

●Environmental Data for Individual Plants and Group Companies in FY2023

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	7.6	7.9	
BOD	mg / L	600	600	600	2.7	14.0	
SS	mg / L	600	600	600	3.7	8.0	
Copper and copper compounds	mg / L	3	3	3	0.01	0.01	
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	0.16	0.50	
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	0.002	
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	0.02	0.03	
Manganese and manganese compounds	mg / L	10	10	10	0.02	0.03	
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 FY2023

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	160	100	80	2.5	9.8	
COD	mg / L	160	160	128	4.2	10.0	
SS	mg / L	200	90	72	2.2	7.0	
n-H mineral oils	mg / L	10	10	8	1	1	
Nitrogen	mg / L	120	120	25	4.4	17.0	
Phosphorus	mg / L	16	16	7.5	0.1	0.1	

<Air Measurement>

Item	Equipment	Unit	National standard	City standard	Voluntary standard	Average	Maximum	Note
Soot	Boiler No.1	g/m ³ N	0.3	0.3	0.24	0.005	0.006	
NOx	Boiler No.1	ppm	180	180	144	91	110	
SOx	Boiler No.1	K-value	11.5	11.5	9.2	1.4	1.9	Newly added due to being subject to the Air Pollution Control Act

●Environmental Data for Individual Plants and Group Companies in FY2023

IBIDEN Jushi Co., Ltd

<Air Measurement>

Item	Equipment	Unit	National standard	City standard	Voluntary standard	Average	Maximum	Note
Soot	Boiler No.1	g/m ³ N	0.3	0.3	0.24	0.005	0.005	
	Boiler No.3	g/m ³ N	0.3	0.3	0.24	0.005	0.009	
NOx	Gas Turbine	ppm	70	70	65	43	45	
	Boiler No.1	ppm	180	180	144	56	56	
	Boiler No.3	ppm	180	180	144	55	64	
SOx	Boiler No.1	m ³ N/h	0.81	0.81	1.65	0.12	0.12	
	Boiler No.3	m ³ N/h	0.81	0.81	0.65	0.04	0.039	

●Environmental Data for Individual Plants and Group Companies in FY2023

IBIDEN Philippines, Inc.

<Wastewater Measurement >

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
pH	-	6.0～9.5	6.2～9.3	7.5	8.3	Industrial park standards revised
BOD	mg / L	500	400	33	98	
COD	mg / L	800	700	75	210	
Total Suspended Solids, TSS	mg / L	350	280	22	152	
Copper	mg / L	1.0	0.8	0.05	0.1	
Lead	mg / L	0.10	0.08	0.05	0.05	
Cyanide compounds	mg / L	0.2	0.16	0.02	0.09	
Nickel	mg / L	1.0	0.8	0.02	0.06	Industrial park standards revised
Color	mg / L	150	120	15	40	
Oil & Grease	mg / L	5	4	2	5	
Iron (Dissolved)	mg / L	7.5	6.0	0.1	0.2	Industrial park standards revised
Manganese (Dissolved)	mg / L	2.0	1.6	0.1	0.4	Same as above
クロロイド	mg / L	450	360	147	347	Newly added due to revision of the industrial park standards
ホウ素	mg / L	4.0	3.2	0.8	2.8	Same as above
硫酸塩	mg / L	550	440	136	255	Same as above
硫酸態窒素(硝酸塩)	mg / L	14	11	1	7	Same as above
NH3-N アンモニア性窒素	mg / L	25	20	3	23	Same as above
リン酸塩	mg / L	15	12	1	8	Same as above
フッ化物	mg / L	2.0	1.6	0.6	1.3	Same as above
トリクロロエチレン	mg / L	9.0	7.2	0.0	0.0	Same as above

<Air Measurement>

Item	Unit	National standard	Voluntary standard	Average	Maximum	Note
NOx	mg/m ³	500	400	62	68	
SOx	mg/m ³	500	400	5	7	

<Noise Measurement>

Time	Unit	National standard	Voluntary standard	Average	Maximum	Note
Morning (5am - 9am)	mg/m ³	65	58	56	58	
Daytime (9am - 6 pm)	mg/m ³	70	63	60	62	
Evening (6 pm - 10 pm)	mg/m ³	65	58	56	58	
Nighttime (10 pm - 5 am)	mg/m ³	60	54	52	54	

●Environmental Data for Individual Plants and Group Companies in FY2023

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	7.1	7.9	
BOD	mg / L	50	50	4.8	27.0	
COD	mg / L	200	100	6.7	52.0	
Total Suspended Solids, TSS	mg / L	100	100	7	78	
Copper	mg / L	1	0.5	0.04	0.19	
Lead	mg / L	0.5	0.5	0.0	0.0	
Chromium (Hexavalent)	mg / L	0.05	0.05	0.00	0.00	
Cyanide compounds	mg / L	0.1	0.1	0.00	0.00	
Nickel	mg / L	1	1	0.07	0.34	
Color	ADMI	200	200	0.0	0.0	
Oil & Grease	mg / L	10	10	1.79	8.00	
Iron (Dissolved)	mg / L	5	5	0.12	0.58	
Manganese (Dissolved)	mg / L	1	1	0.09	0.49	
Formaldehyde	mg / L	2	2	0.01	0.07	

<Noise Measurement>

Time	Unit	National standard	Voluntary standard	Average	Maximum	Note
Daytime (7am - 10 pm)	mg/m ³	75	75	59	66	
Nighttime (10 pm - 7 am)	mg/m ³	75	75	54	57	

●Environmental Data for Individual Plants and Group Companies in FY2023

IBIDEN Fine Ceramics (Suzhou) Co.,Ltd.

< Wastewater Measurement>

測定項目	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
PH	-	6～9	6～9	7.6	7.6	
COD	mg / L	500	500	56.5	59.0	
SS	mg / L	400	400	14.8	22.0	
NH3-N	mg / L	45	45	5.9	8.5	
TP	mg / L	8	8	2.2	0.7	
TN	mg / L	70	70	9.1	10.7	
petroleum	mg / L	1	1	0.6	0.7	

●Environmental Data for Individual Plants and Group Companies in FY2023

IBIDEN Graphite Korea Co., Ltd.

<Air Measurement>

Item	Unit	National regulations	Voluntary standard	Average	Maximum	Note
NOx	ppm	150	150	3.9	28.0	
SOx	ppm	200	200	0.7	33.2	
PM	mg/m ³	30	30	0.8	2.2	

●Environmental Data for Individual Plants and Group Companies in FY2023

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	8.1	8.3	
Electrical conductivity	μS/ cm	2,500	2,500	2,500	733.5	895.0	
Available chlorine	mg / L	30	30	30	0.1	0.1	
COD	mg / L	1,000	1,000	1,000	498.0	542.0	
BOD	mg / L	500	500	500	94.0	157.0	
Total inorganic nitrogen	mg / L	120	120	120	6.5	8.6	
Total nitrogen	mg / L	150	150	150	14.4	16.8	
Ammonium	mg / L	100	100	100	9.3	12.4	
Total phosphorus	mg / L	20	20	20	4.9	9.0	
Sulphate	mg / L	400	400	400	41.5	49.0	
Organic solvent extract (grav.)	mg / L	50	50	50	5.0	5.0	
Phenols	mg / L	10	10	10	0.015	0.020	
Iron	mg / L	20	20	20	0.296	0.500	
Manganese	mg / L	5	5	5	0.020	0.031	
Sulphide	mg / L	1	1	1	0.055	0.060	
Total dissolved solid	mg / L	2,500	2,500	2,500	481	534	
Total solids	mg / L	2,500	2,500	2,500	280	400	
Fluoride	mg / L	50	50	50	0	0	
Tars	mg / L	5	5	5	2	2	

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	7.8	8.7	
Temperature	°C	40	20 - 35	24.1	34	
COD	mg/L		630	145	329	
BOD	mg/L	350	350	43	118	
Total Suspended Solids, TSS	mg/L	150	100	15	36	
Total Nitrogen, Kjeldahl	mg/L		30	3.2	10.0	
Total Nitrogen	mg/L	40	30	1.0	4.5	
Total phosphorous	mg/L	20	20	1.3	2.4	
Oils and greases (Organic solvent extract)	mg/L	15	15	5.0	12.0	
Settleable solids (10 min)	mg/L	1	1	0.15	0.3	
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	0.75	2.20	
Hexavalent chromium	mg/L	1	1	0.10	0.10	
Total Mercury	mg/L	0.01	0.01	0.0021	0.0050	
Total Niquel	mg/L	2	2	0.29	1.10	
Total Lead	mg/L	0.5	0.5	0.05	0.11	
Total Zinc	mg/L	10	10	1.61	5.50	
Fecal coliforms	NMP/L	10,000,000	10,000,000	241.0	2,400	
Electrical conductivity	mS/cm	2,500	1,500	670.0	979.0	
Total dissolved solids (total salt 600°C)	mg/L		1,000	457.4	616.7	
Sulfates	-		35	16.9	35.3	
Active substances to methylene blue	mg/L		2	0.31	0.43	
Phenols	mg/L		0.03	0.01	0.01	
Total phosphate	mg/L	5	5	3.63	7.42	
Free chlorine	mg/L		1.5	78.5	109.1	
Free chlorine	mg/L		18	-	-	Measurements discontinued due to revision of the industrial park
Natural pigment	m-1	3	3	0.875	1.5	New
Water Toxicity	TU	2	2	1.26	1.886	New

<Air Measurement>

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
Carbon monoxide	ppm	500	500	51	152	
NOx	ppm	375	375	1.7	6.9	
Mercury	ppm	0.025	0.025	0.000	0.000	
Soot	mg/m ³	1500	1500	3.5	8	
CO2 from electric consumption	ton	25,000		20,596	22,152	

<Noise Measurement>

Place	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
North (Morning)	dB	68	68	57	57	
North (Night)	dB	68	65	58	58	
South (Morning)	dB	68	68	60	60	
South (Night)	dB	68	65	57	57	
East (Morning)	dB	68	68	54	54	
East (Night)	dB	68	65	56	56	
West (Morning)	dB	68	68	63	63	
West (Night)	dB	68	68	55	55	

Micro-Mech, Inc.

<Air Measurement>

Item	Unit	Industrial park standard	Voluntary standard	Average	Maximum	Note
Trichlorethylene	lbs	9000	9000	6853	6853	

<Noise Measurement>

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