16.9 kg/day	1.0	1.9
Cadmium	0.1	N.D.	N.D.
Cyanide	0.8	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Fluorine and its compounds	15*2	N.D.	0.3
Boron and its compounds	25*2	0.08	0.21
Ammonia			
Ammonium compounds	730*2	2.6	4.1
Nitrite compounds and nitrate compounds			
Nickel	8	0.08	0.28
Tin	8	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds, ammonia, and ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
SOx	10	N.D.	N.D.
NOx	150	66	110

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Toluene	6.6	0.0	0.0	0.0	0.0	124.8	329.7
Nickel	0.0	0.0	0.0	0.0	0.0	7.4	14.5
Nickel compounds	0.0	0.0	0.0	0.0	0.0	6.2	0.1
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	9.3	0.0
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	2.9	0.0

- Unit: t/year

Toyama Murata Manufacturing Co., Ltd.

345, Ueno, Toyama-shi, Toyama 939-8195, Japan
Electricity consumption: 39,661,000 kWh/year
Fuel consumption: 250 kL/year
Total waste released: 662 t/year
(Annual mean recycling ratio: 90.1%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.3	7.6	7.5-7.8*1
SS	50	N.D.	2
BOD	20	2.9	5.4
n-hexane (mineral oil)	3	N.D.	1.3
Copper	3	0.023	0.033
Number of coliform groups	3000	3	5
Lead	0.1	0.02	0.03
Fluorine and its compounds	15*2	N.D.	N.D.
Boron and its compounds	25*2	0.02	0.05
Ammonia			
Ammonium compounds	730*2	2.9	3.6
Nitrite compounds and nitrate compounds			
Tin	—	0.09	0.96
Nickel	—	N.D.	0.007
1,1,1-trichloroethane	1	N.D.	N.D.
Trichloroethylene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds, ammonia, and ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver	0.0	0.0	0.0	0.0	0.0	0.0	3.5
Chromium and trivalent chromium compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Toluene	4.7	0.0	0.0	0.0	0.0	0.0	18.8
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	23.7
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	3.5

- Unit: t/year

Komatsu Murata Manufacturing Co., Ltd.

93, Hikari-machi, Komatsu-shi, Ishikawa 923-8626, Japan
 Electricity consumption: 18,624,187 kWh/year
 Fuel consumption: 247 kL/year
 Total waste released: 280 t/year
 (Annual mean recycling ratio: 93.1%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.6	6.9-8.3*1
SS	90	1	4
COD	40	4.4	16
BOD	40	6.6	37
Copper	3	0.08	0.18
Zinc	5	0.15	0.23
Soluble iron	10	0.07	0.26
n-hexane (mineral oil)	5	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	N.D.	N.D.
Cadmium	0.1	N.D.	0.001
Lead	0.1	N.D.	0.01
Trichloroethylene	0.3	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	—	N.D.	N.D.
SOx	—	0.16	0.23
NOx	—	82	90

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1

- Unit: t/year

Kanazawa Murata Manufacturing Co., Ltd.

Chi-18, Sodanimachi, Tsurugi-machi, Ishikawa-gun, Ishikawa 920-2101, Japan
 Electricity consumption: 50,257,275 kWh/year
 Fuel consumption: 3,089 kL/year
 Total waste released: 1,049 t/year
 (Annual mean recycling ratio: 100%)

[Kanazawa Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
pH	6.0-8.5	7.8	7.4-8.2*1
SS	70	3	11
BOD	20	2.3	14
n-hexane (mineral oil)	5	N.D.	0.7
Phenols	5	N.D.	N.D.
Copper	3	N.D.	N.D.
Zinc	5	0.08	0.20
Soluble iron	10	N.D.	0.30
Soluble manganese	10	N.D.	0.14
Total chromium	1.6	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	3	27
Cadmium	0.1	N.D.	N.D.
Cyanide	0.8	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	12	0.2	4.7
Boron and its compounds	25*2	0.15	0.24
Ammonia			
Ammonium compounds			
Nitrite compounds and nitrate compounds	730*2	2.9	5.5
Nickel	—	0.029	0.048
Antimony	—	0.008	0.012
Dichloromethane	0.2	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for boron, boron compounds, ammonia, ammonium compounds, nitrite compounds, and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
SOx	6.05	N.D.	N.D.
NOx	150	90	140*1
Hydrogen chloride	60	N.D.	0.16
Fluorine compounds	10	N.D.	0.3

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm; hydrogen chloride, fluorine compounds, mg/Nm³
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted.
- *1: Though below the permissible maximum, the measured value was higher than normal because the operating conditions of the absorption chilled water/hot water generator had not been optimized. This value returned to normal following inspection, adjustment, and re-measurement by the manufacturer.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Monoethanol amine	0.0	0.0	0.0	0.0	0.0	0.0	6.1
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Xylene	0.6	0.0	0.0	0.0	0.0	0.0	0.5
Nonyl phenol	0.0	0.0	0.0	0.0	0.0	0.0	2.0

- Unit: t/year

[Nishikanazawa Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
pH	5.0-9.0	7.6	7.3-7.9*1
SS	600	5	22
BOD	600	14	46
n-hexane (animal and vegetable oils and fats)	30	4.3	12
Phenols	5	N.D.	N.D.
Copper	3	N.D.	N.D.
Zinc	5	0.12	0.28
Soluble iron	10	N.D.	N.D.
Soluble manganese	10	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Lead	0.1	0.02	0.07
Iodine	220	N.D.	1.6
Fluorine and its compounds	8	0.5	1.7
1,1,1-trichloroethane	3	N.D.	N.D.
Temperature	45	18	27

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	0.9	0.16	0.21
NOx	180	78	79

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- Unit: t/year

Environmental Data by Murata Plants

Okayama Murata Manufacturing Co., Ltd.

77, Fukumoto, Oku-cho, Oku-gun,
Okayama 701-4241, Japan
Electricity consumption: 39,789,360 kWh/year
Fuel consumption: 3,715 kL/year
Total waste released: 1,983 t/year
(Annual mean recycling ratio: 94.0%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.5	7.5	7.4-7.7*1
SS	30	N.D.	N.D.
COD	10	2.1	4.8
BOD	10	0.7	0.8
n-hexane (mineral oil)	2	N.D.	0.7
Ammonia			
Ammonium compounds	730*2	2.7	7.5
Nitrite compounds and nitrate compounds			
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Total nitrogen	60	3.2	7.8
Organic nitrogen	—	0.2	0.3
Total phosphorus	8	0.4	1.4
Lead	0.1	N.D.	0.007
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.05	N.D.	N.D.
SOx*1	4.91	N.D.	N.D.
NOx	100	51	53

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
1-octanol	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Toluene	0.2	0.0	0.0	0.0	0.0	0.0	20.9
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	3.3	0.5
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	33.8
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	3.6
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Manganese and its compounds	0.0	0.0	0.0	0.0	0.0	0.2	0.0

Unit: t/year

Kanazu Murata Manufacturing Co., Ltd.

10-28, Hananomori 2-chome, Awara-shi,
Fukui 919-0633, Japan
Electricity consumption: 8,843,748 kWh/year
Fuel consumption: 89 kL/year
Total waste released: 216 t/year
(Annual mean recycling ratio: 81.5%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.3	6.8-7.7*1
SS	120	1.5	6
COD	160	4.6	6.1
BOD	120	3.3	5.2
n-hexane (mineral oil)	5	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	4.3	0.049	0.069
NOx	260	79.5	83

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Landfill	Soil	Sewage	Waste	Recycling
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.4

Unit: t/year

[Natsume Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	8.0	7.8-8.1*1
SS	200	N.D.	N.D.
COD	160	1.1	1.3
BOD	160	1.6	1.9
n-hexane (mineral oil)	5	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Lead	0.1	0.015	0.03

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Unit: t/year

Sabae Murata Manufacturing Co., Ltd.

2-82, 1-chome, Miyuki-cho, Sabae-shi,
Fukui 916-0015, Japan
Electricity consumption: 11,301,000 kWh/year
Fuel consumption: 311 kL/year
Total waste released: 862 t/year
(Annual mean recycling ratio: 99.2%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.7-8.7	7.1	6.6-7.6*1
SS	300	16	33
Copper	3	0.13	0.34
Zinc	5	0.027	0.045
Soluble iron	10	0.035	0.061
Soluble manganese	10	N.D.	0.004
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	0.004	0.03
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	125	23.7	48.8
Iodine	220	0.6	0.6
Fluorine and its compounds	8	1.26	4
Nickel	5	0.14	0.33

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	2.1	0.12	0.17
NOx	260	42	50

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Nickel compounds	0.0	0.0	0.0	0.0	0.0	2.2	0.0

Unit: t/year

Iwami Murata Manufacturing Co., Ltd.

Ohda Yi 795-1, Ohda-cho, Ohda-shi,
Shimane 694-0064, Japan
Electricity consumption: 7,284,858 kWh/year
Fuel consumption: 200 kL/year
Total waste released: 350 t/year
(Annual mean recycling ratio: 93.8%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.9	7.2-8.2*1
SS	200	1.7	5
COD	160	6.6	10
BOD	160	2.5	5.1
n-hexane (mineral oil)	5	0.2	0.6
Copper	3	0.008	0.009
Zinc	5	0.07	0.17
Soluble iron	10	0.57	0.9
Soluble manganese	10	0.06	0.09
Number of coliform groups	3000	151	420
Lead	0.1	0.006	0.019
Nickel	—	0.002	0.008
Tin	—	N.D.	N.D.
Barium	—	0.04	0.06
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	0.001	0.007
Tetrachloroethylene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
There is not release into air subject to monitoring,
and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ethylbenzene	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Xylene	1.8	0.0	0.0	0.0	0.0	0.0	0.1
Styrene	4.0	0.0	0.0	0.0	0.0	0.0	1.4
Toluene	0.7	0.0	0.0	0.0	0.0	0.0	0.3
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.7

- Unit: t/year

Hakui Murata Manufacturing Co., Ltd.

52, Yanagibashi-machi, Hakui-shi,
Ishikawa 925-8555, Japan
Electricity consumption: 6,139,422 kWh/year
Fuel consumption: 100 kL/year
Total waste released: 349 t/year
(Annual mean recycling ratio: 94.3%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	8	7.4-8.2*1
SS	40	7	12
COD	90	4.8	8.7
BOD	40	1.4	2.2
n-hexane (mineral oil)	5	N.D.	N.D.
Copper	3	0.007	0.014
Soluble iron	10	1.9	3.2
Total chromium	2	N.D.	N.D.
Number of coliform groups	3000	24	64
Lead	0.1	0.015	0.016
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	5.08	0.24	0.37
NOx	180	24	24

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Toluene	0.6	0.0	0.0	0.0	0.0	1.7	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	24.6

- Unit: t/year

Himi Murata Manufacturing Co., Ltd.

12-5, Oura, Himi-shi, Toyama 935-0103, Japan
Electricity consumption: 8,469,192 kWh/year
Fuel consumption: 61 kL/year
Total waste released: 370 t/year
(Annual mean recycling ratio: 79.9%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	6.7	6.6-6.8*1
SS	120	1.2	4
BOD	25	3.5	6
n-hexane (mineral oil)	5	0.8	1.1
Copper	1	0.033	0.042
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Lead	0.1	0.014	0.02
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	0.005	0.005
SOx	13	0.020	0.022
NOx	180	80	81

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Ethylbenzene	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Xylene	1.2	0.0	0.0	0.0	0.0	0.1	0.0
Silvers and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Toluene	3.6	0.0	0.0	0.0	0.0	14.3	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	1.7

- Unit: t/year

Environmental Data by Murata Plants

Azumi Murata Manufacturing Co., Ltd.

1020, Takibe, Toyoshina-machi, Minamiazumi-gun, Nagano 399-8294, Japan
 Electricity consumption: 11,653,668 kWh/year
 Fuel consumption: 903 kL/year
 Total waste released: 741 t/year
 (Annual mean recycling ratio: 95.9%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.4	7.2-7.5*1
SS	600	5	7
BOD	600	8.5	8.9
n-hexane (mineral oil)	5	1.7	2.1
Copper	3	0.05	0.1
Zinc	5	0.055	0.095
Soluble iron	10	0.049	0.062
Lead	0.1	0.002	0.003
Fluorine and its compounds	8	0.1	0.1
Boron and its compounds	10	1.44	4.04
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	380	1.7	3.8

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	0.003	0.004
SOx	6.3	N.D.	N.D.
NOx	150	73.7	82

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	12.9
Di-n-butyl phthalate	0.1	0.0	0.0	0.0	0.0	0.0	1.6

• Unit: t/year

Wakura Murata Manufacturing Co., Ltd.

1, U, Ishizaki-machi, Nanao-shi, Ishikawa 926-0173, Japan
 Electricity consumption: 4,389,912 kWh/year
 Fuel consumption: 115 kL/year
 Total waste released: 365 t/year
 (Annual mean recycling ratio: 93.2%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8-8.6	7.8	7.4-8.0*1
SS	90	7.38	24
COD	40	6	20
BOD	40	10	29
n-hexane (mineral oil)	5	0.2	1.3
Copper	3	0.007	0.013
Zinc	5	0.044	0.081
Number of coliform groups	3000	27	74
Total nitrogen	120	21	94
Total phosphorus	16	1.5	4.1
Lead	0.1	0.001	0.008

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	1.5	N.D.	N.D.
NOx	180	65	84

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Tetrahydromethylphthalic anhydride	0.1	0.0	0.0	0.0	0.0	0.4	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	3.9

• Unit: t/year

Tome Murata Manufacturing Co., Ltd.

11-1, Nakae 4-chome, Sanuma, Hasama-cho, Tome-gun, Miyagi 987-0511, Japan
 Electricity consumption: 6,103,251 kWh/year
 Fuel consumption: 124 kL/year
 Total waste released: 34 t/year
 (Annual mean recycling ratio: 100%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.0-9.0	6.5	6.2-6.8*1
SS	600	11	16
BOD	600	13	26
n-hexane (mineral oil)	30	3.6	6.3
Copper	3	0.010	0.021
Zinc	5	0.038	0.077
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.02	0.02
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	380	0.03	0.21

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	0.017	0.024
SOx	3.94	0.038	0.043
NOx	180	68	73

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted

Amount released or transported of substances to be subjected to PRTR:

Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Anamizu Electronics Industries, Ltd.

Chi-53, Ohmachi, Anamizu-machi, Fugeshi-gun, Ishikawa 927-0026, Japan

Electricity consumption: 2,993,145 kWh/year

Fuel consumption: 32 kL/year

Total waste released: 103 t/year

(Annual mean recycling ratio: 88.7%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.4	6.9–7.8*1
SS	200	25	46
COD	80	23.3	48
n-hexane (mineral oil)	5	0.9	1.2
Zinc	5	0.14	0.22
Soluble iron	10	0.14	0.3
Lead	0.1	0.01	0.02
Fluorine and its compounds	15*2	N.D.	N.D.
Boron and its compounds	25*2	0.023	0.03
Ammonia			
Ammonium compounds	730*2	9.4	20.5
Nitrite compounds and nitrate compounds			
Nickel	—	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds, ammonia, and ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	1.1	0.019	0.021
NOx	180	84	86

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Ethylbenzene	0.8	0.0	0.0	0.0	0.0	0.9	0.0
Xylene	0.9	0.0	0.0	0.0	0.0	1.1	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	13.2

- Unit: t/year

Asuwa Electronics Industries, Ltd.

1321, Emorinaka 2-chome, Fukui-shi, Fukui 918-8025, Japan

Electricity consumption: 844,842 kWh/year

Fuel consumption: 0 kL/year

Total waste released: 6 t/year

(Annual mean recycling ratio: 86.8%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.9	7.7–8.1*1
SS	200	5	7
BOD	160	11	12
n-hexane (mineral oil)	5	N.D.	0.6
Number of coliform groups	3000	47	91
Cadmium	N.D.	N.D.	N.D.
Lead	0.1	0.03	0.07
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Environmental Data by Murata Plants

Murata Electronics North America, Inc. State College Operation

1900 W. College Avenue State College, PA 16801-2799 USA

Electricity consumption: 19,832,853 kWh/year
 Fuel consumption: 510 kL/year
 Total waste released: 390 t/year
 (Annual mean recycling ratio: 28.2%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
BOD	—	33	60
Zinc	1.48	N.D.	0.015
Total chromium	1.71	N.D.	N.D.
Hexavalent chromium	1.5	N.D.	N.D.
Copper	2.07	N.D.	N.D.
Cadmium	0.25	N.D.	N.D.
Lead	0.43	N.D.	N.D.
Mercury	0.0002	N.D.	N.D.
Silver	0.24	N.D.	N.D.
Thallium	0.19	N.D.	N.D.
Total cyanide	0.65	N.D.	N.D.
Chloroform	0.08	N.D.	N.D.
Methylene chloride	1	N.D.	N.D.
Toluene	0.5	N.D.	N.D.
Barium	—	1.1	8.5
DBP	—	0.08	0.31
Nickel	3.1	0.2	2
Tin	—	2.8	30.6
Xylene	2.1	N.D.	N.D.
1,1,1-trichloroethane	1.5	N.D.	N.D.
γ-BHC	0.003	N.D.	N.D.
DOP	—	0.006	0.007

- Unit: mg/L
- BOD: Biochemical Oxygen Demand
- DBP: di-n-butyl phthalate
- γ-BHC: γ-benzenehexachloride (lindane)
- DOP: dioctyl phthalate
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Murata Amazônia Indústria E Comércio Ltda. Manaus Operation

Avenida Buriti 5395, Distrito Industrial Manaus- Amazonas Brazil CEP 690750-000

Electricity consumption: 550,200 kWh/year
 Fuel consumption: none
 Total waste released: 10 t/year
 (Annual mean recycling ratio: 24.8%)

Water quality data:

There is no waste water subject to monitoring, and no measurement is performed for this purpose.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Murata Manufacturing (UK) Limited

Thornbury Road, Estover Plymouth, Devon PL6 7PP, United Kingdom

Electricity consumption: 2,015,052 kWh/year
 Fuel consumption: 90 kL/year
 Total waste released: 147 t/year
 (Annual mean recycling ratio: 80.6%)

Water quality data:

There is no waste water subject to monitoring, and no measurement is performed for this purpose.

Air quality data:

Item	Target level	Average	Max. value
CO	—	59	69
CO ₂	—	8.0	8.7
Temperature	—	102	95* ¹

- Unit: CO, ppm; CO₂, %; Temperature, °C
- CO: Carbon monoxide
- CO₂: Carbon dioxide
- *1: Lowest temperature
- [Target level]: No particular standard value per currently effective laws or regulations.

Beijing Murata Electronics Co., Ltd.

No. 11 Tianzhu Road, Tianzhu Airport Industry Zone, Shunyi, Beijing 101312, China
 Electricity consumption: 6,032,100 kWh/year
 Fuel consumption: none
 Total waste released: 245 t/year
 (Annual mean recycling ratio: 15.4%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-8.5	7.2	7.2
SS	50	10	10
COD	60	54	54
BOD	—	17.2	17.2
Color	—	4	4

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Organic matters belonging to hydrocarbon groups other than methanes	120	3	12

- Unit: mg/Nm³

Wuxi Murata Electronics Co., Ltd.

Lot 123-125, Xingchuang 1st Road, Wuxi-Singapore Industrial Park, Wuxi, Jiangsu 214028, China
 Electricity consumption: 11,663,994 kWh/year
 Fuel consumption: 60 kL/year
 Total waste released: 321 t/year
 (Annual mean recycling ratio: 60.1%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-9.0	8.0	7.8-8.2* ¹
SS	400	60.5	60.5
COD	500	328	452* ²
Ammonical nitrogen	35	8.4	8.4
Total lead	1	N.D.	N.D.
Animal/plant oils	100	25	28

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: Though below the permissible maximum, the maximum COD value was higher than normal because personnel had been added to accommodate the expansion of our business operations. To limit the increase in COD, we have been increasing the capacity of our wastewater treatment facilities and reconsidering our wastewater emission methods.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Lead dust	0.7	N.D.	N.D.
NOx	240	N.D.	N.D.
Benzene	12	3.6	3.6
Toluene	40	6.3	6.3
Xylene	70	N.D.	N.D.

- Unit: mg/Nm³; NOx, ppm
- NOx: Nitrogen oxides

Taiwan Murata Electronics Co., Ltd.

225 Chung-Chin Road, Taichung, Taiwan
 Electricity consumption: 7,540,800 kWh/year
 Fuel consumption: 0.8 kL/year
 Total waste released: 326 t/year
 (Annual mean recycling ratio: 83.4%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0-9.0	7.5	7.3-7.9* ¹
SS	80	13	26
COD	250	53.9	89.8
BOD	80	8.4	18.1
Temperature	35°C	27.3	30.9
Number of coliform groups	—	3333	6600
Dissolved Oxygen (DO)	3 min.	3.8	3.2* ²

- Unit: pH, none; number of coliform groups, number/cc; temperature, °C; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- *1: The minimum to maximum pH values.
- *2: The minimum Dissolved Oxygen (DO) value.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Dust (emission point (1))	500	187	209
Dust (emission point (2))	406	1	1
Dust (emission point (3))	357	2	2
Dust (emission point (4))	266	N.D.	N.D.
Lead (emission points (1-3))	10	N.D.	N.D.

- Unit: mg/Nm³
- N.D.: not greater than minimum limit of determination (Not Detected)

Environmental Data by Murata Plants

Murata Electronics Singapore (Pte.) Ltd.

200 Yishun Avenue 7, Singapore 768927, Singapore
 Electricity consumption: 69,409,590 kWh/year
 Fuel consumption: 824 kL/year
 Total waste released: 1,478 t/year
 (Annual mean recycling ratio: 51.2%)

Water quality data:
 The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–9.0	7.9	7.1–8.6*1
SS	400	14	65
COD	600	54	174
BOD	400	26	83
TDS	3000	1785	2936*2
Sulfate	1000	327	676
Fat and oil (hydrocarbon)	60	11	41
Fat and oil (glyceride)	100	10	49
Barium	10	0.66	1.52
Nickel	10	0.29	1.94
Tin	10	0.05	0.36

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- TDS: Total Dissolved Nitrogen
- *1: The minimum to maximum pH values.
- *2: Though below the permissible maximum, an incidental high value was detected owing to a variation in the amount of wastewater released. To limit such variation, we have been reconsidering our wastewater emission methods.

Air quality data:
 The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Ammonia and ammonium compounds	76	N.D.	N.D.
Sulfuric acid (as SO ₂)	100	N.D.	N.D.
Dust	100	N.D.	N.D.
CO	625	8.52	26.6
Copper and its compounds	5	0.08	0.09
Benzene	5	N.D.	N.D.
Cyclohexane	-	N.D.	N.D.
Dibutyl phthalate	-	N.D.	N.D.

- Unit: mg/Nm³; CO, ppm
- CO: Carbon monoxide
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Murata Electronics (Thailand), Ltd.

Northern Region Industrial Estate, 63 Moo 4, Tambol Ban-Klang, Amphur Muang, Lamphun 51000, Thailand
 Electricity consumption: 32,026,803 kWh/year
 Fuel consumption: none
 Total waste released: 1,694 t/year
 (Annual mean recycling ratio: 34.9%)

Water quality data:
 The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.5–9.0	7.0	5.8–7.9*1
SS	200	49	85
COD	750	173	320
BOD	500	88	209
TDS	3000	276	344
TKN	100	22	59
Phenols	1	0.06	0.12
Copper	2	0.1	0.69
Zinc	5	0.09	0.17
Total iron	10	0.19	0.28
Trivalent chromium	0.75	N.D.	N.D.
Hexavalent chromium	0.25	N.D.	N.D.
Lead	0.2	0.03	0.07
Fluoride	5	0.43	0.86
Sulfide	1	0.59	0.73
Cadmium	0.03	N.D.	N.D.
Selenium	0.02	N.D.	N.D.
Barium	1	N.D.	N.D.
Nickel	1	0.05	0.1
Formaldehyde	1	0.19	0.34
Chloride	1	0.04	0.11
Oils and grease	10	2	4
Odor	Not perceived	Satisfactory	—
Color	Not perceived	Satisfactory	—
Temperature	45	33	37

- Unit: pH, none; temperature, °C; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- TDS: Total Dissolved Nitrogen
- TKN: Total Kjeldahl Nitrogen
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
 The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Dust	400	11	112
Lead	30	0.05	0.24
Chlorine	30	N.D.	N.D.
Hydrogen chloride	200	3	3
Carbon monoxide	1000	15	128
Sulfuric acid	100	10	10
Sulfur dioxide	1300	1.4	10
Nitrogen dioxide	470	5.3	19
Xylene	870	N.D.	N.D.

- Unit: mg/Nm³
- N.D.: not greater than minimum limit of determination (Not Detected)

Murata Electronics (Malaysia) Sdn. Bhd.

Plot 15, Bemban Industrial Park, Jalan Bemban, 31000 Batu Gajah, Perak, Malaysia
 Electricity consumption: 4,078,515 kWh/year
 Fuel consumption: 6 kL/year
 Total waste released: 183 t/year
 (Annual mean recycling ratio: 96.7%)

Water quality data:
 The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.5–9.0	7.1	6.5–7.6*1
SS	100	5	15
COD	100	7	17
BOD	50	3	6
Oils and grease	10	2	4

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
 The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Lead	25	0.012	0.017
SPM	400	31	33

- Unit: mg/Nm³
- SPM: Suspended Particulate Matter