NORÐURÁL

Green Accounting
2023

CONTENTS

Employees, raw materials and resource consumtion

Quantity	2021	2022	2023	Unit
Employees	601	631	606	
Female employees	141	134	131	
Male employees	460	497	475	
Electricity	4,669,000	4,566,844	4,622,893	MWh
Oil	440,690	387,619	373,898	litres
Gas	32	22	21	tonnes
Fresh water	177,116	163,733	159.937	m^3
Sea water	7,884,000	7,884,000	7.884.000	m^3
Total raw materials used	2.39	2.38	2.38	t/t Al
Imported raw material	2.39	2.38	2.38	t/t Al
Hazardous substances (solid)	614,410	592,526	600.506	tonnes
Hazardous substances (liquid)	466,947	417,715	407.506	litres
Misc. packaging	< 400	< 400	<400	tonnes

Emissions and waste management

Quantity	2021	2022	2023	Unit
Atmospheric emissions				
Fluoride (gaseous and particles)	0.38	0.40	0.35	kg/t Al
Sulphur dioxide SO_2	10.62	11.69	9.76	kg/t Al
Dust	0.71	0.71	0.75	kg/t Al
Carbon Dioxide CO_2	1.53	1.55	1.54	t/t Al
Fluorocarbons, PFC CO_2 equivalents	0.15	0.13	0.12	t CO_2 eq. /t Al
Polyaromatic hydrocarbons PAH_{16}	0.000056	0.000079	1.000072	kg/t Al
Release into surface water/groundwater/sea				
Sludge	0.05	0.05	0.09	kg/t Al
Oil/fat in cooling agents from casthouse and rectifiers	< 0.5	< 0.5	< 0.5	ppm
Release into municipal sewage system				
From septic tanks	0.05	0.05	0.09	kg/t Al
Waste disposal				
Compactable waste	0.40	0.45	0.42	kg/t Al
Seashore repository	33	28	29	kg/t Al
Recyclable waste				
Anode waste and coal dust	111	114	113	kg/t Al
Aluminum slag	9.2	8.5	8.4	kg/t Al
Wood	1.1	0.9	0.9	kg/t Al
Scrap metal	2.6	2.1	1.90	kg/t Al
Cardboard	0.12	0.12	0.09	kg/t Al
Plastic	0.03	0.05	0.08	kg/t Al
Hazardous waste for disposal				
Total waste	0.01	0.03	0.03	kg/t Al

Waste

Quantity	2021	2022	2023	Unit
Material from the sewer				
Sludge	16.4	14.9	29.4	tonnes
Other waste (from septic tanks)	6.6	3.2	2.5	tonnes
Úr sandföngum og sandgryfjum	-		9	tonnes
Recyclable waste				
Anode butts	33,750	33,429	33.759	tonnes
Carbon dust	1,302	1,409	1.455	tonnes
Bath material	1,823	2,982	3.917	tonnes
Aluminum dross	2,890	2,603	2.617	tonnes
Busbars	1,714	1,341	1.560	tonnes
Anode stub metal	-	-		tonnes
Scrap iron	830	640	585	tonnes
Timber	362	273	276	tonnes
Cardboard	37	36	29	tonnes
Plastic	10	14	24	tonnes
Waste oil	4	7	20	tonnes
Rubber tires	9.8	9.4	12	tonnes
Batteries and electronics	3.9	5.7	4.6	tonnes
Textile	2.9	1.9	1.4	tonnes
Light bulbs	0.17	0.26	0.26	tonnes
Oil contaminated waste	8	9	19	tonnes
Asphalt	-	-		tonnes
Hazardous waste				
Electronics – hazardous waste	0.4	-	0.2	tonnes
Hazardous waste	2	7	9	tonnes
Paint	0.4	0.8	1.1	tonnes
Substances in flood pits				
Spent potlining	7,008	5,793	6.571	tonnes
Carbon from rodding shop	1,409	1,221	1.046	tonnes
Carbon from pot rooms	1,242	1,110	1.065	tonnes
Dust from sweeper	-	-		tonnes
Residual refractory material	413	274	311	tonnes
Spent refractory material	127	51	145	tonnes
Earth materials	75	-		tonnes
Gjallsandur			3.377	
Solid waste				
Waste for compacting	125	138	130	tonnes
Organic waste	10	13	17	tonnes

Emissions to air

Quantity	2021	2022	2023	Unit
Substances				
CO_2	481,595	474,498	478.319	tonnes
CF_4/C_2F_6	46,860	38,753	37.463	t CO_2 eq.
SO_2	3,348	3,580	3.028	tonnes
Polyaromatic hydrocarbons	17.6	24.2	22.4	Kg
Total fluoride	121	122	109	tonnes
Dust (PM10)	222	216	234	tonnes

Use of hazardous chemicals (Xn, T, Tx, C, Xi, E, Fx, F, O, N)

Quantity	2021	2022	2023	Unit
DAG 2671 (O, T, N)	-	-	-	litres
DAG 554/20 (C, N, Xn)	18,937	20,027	22.730	litres
Plicast strong mix	-	97	107	tonnes
Ramming paste (T)	660	535	567	tonnes
Flange paste (T)	1,219	1,417	1.410	tonnes
Propane (Fx, F, E)	32	22	21	tonnes
Diesel oil (Xn, O)	440,690	387,619	373.989	litres
Hydraulic oil	7,320	10,069	10.878	litres
Sodium hydroxide (Xi)	227	297	231	tonnes
Aluminum fluoride (Xn)	4,233	4,306	4.648	tonnes
Aluminum oxide (Xn)	608,015	585,833	593.809	tonnes
Ferromanganese (Xn)	10	10	10	tonnes
Ferrophosphorus (Xn)	13	9	12	tonnes

Production and raw material consumption

Quantity	2021	2022	2023	Unit
Aluminum production				
Primary aluminum production	315,182	306,267	310.421	tonnes
Aluminum oxide	608,015	585,833	593.809	tonnes
Aluminum fluoride	4,233	4,306	4.648	tonnes
Prebaked anodes (net consumption)	133,658	131,222	133.646	tonnes
Propane	32	22	21	tonnes
Diesel oil	440,690	387,619	373.898	litres
Sodium hydroxide	227	297	231	tonnes
Flange paste	1,219	1,417	1.410.	tonnes
Cast iron	836	581	704	tonnes
Anode rods	596	509	501	tonnes
Electricity	4,669,000	4,566,844	4.566.893	MWh
Industrial water	106,269	98,240	95.362	m^3
Drinking water	70,847	65,493	63.575	m^3
Sea water	7,884,000	7,884,000	7.884.400	m^3
Silicon	4,199	4,656	4111	tonnes
Magnesium	153	176	167	tonnes
Titanium	65	73	66	tonnes
Strontium	18	21	17	tonnes
Hydraulic oil	7,320	10,069	10.878	litres
Oil for cooling	3,057	1,709	1.850	litres
Oil removing chemicals	2,035	1,800	1.895	litres
Lubricating oil	2,820	5,899	3.765	litres
Ferrosilicon	20	17	22	tonnes
Ferromanganese	10	10	10	tonnes
Ferrophosphorus	13	9	12	tonnes
Carbon	53	48	60	tonnes
Steel pellets	86	34	37	tonnes
Wood sticks	12,250	12,250	17.650	pcs.
Batteries	67	58	62	pcs.

Statements

Auditor's Statement

I have reviewed and audited the information presented in Norðurál's green accounting for 2022. The books have been reviewed with regard to whether the information stipulated in articles 6, 7 and 8 of Regulation No. 851/2002 and whether the numerical information presented complies with data from the financial records and the company's monitoring of key figures in environmental matters.

After having conducted a review of the data, my opinion is that the green accounting meets the conditions of Regulation No. 851/2002 and gives a thorough account of the company's environmental impact in the year of 2022.

Katrín Blöndal
Chemical Engineer

Board's Statement

All information in the company's green accounting for the year 2022 is provided according to the best knowledge. Emission control equipment is of best available technology and is efficiently maintained. The findings of internal measurements are used for making improvements aiming to minimize environmental impact.

Proper handling of the environment is a cornerstone in the company's responsible operation and a constant monitoring of environmental factors aims to ensure that the set goals are achieved. The company's environmental activities were generally successful during the year, with active monitoring carried out in accordance with the monitoring schedule and the requirements of the license.

Gunnar Guðlaugsson
Managing Director

Sigrún Helgadóttir
Plant Manager

Norðurál keeps green accounting in accordance with regulation no. 851/2002 and delivers its audited green accounts to the Environment Agency of Iceland before May 1 every year. Emissions accounting is kept in accordance with regulation no. 990/2008. Norðurál's operations fall under company category 2.01 - Aluminum production according to regulation no. 851/2002 on green accounting. Norðurál operates under a license from The Environment Agency of Iceland. The current operating license was issued in 2015 and is valid until December 16, 2031.

Please send any questions and comments to umhverfi@nordural.is and we shall reply to the best of our ability.

NORÐURÁL

UMHVERFISVERÐLAUN ATVINNULÍFSINS 2022

Jafnlaunaúttekt PwC 2020