Environmental Performance Data

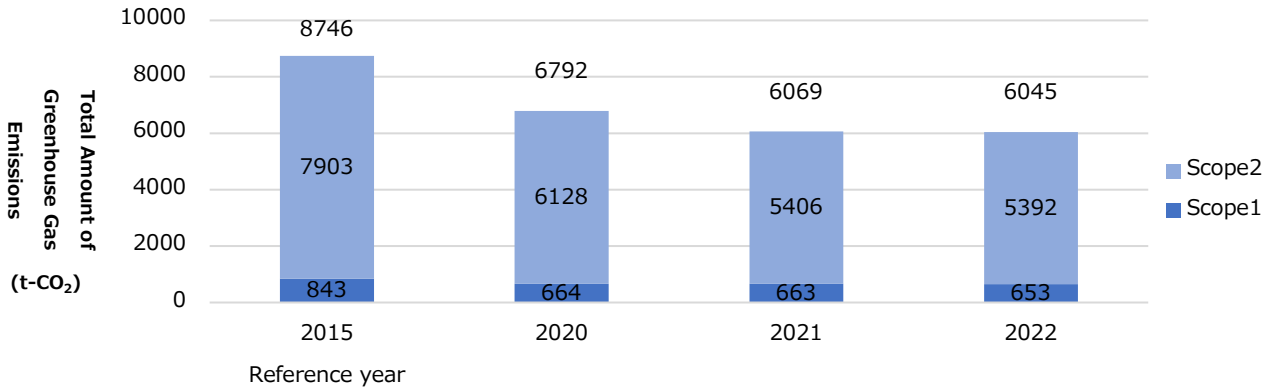
Environmental Conservation

In order to conserve the environment surrounding our sites and comply with the regulations, we perform ongoing management of our facilities, as well as properly manage chemical substances to prevent pollution.
Also, we regularly monitor the burden on the environment from our sites by assessing the actual amount of greenhouse gases, waste material, and water resources emitted/used in business.

Environmental Burden

Total Amount of Greenhouse Gas (GHG) Emissions (Scope 1, Scope 2)

The amount of greenhouse gas emissions from all our sites in Japan is converted to a CO2 equivalent weight as shown below.



The above greenhouse gas emissions amount (t-CO_2) is calculated by taking the total of the WRI/WBCSD GHG Protocol Scope 1 and Scope 2 emission amounts.

- Scope 1: Gasoline and light oil (for company-owned cars used on the company premises), liquefied petroleum gas (dining hall kitchen), town gas (heating and cooling), kerosene (heating)
- Scope 2: Purchased electricity and heating (district cooling and heating at the Yokohama headquarters)

[Conversion factor] Purchased electricity: Uses each electric company's conversion factor for the Act on the Rational Use of Energy report
Liquefied petroleum gas: 5.98 tons of CO_2/1,000 ㎥ (fixed), town gas: 2.23 tons of CO_2/1,000 ㎥ (fixed),
heat: 0.057 tons of CO_2/GJ (fixed), gasoline: 2.32 tons of CO_2/kL (fixed),
light oil: 2.619 tons of CO_2/kL (fixed), kerosene: 2.49 tons of CO_2/kL (fixed)

Electricity Consumption

The amounts of electricity consumption at our main sites in Japan are shown below.

	Unit	Fiscal 2015 Reference year	Fiscal 2020	Fiscal 2021	Fiscal 2022
Total electricity	MWh	13636	12741	11849	11663
Renewable electricity	MWh	0	0	321	690
Renewable energy ratio	%	0.0	0.0	2.7	5.9

Total Amount of Greenhouse Gas (GHG) Emissions (Scope 3)

The amount of greenhouse gas emissions is converted to a CO2 equivalent weight as shown below.

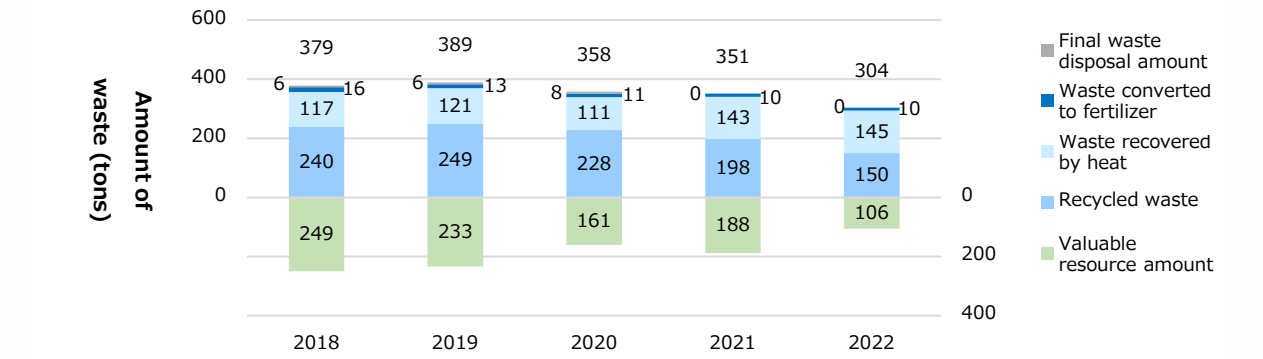
Category	Category Name	Amount of Emission (t-CO_2)				Ratio of amount for each category to entire amount for Scope 3 in fiscal 2022 (%)
		Fiscal 2015 Reference year	Fiscal 2020	Fiscal 2021	Fiscal 2022	
Category 1	Purchased goods and services	110,727.4	101,339.2	111,633.0	125,254.0	86.7
Category 2	Capital goods	4,580.3	7,554.4	1,924.8	4,127.3	2.9
Category 3	Fuel- and energy-related activities not included in Scope 1 or Scope 2	5,331.4	4,549.2	4,485.0	4,335.5	3.0
Category 4	Upstream transportation and distribution	611.7	678.3	1,152.9	491.0	0.3
Category 5	Waste generated in operations	62.1	50.5	50.8	44.0	0.0
Category 6	Business travel	991.5	161.5	421.1	703.8	0.5
Category 7	Employee commuting	3,997.2	4,289.3	2,451.9	2,453.2	1.7
Category 8	Upstream leased assets	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Category 9	Downstream transportation and distribution	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Category 10	Processing of sold products	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Category 11	Use of sold products	8,816.9	10,138.8	11,102.9	7,075.4	4.9
Category 12	End-of-life treatment of sold products	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Category 13	Downstream leased assets	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Category 14	Franchises	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Category 15	Investments	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Total		135,118.6	128,761.2	133,222.4	144,484.1	100.0

Amount of Waste

The amount of waste for all our sites in Japan is shown below. We achieved zero waste emissions (*3) in all our offices and factories.

We check that after thermal recycling by means such as the conversion of general combustible matter to RDF (Refuse Derived Fuel), the residue is put to effective use as base material for cement and paving materials.

We set a goal for 5% or more reduction in the amount of waste, down to 527 tons or less from the 555 ton average of fiscal years 2012 to 2014. Our actual results from fiscal 2022 were 304 tons (-42%).



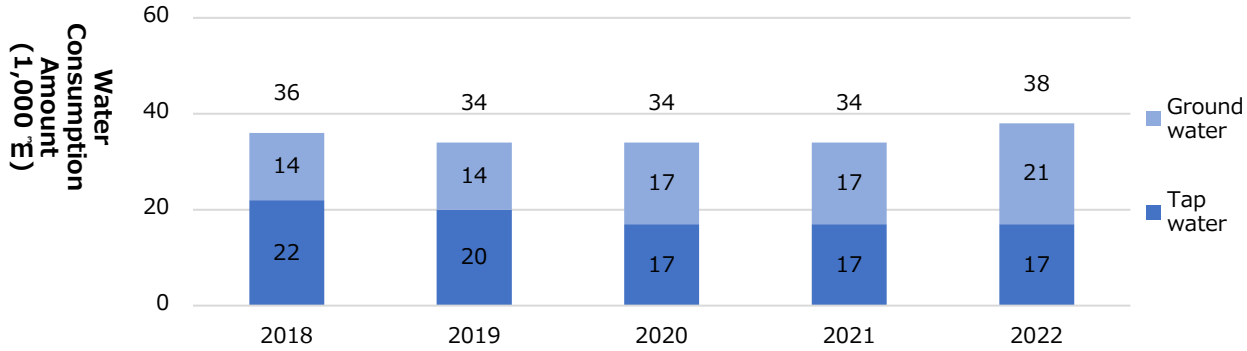
(*3) Zero waste emission means that waste produced by our sites is all used effectively, such as through recycling, and disposal by simple incineration or landfills is less than 0.5%. The term "Waste", as used above, specifically includes 11 sub-types, such as sludge waste, oil waste, acid waste, alkali waste, plastic waste, paper waste, metal waste, timber waste, textile waste, glass and ceramic waste, and meat and vegetable waste (cafeteria kitchen waste). Medical waste is not included in this definition.

(Note) The valuable resource amount means the amount of waste resources sold off for monetary compensation. The final waste disposal amount means the remaining waste (landfill) other than recycled waste, waste recovered by heat, and simple incinerated waste.

Water Consumption/Water Drainage

The amount of water consumption and water drainage for our main sites in Japan is shown below.

■Water Consumption Amount

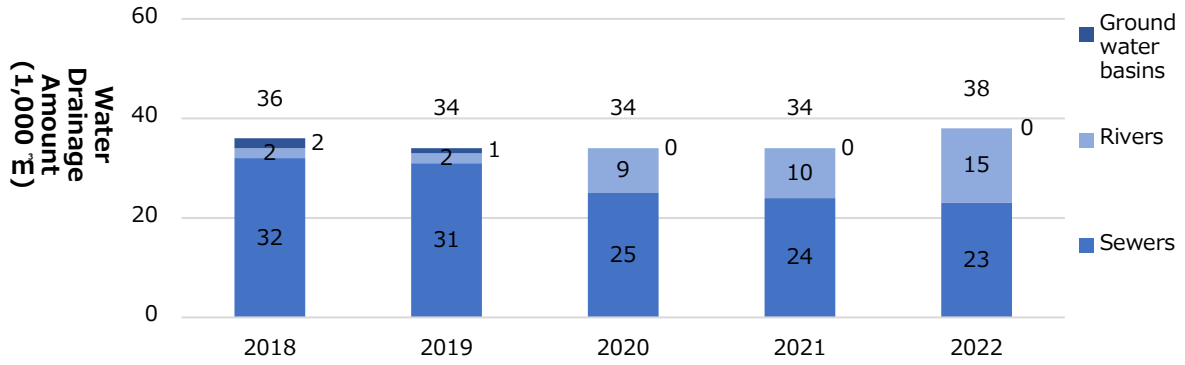


At each site, we use tap water for domestic use and to humidify the office in winter. At our Headquarters, we use ground water to water our plants in summer, and at our Headquarters and the ProDeS Center, we use ground water to melt snow. We use water for our every day needs at our company sites, not for industrial purposes.

For our total water consumption amount, we set a target to reduce it by 1% or more in fiscal 2022 to an amount of 35,600 ㎥ or less compared to the reference year of 2018. In fiscal 2022, more ground water was used to melt snow due to heavier snowfalls that year. As a result, we were not able to achieve our target, with our actual consumption results for fiscal 2022 at 38,000 ㎥ (+2.4%).

Our water is used for every day purposes. We do not have any water that can be reused or recycled.

■Water Drainage Amount



Tap water used for domestic uses drains into the sewer. Ground water used to melt snow drains into the rivers, and water used to water plants and vegetable drains underground. We have been continuously monitoring and measuring water quality by using our own self management values in order to ensure the quality of water that drains from our main sites.

In fiscal 2022, more ground water was used to melt snow. Therefore, more water was drained to rivers.

Results in Handling of Chemical Substances

We tally the amount of chemical substances that are used for purposes such as designing, developing, evaluating, manufacturing, maintaining, or cleaning up the premises no matter how much there is.

■Chemical Substances Subject to PRTR Law

The amount of chemical substances subject to the PRTR law that were handled in fiscal 2022 is shown below. None of the chemical substances were in excess of the annual values which require the relevant prefectural authorities to be notified (*4).
Furthermore, no Special Class I Specified Chemical Substances were handled.
We set a goal to limit the amount we handle to less than the average of fiscal years 2012 to 2014, which was 0.132 tons. Our actual results from fiscal 2022 were 0.098 tons (-9%).

Annual Handled Amount of Chemical Substances Subject to the PRTR Law (Class I Specified Chemical Substances) (Tons)

Chemical Substance Name	Fiscal 2018	Fiscal 2019	Fiscal 2020	Fiscal 2021	Fiscal 2022
Sodium linear alkylbenzensulfonate	0.034	0.031	0.044	0.031	0.031
Polyoxyethylene alkyl ether	0.021	0.022	0.022	0.019	0.023
2-aminoethanol	0.021	0.026	0.027	0.025	0.019
Silver and its water-soluble compounds	0.028	0.039	0.031	0.022	0.019
Methyl methacrylate	0.000	0.000	0.006	0.006	0.004
Methylenebis (4,1-phenylene) diisocyanate	0.000	0.000	0.000	0.000	0.001
Sodium dodecyl ether sulfate	0.002	0.001	0.001	0.001	0.001
2,6-Di-tert-butyl-4-cresol	0.000	0.000	0.000	0.001	0.000
Methacrylic acid	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.001	0.001	0.001	0.001	0.000
Other	0.016	0.002	0.001	0.001	0.000
Total	0.135	0.123	0.136	0.107	0.098

(*4) 1 ton or more per year for Class I Specified Chemical Substances, 0.5 tons or more per year for Special Class I Specified Chemical Substances.

■VOC (Volatile Organic Compound)

Although there are no specific facilities that are subject to VOC emission control, we make an independent effort to maintain and manage the amount of VOCs handled.
We set a goal to limit the amount we handle to less than the average of fiscal years 2012 to 2014, which was 1.266 tons. Our actual results from fiscal 2022 were 0.614 tons (-35%).

Annual Amount of VOC Handled (Tons)

Chemical Substance Name	Fiscal 2018	Fiscal 2019	Fiscal 2020	Fiscal 2021	Fiscal 2022
Isopropyl alcohol	0.746	0.770	0.790	0.809	0.465
Butyl acetate	0.056	0.066	0.046	0.058	0.074
Ethanol	0.150	0.134	0.097	0.053	0.052
Other	0.030	0.043	0.017	0.018	0.023
Total	0.982	1.013	0.950	0.938	0.614

■Greenhouse Gases

The amount of greenhouse gases that were handled in fiscal 2022 is shown below. The annual amount handled in fiscal 2022 is converted to a CO_2 equivalent weight of approximately 6 tons. Our reduction target for the amount (tons) of greenhouse gas emissions handled applies to reduction at all our sites.

Annual amount of greenhouse gases handled (Converted to CO2) (Tons)

Chemical Substance Name	Fiscal 2018	Fiscal 2019	Fiscal 2020	Fiscal 2021	Fiscal 2022
1,1,1,2-tetrafluoroethane (HFC-134a)	23.271	13.974	11.517	7.061	6.155
1,1-Difluoroethane (HFC-152a)	0.023	0.000	0.054	0.059	0.233
CO_2 not from energy	0.001	0.000	0.001	0.000	0.000
Total	23.295	13.974	11.572	7.120	6.388

Compliance with All Environmental Laws and Regulations

In order to conserve the environment surrounding our sites and comply with laws and regulations, we will regularly measure water quality, noise output, and vibration output.

Water Quality Measurement Results

We make efforts to maintain the water quality of drainage from Headquarters, the ProDeS Center, and the PFU Techno Wise Takamatsu Plant. The results of the measurement did not exceed the legal regulations, and there was no problem with water quality.

	Regulated substances	Unit	Regulation value	Fiscal 2022 measured value	Evaluation
Headquarters (Bld. A & B)	Hydrogen ion concentration (pH)	-	Between 5 & 9	8.6	
	Biochemical oxygen demand (BOD)	mg/L	Less than 600	300	
	Suspended substances (SS)	mg/L	Less than 600	220	
	Mineral oil	mg/L	5 or less	Less than 0.5	✓
	Animal and plant oils	mg/L	30 or less	9.8	
	Ammonium-nitrogen, nitrite-nitrogen and nitrate-nitrogen content	mg/L	Less than 380	33	
Headquarters (Bld. E)	Hydrogen ion concentration (pH)	-	Between 5 & 9	7.5	
	Biochemical oxygen demand (BOD)	mg/L	Less than 600	18	
	Suspended substances (SS)	mg/L	Less than 600	50	
	Mineral oil	mg/L	5 or less	Less than 0.5	✓
	Animal and plant oils	mg/L	30 or less	0.8	
	Ammonium-nitrogen, nitrite-nitrogen and nitrate-nitrogen content	mg/L	Less than 380	Less than 1	
Headquarters (Anechoic Chamber)	Hydrogen ion concentration (pH)	-	Between 5 & 9	7.7	
	Biochemical oxygen demand (BOD)	mg/L	Less than 600	3.6	
	Suspended substances (SS)	mg/L	Less than 600	Less than 1	
	Mineral oil	mg/L	5 or less	Less than 0.5	✓
	Animal and plant oils	mg/L	30 or less	Less than 0.5	
	Ammonium-nitrogen, nitrite-nitrogen and nitrate-nitrogen content	mg/L	Less than 380	Less than 1	
ProDeS Center	Hydrogen ion concentration (pH)	-	Between 5 & 9	7.5	
	Biochemical oxygen demand (BOD)	mg/L	Less than 600	290	
	Suspended substances (SS)	mg/L	Less than 600	210	
	Mineral oil	mg/L	5 or less	Less than 0.5	✓
	Animal and plant oils	mg/L	30 or less	23	
	Ammonium-nitrogen, nitrite-nitrogen and nitrate-nitrogen content	mg/L	Less than 380	21	
PFU Techno Wise Takamatsu Plant (Bld. 2 & 3)	Hydrogen ion concentration (pH)	-	Between 5 & 9	7.5	
	Biochemical oxygen demand (BOD)	mg/L	Less than 600	Less than 1	
	Suspended substances (SS)	mg/L	Less than 600	2	
	Mineral oil	mg/L	5 or less	Less than 1	
	Animal and plant oils	mg/L	30 or less	Less than 1	✓
	Ammonium-nitrogen, nitrite-nitrogen and nitrate-nitrogen content	mg/L	Less than 380	0.6	

■Noise/Vibration Measurement

At our headquarters, we regularly measure the noise and vibration generated by our business activities (once every five years).
We performed measurements on June 10, 2020, and confirmed that all values did not exceed the legal regulations (next measurement planned for fiscal 2025).

Noise Measurement Results

	Noise	Unit	Regulation value	Fiscal 2020 measured value				Evaluation
				Bld. E north side	Bld. A southwest side	Anechoic chamber north side	South side parking lot	
Headquarters	Daytime	dB	65 or less	34	47	46	-	✓
	Morning	dB	60 or less	34	47	46	-	
	Evening	dB	60 or less	34	47	46	-	
	Nighttime	dB	50 or less	34	47	46	-	
	Daytime	dB	60 or less (*5)	-	-	-	40	
	Morning	dB	55 or less (*5)	-	-	-	40	
	Evening	dB	55 or less (*5)	-	-	-	40	
	Nighttime	dB	45 or less (*5)	-	-	-	40	

(*5) Because the parking lot is in an area within 50m of the borders of school grounds, the legal regulations are five decibels lower.

Vibration Measurement Results

	Vibration	Unit	Regulation value	Fiscal 2020 measured value				Evaluation
				Bld. E north side	Bld. A southwest side	Anechoic chamber north side	South side parking lot	
Headquarters	Daytime	dB	65 or less	27	30	31	-	✓
	Nighttime	dB	50 or less	27	30	31	-	
	Daytime	dB	60 or less (*6)	-	-	-	29	
	Nighttime	dB	45 or less (*6)	-	-	-	29	

(*6) Because the parking lot is in an area within 50m of the borders of school grounds, the legal regulations are five decibels lower.