

# Environmental Product Declaration

In accordance with 14025 and EN15804 +A2

Krossmaterial från Svalget, Boden; Aggregates from Svalget, Boden



The Norwegian  
EPD Foundation

**Owner of the declaration:**  
BDX Företagen

**Product name:**  
Krossmaterial från Svalget, Boden;  
Aggregates from Svalget, Boden

**Declared unit:**  
1000 kg aggregates

**Product category /PCR:**  
NPCR 018 version 1.0 (PCR-Part B for natural  
stone products, aggregates and fillers)

NPCR Part A: Construction products and  
services (version 2)

EN 15804:2012+A2:2019

**Program holder and publisher:**  
The Norwegian EPD foundation

**Declaration number:**  
NEPD-4358-3586-EN

**Registration number:**  
NEPD-4358-3586-EN

**Issue date:** 28.04.2023

**Valid to:** 28.04.2028

# General information

## Product:

Aggregates produced in quarry Svalget.

## Program Operator:

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

NEPD-4358-3586-EN

## This declaration is based on Product Category Rules:

NPCR 018 version 1.0 (PCR-Part B for natural stone products, aggregates and fillers) / NPCR Part A: Construction products and services (version 2) / EN 15804:2012+A2:2019

## Statements:

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

## Declared unit:

**1 tonne (1000 kg)** of aggregates

## Verification:

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

internal

external



Martin Erlandsson, IVL Swedish Env Res Inst

Independent verifier approved by EPD Norway

## Owner of the declaration:

BDX Företagen AB  
Contact person: Anders Göransson  
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## Manufacturer:

BDX Företagen AB  
Address: Box 854, 971 26 Luleå/ Sweden  
Phone: +46 (0)920-26 26 00  
e-mail: info@bdx.se

## Place of production:

Svalget, Boden

## Management system:

ISO 14001: 2015  
ISO 9001:2015

## Organisation no:

556207-3329

## Issue date:

28.04.2023

## Valid to:

28.04.2028

## Reference year:

2021-2022

## Comparability:

EPDs from other programmes than EPD Norway may not be comparable.

## The EPD has been worked out by:

Jonathan Klement at Ramboll

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Approved



Manager of EPD Norway

# Products

## Product description:

BDX supplies aggregates, gravel and sand from more than 30 quarries. The Products declared in this EPD are aggregates manufactured by BDX Företagen AB, site Svalget in Boden. Aggregates are manufactured in various fractions, from blasted rock to finely crushed material. Products from Svalget are used for asphalt-, and concrete mixtures, in civil engineering work and road and railway construction.

This EPD contains aggregates divided into six product groups, covering in total 44 products. The product groups follow the involved production steps for the respective stones. The products intended applications are further described in the following section are depicted in the table on the next page.

## Market:

Northern Sweden

## Reference service life, product:

The RSL or estimated service life (ESL) cannot be determined such that three different end-of-life scenarios were developed. One of the scenarios presumes a lifetime of more than 100 years, the two other scenarios presume a service life of less than 100 years.

## Product specification:

The products declared consist only of the stone from the quarry in Svalget. The material composition is listed in the table below. The different products specifications are reported in the table on the next page.

Materials	kg	%
Aggregate from Svalget	1000	100

## Technical data:

The materials are partly certified following different standards.

**EN 12620** Aggregates for concrete

**EN 13242** Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction

**EN 13043** Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas

**EN 13450** Aggregates for railway ballast

## Products specifications of the products in the different Product groups

Product Group	Name (english)	Name (swedish)	EN 12620	EN 13242	EN 13043	EN 13450	Area of use (swedish)
1	Crushed bedrock 0/150	Bergkross 0/150					Förstärkningslager för vägbyggnation och ytor/planer
	Crushed bedrock 0/200	Bergkross 0/200					
	Crushed bedrock 0/250	Bergkross 0/250					
	Crushed bedrock 0/16	Bergkross 0/16		X			Fyllnads-material för byggnads-ändamål
	Crushed bedrock 0/32	Bergkross 0/32		X			
	Crushed bedrock 0/90	Bergkross 0/90		X			
	Crushed bedrock 90/300	Bergkross 90/300					
	Crushed bedrock 90/200	Bergkross 90/200					
2	Reinforcement layer 0/125	Förstärkning 0/125		X			Förstärkningslager och bärlager för vägbyggnation och ytor/planer.
	Reinforcement layer 0/90	Förstärkning 0/90		X			
	Reinforcement layer 0/63	Förstärkning 0/63		X			
	Reinforcement layer 0/45 gravel road	Förstärkning 0/45 gr väg		X			Ballast för järnväg, infräsning vägbyggnad samt makadam vid husbyggnationer.
	Macadam 32/63	Makadam 32/63		X		X	
	Macadam 16/45	Makadam 16/45		X			
	Base coarse 0/45 paved roads	Bärlager 0/45 bel väg		X			
3	Base coarse 0/32 paved roads	Bärlager 0/32 bel väg		X			Bärlager för att hårdgöra och justera uppfarter, körbanor mm.
	Base coarse 0/32 gravel road	Bärlager 0/32 grus väg		X			
	Macadam 11/32	Makadam 11/32				X	Ballast för järnväg
	Macadam 16/32	Makadam 16/32	X	X			Material till asfalt, betong samt dränerande lager och makadam vid husbyggnationer
	Macadam 16/22	Makadam 16/22	X	X	X		
	Macadam 8/16 sorted	Makadam 8/16 Sorterad		X			Material till dränerande lager och makadam vid husbyggnationer
	Rock Fines 0/8 sorted	Stenmjöl 0/8 Sorterad		X			Material till ledningsbädd, plattsättning, slitlager
4	Crushed bedrock 0/16	Bergkross 0/16		X	X		Material till asfalt samt obundet slitlager
	Macadam 8/16	Makadam 8/16		X			Material till dränerande lager och makadam vid husbyggnationer
	Macadam 11/16	Makadam 11/16		X			
	Macadam 8/11	Makadam 8/11		X			
	Macadam 4/8	Makadam 4/8		X			Material för halkbekämpning
	Macadam 2/6	Makadam 2/6		X			
	Macadam 2/4	Makadam 2/4		X			
	Rock Fines 0/8	Stenmjöl 0/8		X			Material till ledningsbädd, plattsättning, slitlager
	Rock Fines 0/4	Stenmjöl 0/4		X			
Rock Fines 0/2	Stenmjöl 0/2		X				
5	Rock Fines 0/2 asphalt	Stenmjöl 0/2 Asfalt			X		Material för tillverkning av asfaltmassa och betong
	Rock Fines 0/4 asphalt	Stenmjöl 0/4 Asfalt			X		
	Rock Fines 0/8 asphalt	Stenmjöl 0/8 Asfalt					
	Macadam 2/4 asphalt	Makadam 2/4 asfalt					Halkbekämpning
	Macadam 4/8 asphalt	Makadam 4/8 Asfalt	X		X		Material för tillverkning av asfaltmassa och betong
	Macadam 8/11 asphalt	Makadam 8/11 Asfalt	X		X		
	Macadam 11/16 asphalt	Makadam 11/16 Asfalt	X		X		
	Macadam 8/16 asphalt	Makadam 8/16 Asfalt	X		X		
6	Rock Fines 0/4 cubed	Stenmjöl 0/4 Kubiserad	X				Kubiserad ballast till betong
	Rock Fines 0/8 cubed	Stenmjöl 0/8 Kubiserad	X				
	Macadam 4/8 cubed	Makadam 4/8 Kubiserad	X				
	Macadam 8/16 cubed	Makadam 8/16 Kubiserad	X				

# LCA: Calculation rules

## Declared unit:

**1 tonne**, for the *bound aggregates and fillers* following the standards EN 12620 and EN 13043.

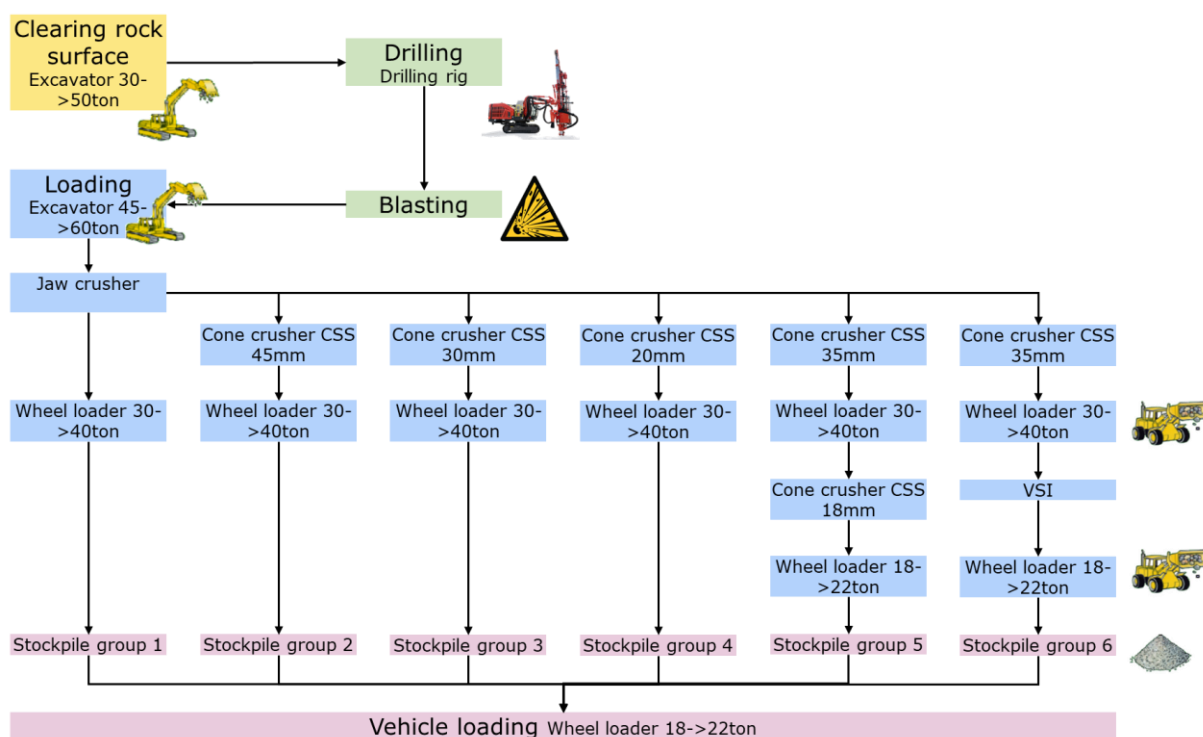
**1 tonne**, for the *natural stones and unbound aggregates* following the standards EN 13242 and EN 13450 and the products in this EPD not following any standard.

## Data quality:

The foreground data for the A1-A3 module is specific data provided by BDX and is representative for the Svalget quarry in Boden. The selection of background data has been made to represent this specific site/region and the origin of the sourced materials. The data quality for foreground data and background data corresponds to the specifications of EN 15804.

## Allocation:

The production process was divided into four main processes and split into the different machines involved. The machining time and the material handled per hour were used for the calculation. First the machining time was related to the corresponding fuel consumption and the equipment usage. Then these inputs were allocated to the declared unit by relating the time to an estimated handling of mass during the time. The products were grouped depending on the processes involved in their production, i.e., products in the same product group go through the same machines and may be separated on the final screen and conveyor belt. Therefore, the products within a product group carry the same impacts and there is no variation in any LCIA indicator higher than  $\pm 10\%$ .



Schematic presentation of the production process. 1. Rock surface cleaning (Avtäckning), yellow; 2. Drilling and blasting (Borrning och sprängning), green; 3. Crushing (Krossprocess), blue; 4. Outward logistics (Utlastning), purple.

### System boundary:

**Bound aggregates and fillers**, i.e., the products in this EPD following the standards EN 12620 and EN 13043 have the scope “Cradle to gate with options” and thus covers the life cycle modules A1-A3+A4. The life cycle stages A5 and B1-B7, C1-C4 and D are not included following the conditions in EN 15804+A2 section 5.2.

**Natural stones and unbound aggregates**, i.e., the products in this EPD following the standards EN 13242 and EN 13450 and the products in this EPD not following any standard have the scope “Cradle to gate with A1-A3 modules + A4 + C1-C4 and module D”. The life cycle stages A5 and B1-B7 are not included.

### Cut-off criteria:

The LCI includes all flows directly linked to the production, besides one small 40-year-old barrack in the quarry of which only half is used by BDX. Excluded from the LCI are inventory flows from infrastructure, construction, and tools that are not directly consumed in the production process, travelling by personnel and research and development. These exclusions meet the energy and mass criteria in EN 15804+A2, section 6.3.6.

## LCA: Scenarios and additional technical information

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

### Transportation to construction site (A4)

Module A4 is declared with the following scenario.

Transport	Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	value (l/t)
A4	Truck	50%	Truck-trailer, Euro 6, 50 - 60t gross weight / 40.6t payload capacity	60	Diesel	1,04

The transport distance is assumed following the values by Trafikverket for Berg Fall B, Fyll (6.4) (Klimatkalkyl version 7.0). The assumed single distance to the construction site of 30 km was doubled to include the retour.

### End of Life (C1, C3, C4)

Multiple 100% end-of-life scenario were only developed for the products classified as *Natural stones and unbound aggregates*. “100%” scenarios report one approach for the module or modules in the EPD, eg 100% of the product is sent to landfill, instead of a mix between different scenarios.

Following EN 15804+A2 Section 6.3.8.2 the system shall be assessed for a 100 year period, which is relevant in this context as stones and aggregates used in constructions and infrastructure do not lose their functional properties over time, such that this period could be exceeded.

#### Scenario 1 (100%):

The aggregates (Natural stones and unbound aggregates) stay in the construction for a long time period (more than 100 years). Thus, it is assumed that the aggregates do not reach the end-of-life stage.

Scenario 2 (100% reuse):

The aggregates are recovered after a certain time and reused as aggregates. This is expected to occur within a 100-year time horizon.

Scenario 3 (100% disposal):

The aggregates are recovered after a certain time and disposed. This is expected to occur within a 100-year time horizon.

	Unit	Scenario 1	Scenario 2	Scenario 3
Hazardous waste disposed	kg	0	0	0
Collected as mixed construction waste	kg	0	1000	1000
Reuse	kg	0	1000	0
Recycling	kg	0	0	0
Energy recovery	kg	0	0	0
To landfill	kg	0	0	1000

## Transport to waste processing (C2)

Scenario	Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	value (l/t)
Scenario 1	Truck	-	-	0	-	-
Scenario 2	Truck	-	-	0	-	-
Scenario 3	Truck	50%	28-32t	60	Diesel	1,48

The transport distance in Scenario 3 is assumed following the values by Trafikverket for Jord-/Bergschakt Fall B (6.4) (Klimatkalkyl version 7.0). The assumed single distance to the construction site of 30 km was doubled to include the retour.

## Benefits and loads beyond the system boundaries (D)

In general, module D includes reuse, recovery and/or recycling potential, expressed as net impact and benefits. The same scenarios as for the end-of-life stage are considered.

Scenario 1 (100%):

As the material did not leave the system boundary the module D has no activity. Accordingly, no environmental impact or benefit is recorded.

Scenario 2 (100%):

The net load relates to the transport of the excavated material within the reuse project. This is assumed to be 2 km in accordance with the Fall A assumptions in Trafikverket's climate calculation tool Klimatkalkyl (Jordschakt Fall A (6.4) and assumed to happen with a 28-32t truck. The benefit gained is equal to externally sourced virgin aggregates that are substituted. This is assumed to replace the product group with the lowest environmental impact declared in this EPD (module A1-A3) (conservative assumption) and a transport of 30 km in accordance with the Fall B assumptions in Trafikverket's tool Klimatkalkyl (Jordschakt Fall B (6.4).

Scenario 3 (100%):

As the material is finally disposed the module D has no activity. Accordingly, no environmental impact or benefit is recorded.

## Transport in Resource recovery stage (D)

Scenario	Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	value (l/t)
Scenario 1	Truck	-	-	0	-	-
Scenario 2 (Load)	Truck	50%	28-32t	4	Diesel	0,10
Scenario 2 (Load in credit)	Truck	50%	28-32t	60	Diesel	1,48
Scenario 3	Truck	-	-	0	-	-

The transport distance in Scenario 2 is assumed following the values by Trafikverket for Jordschakt Fall A (6.4) and Jordschakt Fall B (6.4) (Klimatkalkyl version 7.0). The assumed single distance to the construction site of 30 km was doubled to include the return.

### Additional technical information

The LCA calculations were performed with the LCA software GaBi (version 10.6.2.9), using background life cycle inventory (LCI) data from GaBi Professional database 2022.2 and ecoinvent 3.8.



## LCA: Results

**Bound aggregates and fillers** have the scope “Cradle to gate with options” and thus covers the life cycle modules A1-A3+A4. The life cycle stages A5 and B1-B7, C1-C4 and D are not included. The declared modules are shown in the table below, which follows the modular approach in EN 15804.

System boundaries for bound aggregates and fillers (X=included, MND= module not declared)

Product stage			Assembly stage		Use stage								End of life stage				Benefits & loads beyond system boundary
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	MND	MND								MND				MND

**Natural stones and unbound aggregates** have the scope “Cradle to gate with A1-A3 modules + A4 + C1–C4 and module D”. The life cycle stages A5 and B1-B7 are not included. The declared modules are shown in the table below, which follows the modular approach in EN 15804.

System boundaries for natural stones and unbound aggregates (X=included, MND= module not declared)

Product stage			Assembly stage		Use stage								End of life stage				Benefits & loads beyond system boundary
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	MND	MND								X	X	X	X	X

Core environmental impact indicators in the modules A1-A3 for **bound aggregates and fillers (1000 kg)** and for **natural stones and unbound aggregates (1000 kg)** and A4 for **bound aggregates and fillers (1000 kg)**

Indicator	Unit	A1-A3 Product group 1	A1-A3 Product group 2	A1-A3 Product group 3	A1-A3 Product group 4	A1-A3 Product group 5	A1-A3 Product group 6	A4 all product groups
GWP-total	kg CO2 eq.	2,12E+00	2,29E+00	2,45E+00	3,14E+00	3,53E+00	3,65E+00	3,53E+00
GWP-fossil	kg CO2 eq.	2,01E+00	2,17E+00	2,32E+00	2,96E+00	3,32E+00	3,44E+00	3,32E+00
GWP-biogenic	kg CO2 eq.	1,04E-01	1,11E-01	1,21E-01	1,66E-01	1,87E-01	1,98E-01	1,89E-01
GWP-LULUC	kg CO2 eq.	9,18E-03	9,80E-03	1,07E-02	1,47E-02	1,66E-02	1,75E-02	2,05E-02
ODP	kg CFC11 eq.	8,10E-10	1,62E-09	1,62E-09	1,62E-09	2,02E-09	2,02E-09	2,98E-13
AP	mol H <sup>+</sup> eq.	8,35E-03	9,01E-03	9,75E-03	1,31E-02	1,48E-02	1,55E-02	4,36E-03
EP-freshwater	kg P eq.	8,73E-06	1,03E-05	1,10E-05	1,43E-05	1,64E-05	1,72E-05	1,66E-05
EP-marine	kg N eq.	3,83E-03	4,10E-03	4,44E-03	5,98E-03	6,74E-03	7,10E-03	1,36E-03
EP-terrestrial	mol N eq.	4,17E-02	4,46E-02	4,84E-02	6,53E-02	7,36E-02	7,76E-02	1,51E-02
POCP	kg NMVOC eq.	7,55E-03	8,13E-03	8,81E-03	1,18E-02	1,34E-02	1,41E-02	3,64E-03
ADP-M&M	kg Sb eq.	1,33E-06	1,86E-06	1,87E-06	2,04E-06	2,52E-06	2,22E-06	3,06E-07
ADP-fossil	MJ	2,66E+01	2,87E+01	3,07E+01	3,95E+01	4,43E+01	4,59E+01	4,42E+01
WDP	m <sup>3</sup>	2,86E-02	2,79E-02	2,94E-02	3,51E-02	3,78E-02	4,15E-02	3,40E-02

Core environmental impact indicators in the modules C1-C4 and D for **natural stones and unbound aggregates (1000 kg)**

Reported values for modules C1-C4 and D refer to end-of-life Scenario 1 (Sc 1), Scenario 2 (Sc 2) and Scenario 3 (Sc 3) and are the same for all product groups.

Indicator	Unit	C1-C4 Sc 1	C1 Sc 2	C2-C4 Sc 2	C1 Sc 3	C2 Sc 3	C3 Sc 3	C4 Sc 3	D Sc 1	D Sc 2	D Sc 3
GWP-total	kg CO2 eq.	0	6,23E-01	0	6,23E-01	5,39E+00	0	6,23E-01	0	-7,97E+00	0
GWP-fossil	kg CO2 eq.	0	6,52E-01	0	6,52E-01	5,33E+00	0	6,52E-01	0	-7,74E+00	0
GWP-biogenic	kg CO2 eq.	0	0,00E+00	0	0,00E+00	2,24E-02	0	0,00E+00	0	-1,83E-01	0
GWP-LULUC	kg CO2 eq.	0	4,21E-03	0	4,21E-03	3,63E-02	0	4,21E-03	0	-4,78E-02	0
ODP	kg CFC11 eq.	0	7,71E-14	0	7,71E-14	6,65E-13	0	7,71E-14	0	-8,10E-10	0
AP	mol H <sup>+</sup> eq.	0	3,15E-03	0	3,15E-03	1,14E-02	0	3,15E-03	0	-2,29E-02	0
EP-freshwater	kg P eq.	0	2,24E-06	0	2,24E-06	1,93E-05	0	2,24E-06	0	-3,06E-05	0
EP-marine	kg N eq.	0	1,48E-03	0	1,48E-03	4,81E-03	0	1,48E-03	0	-1,01E-02	0
EP-terrestrial	mol N eq.	0	1,63E-02	0	1,63E-02	5,40E-02	0	1,63E-02	0	-1,12E-01	0
POCP	kg NM VOC eq.	0	4,11E-03	0	4,11E-03	1,02E-02	0	4,11E-03	0	-2,06E-02	0
ADP-M&M	kg Sb eq.	0	6,35E-08	0	6,35E-08	5,48E-07	0	6,35E-08	0	-1,91E-06	0
ADP-fossil	MJ	0	8,28E+00	0	8,28E+00	7,14E+01	0	8,28E+00	0	-1,04E+02	0
WDP	m <sup>3</sup>	0	7,28E-03	0	7,28E-03	6,28E-02	0	7,28E-03	0	-9,55E-02	0

**GWP-total:** Global Warming Potential; **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; See “additional Norwegian requirements” for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption

### Classification of disclaimers to the declaration of core environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
<b>Disclaimer 2</b> – 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		

### Resource use in the modules A1-A3 for **bound aggregates and fillers (1000 kg)** and for **natural stones and unbound aggregates (1000 kg)** and A4 for **bound aggregates and fillers (1000 kg)**

Parameter	Unit	A1-A3 Product group 1	A1-A3 Product group 2	A1-A3 Product group 3	A1-A3 Product group 4	A1-A3 Product group 5	A1-A3 Product group 6	A4 all product groups
RPEE	MJ	6,43E+00	6,88E+00	7,48E+00	1,01E+01	1,14E+01	1,20E+01	1,36E+01
RPEM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	1,62E+00	1,75E+00	1,87E+00	2,42E+00	2,73E+00	2,84E+00	2,77E+00
NRPE	MJ	2,67E+01	2,88E+01	3,08E+01	3,96E+01	4,44E+01	4,61E+01	4,43E+01
NRPM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	2,67E+01	2,88E+01	3,08E+01	3,96E+01	4,44E+01	4,61E+01	4,43E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m <sup>3</sup>	1,97E-03	2,09E-03	2,23E-03	2,85E-03	3,22E-03	3,41E-03	3,19E-03

## Resource use in the modules C1-C4 and D for **natural stones and unbound aggregates (1000 kg)**

Reported values for modules C1-C4 and D refer to end-of-life Scenario 1 (Sc 1), Scenario 2 (Sc 2) and Scenario 3 (Sc 3) and are the same for all product groups.

Parameter	Unit	C1-C4 Sc 1	C1 Sc 2	C2-C4 Sc 2	C1 Sc 3	C2 Sc 3	C3 Sc 3	C4 Sc 3	D Sc 1	D Sc 2	D Sc 3
RPEE	MJ	0	5,76E-01	0	5,76E-01	4,97E+00	0	5,76E-01	0	-1,42E+01	0
RPEM	MJ	0	0,00E+00	0	0,00E+00	1,00E+00	0	0,00E+00	0	0,00E+00	0
TPE	MJ	0	5,76E-01	0	5,76E-01	4,97E+00	0	5,76E-01	0	-6,90E+00	0
NRPE	MJ	0	8,31E+00	0	8,31E+00	7,17E+01	0	8,31E+00	0	-1,04E+02	0
NRPM	MJ	0	0,00E+00	0	0,00E+00	1,00E+00	0	0,00E+00	0	0,00E+00	0
TRPE	MJ	0	8,31E+00	0	8,31E+00	7,17E+01	0	8,31E+00	0	-1,04E+02	0
SM	kg	0	0,00E+00	0	0,00E+00	0,00E+00	0	0,00E+00	0	0,00E+00	0
RSF	MJ	0	0,00E+00	0	0,00E+00	0,00E+00	0	0,00E+00	0	0,00E+00	0
NRSF	MJ	0	0,00E+00	0	0,00E+00	0,00E+00	0	0,00E+00	0	0,00E+00	0
W	m <sup>3</sup>	0	6,73E-04	0	6,73E-04	5,81E-03	0	6,73E-04	0	-8,15E-03	0

*RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water*

## End of life – Waste in the modules A1-A3 for **bound aggregates and fillers (1000 kg)** and for **natural stones and unbound aggregates (1000 kg)** and A4 for **bound aggregates and fillers (1000 kg)**

Parameter	Unit	A1-A3 Product group 1	A1-A3 Product group 2	A1-A3 Product group 3	A1-A3 Product group 4	A1-A3 Product group 5	A1-A3 Product group 6	A4 all product groups
HW	kg	1,51E-09	1,57E-09	1,58E-09	1,64E-09	1,79E-09	1,78E-09	2,12E-10
NHW	kg	1,91E-02	2,42E-02	2,44E-02	2,68E-02	3,26E-02	2,97E-02	6,53E-03
RW	kg	9,56E-05	9,82E-05	1,02E-04	1,16E-04	1,25E-04	1,29E-04	7,44E-05

## End of life – Waste in the modules C1-C4 and D for **natural stones and unbound aggregates (1000 kg)**

Reported values for modules C1-C4 and D refer to end-of-life Scenario 1 (Sc 1), Scenario 2 (Sc 2) and Scenario 3 (Sc 3) and are the same for all product groups.

Parameter	Unit	C1-C4 Sc 1	C1 Sc 2	C2-C4 Sc 2	C1 Sc 3	C2 Sc 3	C3 Sc 3	C4 Sc 3	D Sc 1	D Sc 2	D Sc 3
HW	kg	0	6,06E-11	0	6,06E-11	5,23E-10	0	6,06E-110	0	-2,07E-09	0
NHW	kg	0	1,37E-03	0	1,37E-03	1,18E-02	0	1,00E+03	0	-3,17E-02	0
RW	kg	0	1,61E-05	0	1,61E-05	1,39E-04	0	1,61E-050	0	-2,44E-04	0

*HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed*

End of life – output flow in the modules A1-A3 for **bound aggregates and fillers (1000 kg)** and for **natural stones and unbound aggregates (1000 kg)** and A4 for **bound aggregates and fillers (1000 kg)**

Parameter	Unit	A1-A3 Product group 1	A1-A3 Product group 2	A1-A3 Product group 3	A1-A3 Product group 4	A1-A3 Product group 5	A1-A3 Product group 6	A4 all product groups
CR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	3,20E-02	5,18E-02	5,19E-02	5,20E-02	7,36E-02	6,00E-02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

End of life – output flow in the modules C1-C4 and D for **natural stones and unbound aggregates (1000 kg)**

Reported values for modules C1-C4 and D refer to end-of-life Scenario 1 (Sc 1), Scenario 2 (Sc 2) and Scenario 3 (Sc 3) and are the same for all product groups.

Parameter	Unit	C1-C4 Sc 1	C1 Sc 2	C2 Sc 2	C3 Sc 2	C4 Sc 2	C1-C4 Sc 3	D Sc 1	D Sc 2	D Sc 3
CR	kg	0	0	0	1,00E+03	0	0	0	-3,20E-02	0
MR	kg	0	0	0	0,00E+00	0	0	0	0,00E+00	0
MER	kg	0	0	0	0,00E+00	0	0	0	0,00E+00	0
EEE	MJ	0	0	0	0,00E+00	0	0	0	0,00E+00	0
ETE	MJ	0	0	0	0,00E+00	0	0	0	0,00E+00	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

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

### Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	Value
Biogenic carbon content in product	kg C	0
Biogenic carbon content in the accompanying packaging	kg C	0

## Additional Norwegian requirements

### Greenhouse gas emission from the use of electricity in the manufacturing phase

No electricity is used for the production of the declared aggregates.

### Additional environmental impact indicators required in NPCR Part A for construction products

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.

Indicator	Unit	A1-A3 Product group 1	A1-A3 Product group 2	A1-A3 Product group 3	A1-A3 Product group 4	A1-A3 Product group 5	A1-A3 Product group 6
GWP-IOBC	kg CO2 eq.	1,98E+00	2,14E+00	2,28E+00	2,93E+00	3,28E+00	3,39E+00

**GWP-IOBC** Global warming potential calculated according to the principle of instantaneous oxidation.

### Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.






- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

### Indoor environment

Not relevant.

## Bibliography

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- ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
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  - Källmén, A., et. al., (2019) Well-to-wheel LCI data for HVO fuels on the Swedish market. Report No 2019:04, f3 The Swedish Knowledge Centre for Renewable Transportation Fuels, Sweden. Available at [www.f3centre.se](http://www.f3centre.se).
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