

●Environmental Data for Individual Plants and Group Companies in FY2022

**IBIDEN Engineering Co., Ltd**

< Wastewater Measurement >

Item	Unit	National standard	City standard	Voluntary standard	Average	Maximum	Note
pH	-	5.0~9.0	5.0~9.0	5.0~9.0	7.3	7.5	
BOD	mg / L	600	600	600	1.3	1.9	
SS	mg / L	600	600	600	3.0	8	
Copper and copper compounds	mg / L	3	3	3	0.01	0.02	
Lead and lead compounds	mg / L	0.1	0.1	0.1	0.01	0.01	
Chromium	mg / L	2	2	2	0.02	0.02	
Hexavalent chromium	mg / L	0.5	0.5	0.5	0.02	0.02	
Fluorine and fluorine compounds	mg / L	8	8	8	0.34	1.6	
Cyanide compounds	mg / L	1	1	1	0.01	0.01	
1·1·1 Trichloroethane	mg / L	3	3	3	0.0005	0.0005	
1·1·2 Trichloroethane	mg / L	0.06	0.06	0.06	0.0006	0.0006	
1.3 Dichloropropanes	mg / L	0.02	0.02	0.02	0.0002	0.0002	
1·2 Dichloroethane	mg / L	0.04	0.04	0.04	0.0004	0.0004	
1·1 Dichloroethylene	mg / L	1	1	1	0.002	0.002	
Cis- 1·2 Dichloroethylene	mg / L	0.4	0.4	0.4	0.004	0.004	
Trichloroethylene	mg / L	0.3	0.3	0.3	0.002	0.003	
Tetrachloroethylene	mg / L	0.1	0.1	0.1	0.0005	0.0005	
Dichloromethane	mg / L	0.2	0.2	0.2	0.002	0.002	
Carbon tetrachloride	mg / L	0.2	0.2	0.2	0.0002	0.0002	
Cadmium and cadmium compounds	mg / L	0.03	0.03	0.03	0.01	0.01	
Phenol	mg / L	5	5	5	0.1	0.1	
n-H mineral oils	mg / L	5	5	5	1	1	
Arsenic and arsenic compounds	mg / L	0.1	0.1	0.1	0.01	0.01	
Alkyl mercury	mg / L	ND	ND	ND	ND	ND	
Organic phosphorus	mg / L	1	1	1	0.01	0.01	
Polyhalogenated biphenyl	mg / L	0.003	0.003	0.003	0.0005	0.0005	
Zinc and zinc compounds	mg / L	2	2	2	0.03	0.06	
Manganese and manganese compounds	mg / L	10	10	10	0.06	0.18	
Benzene	mg / L	0.1	0.1	0.1	0.001	0.001	
Boron and boron compounds	mg / L	10	10	10	0.1	0.1	
1,4-dioxane	mg / L	0.5	0.5	0.5	0.05	0.05	

●Environmental Data for Individual Plants and Group Companies in FY2022

**IBIDEN Bussan Co., Ltd**

<Wastewater Measurement >

Item	Unit	National standard	City standard	Voluntary standard	Average	Maximum	Note
pH	-	5.8~8.6	5.8~8.6	6.1~8.3	7.4	7.7	
BOD	mg / L	100	100	80	2.9	9.8	
COD	mg / L	160	-	128	5.1	8.8	
SS	mg / L	90	90	72	1	1	
n-H mineral oils	mg / L	10	10	8	1	1	
Nitrogen	mg / L	120	120	48	3.9	8.7	
Phosphorus	mg / L	16	16	4.8	0.1	0.1	

<Air Measurement >

Item	Equipment	Unit	National standard	City standard	Voluntary standard	Average	Maximum	Note
Soot	Boiler No.1	g/m <sup>3</sup> N	0.3	0.3	0.24	0.01	0.012	
NOx	Boiler No.1	ppm	180	180	144	65	67	
SOx	Boiler No.1	K-value	11.5	11.5	9.2	2.1	2.1	

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**IBIDEN Jushi Co., Ltd**

<Air Measurement>

Item	Equipment	Unit	National standard	City standard	Voluntary standard	Average	Maximum	Note
Soot	Boiler No.1	g/m <sup>3</sup> N	0.3	0.3	0.24	0.007	0.007	
	Boiler No.3	g/m <sup>3</sup> N	0.3	0.3	0.24	0.007	0.011	
NOx	Gas Turbine	ppm	70	70	65	44	45	
	Boiler No.1	ppm	180	180	144	43	43	
	Boiler No.3	ppm	180	180	144	51	64	
SOx	Boiler No.1	m <sup>3</sup> N/h	0.81	0.81	1.65	0.12	0.12	
	Boiler No.3	m <sup>3</sup> N/h	0.81	0.81	0.65	0.03	0.039	

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**IBIDEN Philippines, Inc.**

<Wastewater Measurement >

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
pH	-	6.5 - 9.0	6.7-8.8	7.7	8.4	
BOD	mg / L	500	400	44.4	167	
COD	mg / L	800	700	91.8	241	
Total Suspended Solids, TSS	mg / L	350	280	13.8	55	
Copper	mg / L	1	0.8	0.07	0.3	
Lead	mg / L	0.3	0.24	0.03	0.05	
Cyanide compounds	mg / L	0.2	0.16	0.07	0.19	
Nickel	mg / L	0.5	0.4	0.02	0.02	
Color	mg / L	150	120	8.2	50	
Oil & Grease	mg / L	5	4	1.7	4	
Iron (Dissolved)	mg / L	10	8	0.10	0.23	
Manganese (Dissolved)	mg / L	1	0.8	0.19	0.59	

<Air Measurement>

Item	Unit	National standard	Voluntary standard	Average	Maximum	Note
NOx	mg/m <sup>3</sup>	2000	1600	17	50	
SOx	mg/m <sup>3</sup>	500	400	24	32	

<Noise Measurement>

Time	Unit	National standard	Voluntary standard	Average	Maximum	Note
Morning (5am - 9am)	mg/m <sup>3</sup>	65	58	55.0	57.1	
Daytime (9am - 6 pm)	mg/m <sup>3</sup>	70	63	55.2	57.6	
Evening (6 pm - 10 pm)	mg/m <sup>3</sup>	65	58	54.4	57.2	
Nighttime (10 pm - 5 am)	mg/m <sup>3</sup>	60	54	52.6	53.7	

●Environmental Data for Individual Plants and Group Companies in FY2022

**IBIDEN Electronics Malaysia Sdn. Bhd.**

< Wastewater Measurement >

Item	Unit	National standard	Voluntary standard	Average	Maximum	Note
pH	-	5.5 - 9.0	6.2-8.3	7.09	7.7	
BOD	mg / L	50	50	3.87	12	
COD	mg / L	200	100	9.21	63	
Total Suspended Solids, TSS	mg / L	100	100	24.7	77	
Copper	mg / L	1	0.5	0.05	0.2	
Lead	mg / L	0.5	0.5	0	0	
Chromium (Hexavalent)	mg / L	0.05	0.05	0	0	
Cyanide compounds	mg / L	0.1	0.1	0.0013	0.07	
Nickel	mg / L	1	1	0.21	0.81	
Color	ADMI	200	200	0	0	
Oil & Grease	mg / L	10	10	1.71	6	
Iron (Dissolved)	mg / L	5	5	0.30	3.18	
Manganese (Dissolved)	mg / L	1	1	0.05	0.23	
Formaldehyde	mg / L	2	2	0.04	0.26	

<Noise Measurement>

Time	Unit	National standard	Voluntary standard	Average	Maximum	Note
Daytime (7am - 10 pm)	mg/m <sup>3</sup>	75	75	60.7	64.8	
Nighttime (10 pm - 7 am)	mg/m <sup>3</sup>	75	75	60.9	64.5	

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**IBIDEN Fine Ceramics (Suzhou) Co.,Ltd.**

< Wastewater Measurement >

測定項目	単位	国の基準	市の基準	自主基準	平均値	最大値	備考
PH	-	6-9		6-9	7.2	7.3	
COD	mg / L	500		500	22.6	25	
SS	mg / L	400		400	24.6	26	
NH3-N	mg / L	45		45	3.6	3.7	
TP	mg / L	8		8	0.2	0.3	
TN	mg / L	70		70	4.2	4.3	
petroleum	mg / L	1		1	ND	ND	

●Environmental Data for Individual Plants and Group Companies in FY2022

**IBIDEN Graphite Korea Co., Ltd.**

<Air Measurement >

Item	Unit	National regulations	Voluntary standard	Average	Maximum	Note
NOx	ppm	150	150	5.3	17.8	
SOx	ppm	200	200	0.7	14.2	
PM	mg/m <sup>3</sup>	30	30	1.0	2.5	

●Environmental Data for Individual Plants and Group Companies in FY2022

**IBIDEN Hungary Kft.**

< Wastewater Measurement >

Item	Unit	National standard	Industrial park standard	Voluntary standard	Average	Maximum	Note
pH	-	6.5-10.0	6.5-10.0	6.5-10.0	8.3	8.4	
Electrical conductivity	μS/ cm	2,500	2,500	2,500	1,121	1,347	
Available chlorine	mg / L	30	30	30	0.1	0.1	
COD	mg / L	1,000	1,000	1,000	182.5	208	
BOD	mg / L	500	500	500	46.5	56	
Total inorganic nitrogen	mg / L	120	120	120	22.7	41	
Total nitrogen	mg / L	150	150	150	30.4	44	
Ammonium	mg / L	100	100	100	26.7	41	
Total phosphorus	mg / L	20	20	20	6.3	9	
Sulphate	mg / L	400	400	400	22.0	34	
Organic solvent extract (grav.)	mg / L	50	50	50	4.5	5	
Phenols	mg / L	10	10	10	0.03	0.03	
Iron	mg / L	20	20	20	0.54	0.59	
Manganese	mg / L	5	5	5	0.03	0.03	
Sulphide	mg / L	1	1	1	0.07	0.07	
Total dissolved solid	mg / L	2,500	2,500	2,500	787	1,040	
Total solids	mg / L	2,500	2,500	2,500	450	500	
Fluoride	mg / L	50	50	50	1.38	2.60	
Tars	mg / L	5	5	5	<2	<2	

<Noise Measurement >

Time	Unit	National standard	Industrial park standard	Voluntary standard	Average	Maximum	Note
Daytime	mg/m <sup>3</sup>	50	50	50	33.8	38	
Nighttime	mg/m <sup>3</sup>	40	40	40	33.8	38	

●Environmental Data for Individual Plants and Group Companies in FY2022

**IBIDEN Mexico, S.A. de C.V.**

< Wastewater Measurement >

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
pH	-	5.0 - 10	6.5 - 8.5	7.9	8.4	
Temperature	°C	40	20 - 35	24	29	
BOD	mg/L		630	147	321	
COD	mg/L	350	350	44	109	
Total Suspended Solids, TSS	mg/L	150	100	22	87	
Total Nitrogen, Kjeldahl	mg/L		30	1.7	4.5	
Total Nitrogen	mg/L	40	30	2.0	4.9	
Total phosphorous	mg/L	20	20	1.1	1.2	
Oils and greases (Organic solvent extract)	mg/L	15	15	5	5	
Settleable solids (10 min)	mg/L	1	1	0.25	1	
Total arsenic	mg/L	0.2	0.2	0.02	0.02	
Total cadmium	mg/L	0.2	0.2	0.02	0.02	
Total cyanide	mg/L	2	2	0.03	0.03	
Total copper	mg/L	4	4	0.03	0.11	
Hexavalent chromium	mg/L	1	1	0.1	0.1	
Total Mercury	mg/L	0.01	0.01	0.001	0.001	
Total Niquel	mg/L	2	2	0.02	0.02	
Total Lead	mg/L	0.5	0.5	0.02	0.02	
Total Zinc	mg/L	10	10	0.1	0.18	
Fecal coliforms	NMP/L	10,000,000	10,000,000	215	1,100	
Electrical conductivity	mS/cm	2,500	1,500	653	796	
Total dissolved solids (total salt 600°C)	mg/L		1,000	482	903	
Sulfates	-		35	15	27.2	
Active substances to methylene blue	mg/L		2	0.18	0.18	
Phenols	mg/L		0.01	0.001	0.005	
Total phosphate	mg/L	5	5	3.4	3.5	
Free chlorine	mg/L		1.5	0.1	0.1	

<Air Measurement >

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
Carbon monoxide	ppm	500	500	41.9	325.1	
NOx	ppm	375	375	1.5	3	
Mercury	ppm	0.025	0.025	0	0	
Soot	mg/m <sup>3</sup>	1500	1500	88.5	470.5	
CO2 from electric consumption	ton	25,000	25,000	21,581	21,581	

<Noise Measurement >

Place	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
North (Morning)	dB	68	68	58.5	58.5	
North (Night)	dB	68	65	57.3	57.3	
South (Morning)	dB	68	68	61.6	61.6	
South (Night)	dB	68	65	60.2	60.2	
East (Morning)	dB	68	68	58.0	58.0	
East (Night)	dB	68	65	57.1	57.1	
West (Morning)	dB	68	68	58.5	58.5	
West (Night)	dB	68	65	56.1	56.1	

●Environmental Data for Individual Plants and Group Companies in FY2022

**Micro-Mech, Inc.**

<Air Measurement>

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	備考
Trichlorethylene	lbs	9,000	9,000	8,756	8,756	

<Noise Measurement>

Time	Unit	Industrial park standard	Voluntary standard	Average	Maximum	備考
Daytime	dB	90	90	78	83	