

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Natural and Crushed Sea-dredged Aggregates from Álfsnesvík - Björgun



The Norwegian EPD Foundation

Owner of the declaration:

Björgun ehf

Product:

Natural and Crushed Sea-dredged Aggregates from Álfsnesvík - Björgun

Declared unit:

1 tonne

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 018:2020 Part B for natural stone products, aggregates and fillers

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-6025-5275-EN

Registration number:

NEPD-6025-5275-EN

Issue date: 15.02.2024

Valid to: 15.02.2029

EPD software:

LCAno EPD generator ID: 154348

General information

Product

Natural and Crushed Sea-dredged Aggregates from Álfsnesvík - Björgun

Program operator:

Post Box 5250 Majorstuen, 0303 Oslo, Norway
The Norwegian EPD Foundation
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Declaration number:

NEPD-6025-5275-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 018:2020 Part B for natural stone products, aggregates and fillers

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 tonne Natural and Crushed Sea-dredged Aggregates from

Declared unit with option:

A1,A2,A3,A4
Álfsnesvík - Björgun

Functional unit:

Not applicable

Verification:

Independent verification of the declaration and data, according to ISO14025:2010

Third party verifier:



Martin Erlandsson, IVL Swedish Res. Inst.

Owner of the declaration:

Björgun ehf
Contact person: Eysteinn Dofrason
Phone: 563 5600
e-mail: eysteinn@bjorgun.is

Manufacturer:

Björgun ehf
Víðinesvegur 22 162 Reykjavík
Álfsnesvík, Iceland

Place of production:

Björgun ehf
Víðinesvegur 22 162 Reykjavík
Álfsnesvík, Iceland

Management system:

Certified QM system operated to comply with CE-marked products, with additional principles in accordance to ISO 9001:2015.

Organisation no:

460169-7399

Issue date: 15.02.2024

Valid to: 15.02.2029

Year of study:

2023

Comparability:

EPD of construction products may not be comparable if they do not comply with EN 15804 and seen in a building context.

The EPD has been worked out by:

Zohaib Ali Saleem

Mie Vold, LCA.no AS

Approved:



Hákon Hauan
Managing Director of EPD-Norway

Product

Product description:

The raw material is extracted from seabed quarries in the fjords of Kollafjörður, Hvalfjörður and Faxaflói Bay. The material is then further processed at Björgun's operating facility in Álfsnesvík. The processing facility involves a washing screen plant and a crushing unit. The scope of the screening/crushing differs between products and depends on the specification and application area.

Product specification

Natural and crushed sea-dredged aggregates (basalt) in bulk - predominantly aggregates utilized in concrete and asphalt.

In compliance with Regulation 305/2011/EU of the European Parliament and the Council of 9th of March 2011 (the Construction Products Regulation – CPR), we hold a certificate for construction of the following products, according to the approved standards:

- Aggregates for Concrete: EN 12620:2002+A1:2008.
- Aggregates for Asphalt: EN 13043:2002.

Materials	Value	Unit
Aggregates	1000	kg

Technical data:

The EPD applies to sea-dredged aggregates from Álfsnesvík. Products for Concrete and Asphalt have CE marking and DoP. All products have TDS and can be accessed through our website www.bjorgun.is

Product	Number of Crushing stages	Processing facilities	End use of Aggregates	Area of Use
Pveginn Björgunarsandur 0-4 mm CE	0	Washing Screen	Bound/Unbound	Concrete, as cable trench sand
Pvegin Perlumöl 4-16 mm CE	0	Washing Screen	Bound	Concrete, decorative aggregates for gardens
Pvegin Perlumöl 16-25 mm CE	0	Washing Screen	Bound	Concrete, decorative aggregates for gardens
Brotinn salli 0-5 mm CE	2	Washing Screen + Crushing Unit	Bound	Concrete, asphalt, substrate for paving slabs
Brotin möl 5-25 mm CE	2	Washing Screen + Crushing Unit	Bound	Concrete
Pvegin möl 25-50 mm	0	Washing Screen	Unbound	Construction, drainage, decorative aggregates for garden
Pvegin möl 50-90 mm	0	Washing Screen	Unbound	Construction, drainage, decorative aggregates for garden
Skeljasandur 0-3 mm	0	Washing Screen	Bound/Unbound	Mixing with soil, on lawns, on golf courses, on volleyball courses
Skeljasandur 0-8 mm	0	Washing Screen	Bound/Unbound	Mixing with soil, on lawns, on golf courses, on volleyball courses

Market:

From our production site at Álfsnesvík, we supply aggregates for the domestic market.

Reference service life, product

Depending on the area of use. The high quality of our products provide a long-term service life in end-use for our customers (almost unlimited life span).

Reference service life, building or construction works

Not applicable.

LCA: Calculation rules

Declared unit:

1 tonne Natural and Crushed Sea-dredged Aggregates

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. This cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases.

Production data is collected in 2023 from the site of production for the year 2023.

The data is from various internal logging systems within the company.

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage				Construction installation stage	Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR

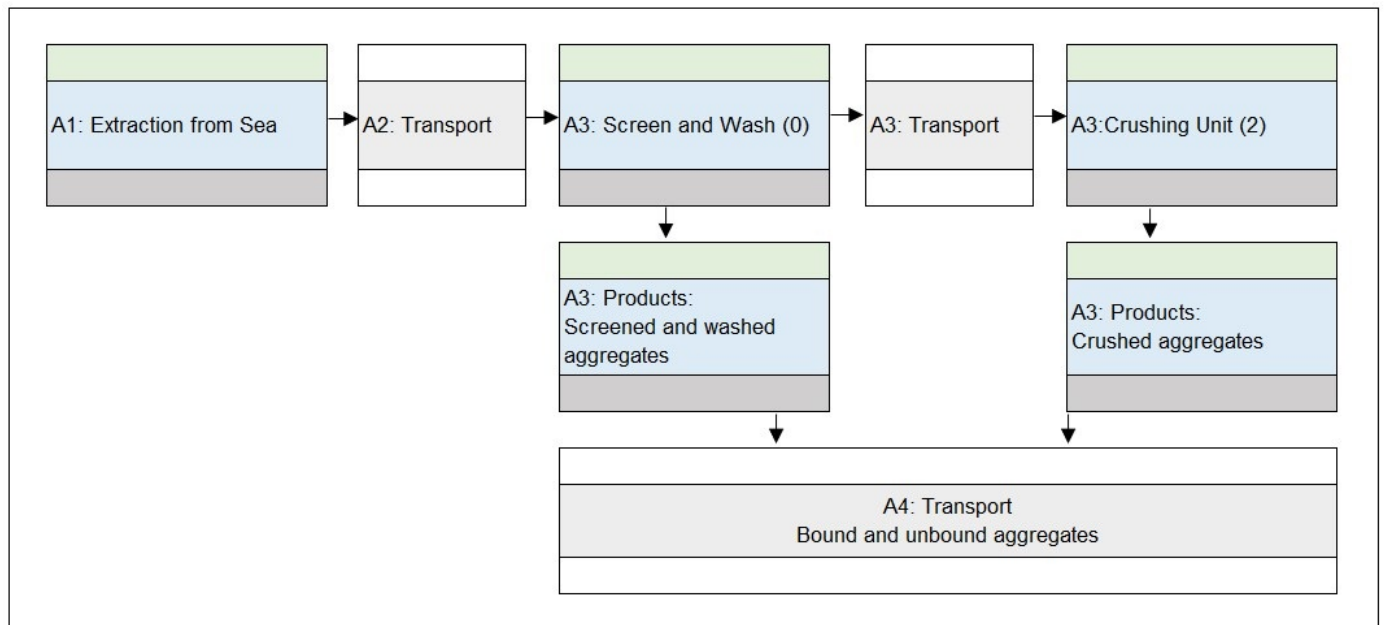
System boundary:

As the products are mainly used for bound purposes, the end phase C1-C4 , and D are not considered in this EPD.

This consideration will normally take place in the EPD published by producers of asphalt and concrete.

Unbound aggregate production is only 1% of the total production. Therefore, end of life has not been included.

Additionally , packaging materials are not used/included.



Additional technical information:

LCA: Scenarios and additional technical information














The following information describe the scenarios in the different modules of the EPD.

Björgun supplies aggregates within the domestic market. Our focus is on serving serving Reykjavík and surrounding areas, located approximately 25 kilometers away, with high-quality products. Additionally, a minor portion of our production is allocated for sales to rural areas, which are transferred via maritime transport for optimal reach and delivery.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	25	0,043	l/tkm	1,08

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact						
Indicator	Unit	Extraction from Sea (A1-A3)	Screen and Wash (A1- A3)	Screen and Crush (A1- A3)	A4	
 GWP-total	kg CO ₂ -eq	2,79E+00	4,91E+00	1,02E+01	4,09E+00	
 GWP-fossil	kg CO ₂ -eq	2,79E+00	4,88E+00	1,02E+01	4,08E+00	
 GWP-biogenic	kg CO ₂ -eq	3,08E-04	6,88E-03	7,39E-03	1,69E-03	
 GWP-luluc	kg CO ₂ -eq	1,18E-04	2,24E-02	2,37E-02	1,45E-03	
 ODP	kg CFC11 -eq	6,20E-07	1,06E-06	2,18E-06	9,25E-07	
 AP	mol H ⁺ -eq	9,83E-02	1,19E-01	1,75E-01	1,17E-02	
 EP-FreshWater	kg P -eq	3,74E-06	2,71E-05	4,93E-05	3,26E-05	
 EP-Marine	kg N -eq	2,37E-02	3,25E-02	5,70E-02	2,32E-03	
 EP-Terrestrial	mol N -eq	2,60E-01	3,56E-01	6,25E-01	2,60E-02	
 POCP	kg NMVOC -eq	6,76E-02	9,41E-02	1,68E-01	9,95E-03	
 ADP-minerals&metals ¹	kg Sb-eq	2,06E-06	2,29E-05	6,86E-05	1,13E-04	
 ADP-fossil ¹	MJ	3,82E+01	6,69E+01	1,40E+02	6,17E+01	
 WDP ¹	m ³	5,50E+00	2,17E+02	2,25E+02	5,97E+01	

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"







*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Remarks to environmental impacts

Environmental impacts for the different stages are aggregated based on the number of processes, see table under product specification for details and the system boundary.

Additional environmental impact indicators











Indicator		Unit	Extraction from Sea (A1-A3)	Screen and Wash (A1-A3)	Screen and Crush (A1-A3)	A4
	PM	Disease incidence	6,75E-07	1,20E-06	2,67E-06	2,50E-07
	IRP ²	kgBq U235 -eq	1,67E-01	2,91E-01	5,97E-01	2,70E-01
	ETP-fw ¹	CTUe	1,80E+01	4,21E+01	8,87E+01	4,58E+01
	HTP-c ¹	CTUh	1,53E-09	2,75E-09	4,85E-09	0,00E+00
	HTP-nc ¹	CTUh	1,39E-08	4,03E-08	8,52E-08	5,00E-08
	SQP ¹	dimensionless	4,62E+00	8,26E+00	1,73E+01	4,32E+01

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed




1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use							
Indicator		Unit	Extraction from Sea (A1-A3)	Screen and Wash (A1- A3)	Screen and Crush (A1- A3)	A4	
	PERE	MJ	9,42E-02	4,00E+00	4,31E+00	8,84E-01	
	PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
	PERT	MJ	9,42E-02	4,00E+00	4,31E+00	8,84E-01	
	PENRE	MJ	3,82E+01	6,69E+01	1,40E+02	6,17E+01	
	PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
	PENRT	MJ	3,82E+01	6,69E+01	1,40E+02	6,17E+01	
	SM	kg	0,00E+00	8,70E-03	4,13E-02	0,00E+00	
	RSF	MJ	2,03E-03	1,58E-02	2,16E-02	3,16E-02	
	NRSF	MJ	0,00E+00	1,90E-02	-8,31E-02	1,13E-01	
	FW	m ³	8,75E-04	2,50E-01	2,46E-02	6,60E-03	

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"





*INA Indicator Not Assessed

End of life - Waste						
Indicator		Unit	Extraction from Sea (A1-A3)	Screen and Wash (A1-A3)	Screen and Crush (A1-A3)	A4
	HWD	kg	7,57E-04	6,22E-03	8,72E-03	3,18E-03
	NHWD	kg	1,74E-02	1,60E-01	2,56E-01	3,00E+00
	RWD	kg	2,75E-04	4,62E-04	9,65E-04	4,21E-04

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

*Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Output flow						
Indicator		Unit	Extraction from Sea (A1-A3)	Screen and Wash (A1-A3)	Screen and Crush (A1-A3)	A4
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0,00E+00	6,25E-02	6,25E-02	0,00E+00
	MER	kg	0,00E+00	2,84E-07	2,84E-07	0,00E+00
	EEE	MJ	0,00E+00	1,52E-02	1,52E-02	0,00E+00
	EET	MJ	0,00E+00	2,30E-01	2,30E-01	0,00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

*Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3). Grid mix can in this case also serve as proxy data for residual mix.

Electricity mix	Data source	Amount	Enhet
Electricity, Iceland (kWh)	ecoinvent 3.6	55.84	g CO2-eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

The product has no effect on indoor environment.






Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products					
Indicator	Unit	Extraction from Sea (A1-A3)	Screen and Wash (A1- A3)	Screen and Crush (A1- A3)	A4
GWPIOBC	kg CO ₂ -eq	2,79E+00	4,91E+00	1,02E+01	4,09E+00

GWPI-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
 ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
 EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
 ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
 NPCR Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge.
 NPCR 018:2020 Part B for natural stone products, aggregates and fillers.
 EPD for Björgun ehf, LCI/LCA REPORT, Zohaib Ali and Mie Vold, LCA.no AS, report no. 02.24, January 2024.

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