

Environmental Product Declaration

In accordance with ISO14025:2006 and
EN15804:2012+A2:2019

Natural stone quartzite schist, natural edges



OPPDAL STEN

Owner of the declaration:
Oppdal sten

Product name:
Natural stone quartzite schist, natural edges

Declared unit:
1 tonne

Product category /PCR:
CEN Standard EN 15804:2012+A2:2019
serves as core PCR NPCR 018:2022 Part
B for natural stone products, aggregates
and fillers

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-15478-19255

Registration number:
NEPD-15478-19255

Issue date: 20.04.2026

Valid to: 20.04.2031

General information

Product:

Natural stone quartzite schist, even thickness, natural edges

Program operator:

EPD-Global

Post Box 5250 Majorstuen, 0303 Oslo, Norway

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Declaration number:

NEPD-15478-19255

This declaration is based on Product Category Rules:

NPCR 018:2022 Part B for natural stone products, aggregates and fillers. PCR review conducted by: Christoffer Skaar

Statement of liability:

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

Declared unit:

1 tonne Oppdal Sten Natural stone quartzite schist, even thickness, natural edges.

Declared unit with option:

A1-A3, A4, C1, C2, C3, C4, D

Functional unit:

Not applicable

Verification:

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

internal ☐

external ☒

Julie Lyse Skillestad

Independent verifier approved by EPD-Global

Owner of the declaration:

Oppdal Sten AS

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Manufacturer:

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Place of production:

Kåsvegen, Oppdal, Norge

Management system:

-

Organisation no:

966 234 547

Issue date:

20.04.2026

Valid to:

20.04.2031

Year of study:

2024

Comparability:

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

The EPD has been worked out by:

Inger Adele Helseth and Silje Wærp, Asplan Viak

Approved

Håkon Hauvåg

Manager of EPD-Global

Product

Product description:

Natural stone quartzite schist, natural edges applies to slate with a natural surface and unprocessed edges, as well as products with hand-cut (pitched) edges, such as random flagstone, dry stone walling, machine-cut wall stone, tiles, steps, window sills, and stepping stones with pitched or split edges.

The mineral composition of the slate consists primarily of quartz, feldspar, and mica. Oppdal slate appears in shades of grey ranging from light grey to dark grey. It is a high-quality quartzite schist that is durable and easy to work with.

Product specification:

Materials	Value	%
Natural stone 1000 kg	1	100

Technical data:

Technical Properties – Machine cut slate (Mean Values)

Property	Standard	THM	MO	MG	
Petrography	EN 12407	Quartzite schist			
Density	EN 1936	2688	2697	2702	kg/m ³
Water absorption	EN 13755	0.24	0.20	0.23	wt-%
Flexural strength - after frost	EN 12372	26.7	30.3	23.5	MPa
	EN 12372	29.4	32.1	24.5	MPa
Compressive strength	EN 1926	271	240	244.6	MPa
Slip resistance, natural surface	EN 14231	82	82	96	SRV dry
	EN 14231	27	54	63	SRV wet
Slip resistance, honed	EN 14231	59	58	61	SRV dry
	EN 14231	31	30	35	SRV wet
Facade anchor, breaking load dowel hole	EN 13364	2350	2325	2170	N
Frost resistant	EN 12371	Yes	Yes	Yes	
Abrasion resistance	EN 14157 (A)	15.2	17.4	16.4	mm
Fire classification (not tested)	Decision 96/603 CE	A1	A1	A1	

THM: Trollheimen, MO: Mørk, MG: Mørk Golan. Values are mean values.

Market:

Nordic

Reference service life, product:

Depending of the application

Reference service life, building:

50 years

Additional technical information

Conversion of results from per ton to per m² can be done by multiplying the result with the thickness in meters and the density of 2.7 ton/m³.

LCA: Calculation rules

Declared unit:

1 tonne Natural stone quartzite schist, even thickness, natural edges

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. These 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 economical allocation (extraction of stone) and mass allocation for processing of different natural stone product. 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:

Data has been collected in 2025 and is representative of the year 2024 (yearly average). Data for raw material inputs, product manufacturing ((A1–A3) are based on specific data provided by Oppdal Sten and technical data sheets from suppliers. The main energy sources used are diesel and electricity. Some steel and other materials are also used, but these represent a minor share compared to the total amount of slate produced.

Consumption data has been provided directly by Oppdal Sten and is considered to be of high quality. Emission data, particularly greenhouse gas emissions, are theoretical values based on the combustion of fossil fuels (diesel and gas) and are also considered to be of good quality. End-of-Life (C1–C4) are based on information from manufacturers. Generic data for background processes has been modelled using Ecoinvent 3.11.



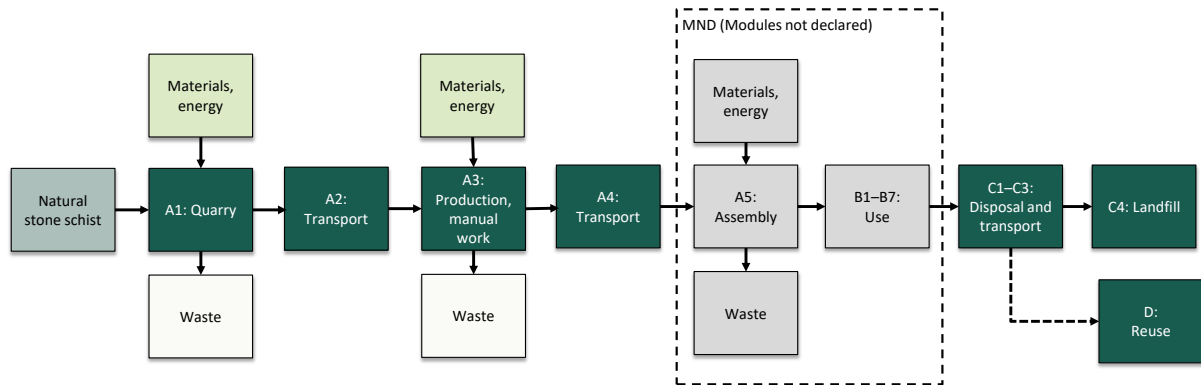
Materials	Source	Data quality	Year
Explosives	NEPD-3781-2761-EN, issue date 18.10.2022, valid until 18.10.2026. NEPD-4019-3055-EN, issue date 07.12.2022, valid until 07.12.2027. NEPD-4018-3055-EN, issue date 07.12.2022, valid until 07.12.2027 NEPD-4020-3055, issue date 07.12.2022, valid until 07.12.2027	Very good	2018/2019 2021 2021 2021
Extraction: Combustion of diesel in construction machine Based on "Transport, freight, lorry >32 metric ton, EURO6 {RER} transport, freight, lorry >32 metric ton, EURO6 Cut-off, U"	Ecoinvent v 3.11.	Very good	2022
Electricity, low voltage {NO} market for Cut-off, U	Ecoinvent v 3.11.	Very good	2022

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

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	MND	MND	MND	MND	X	X	X	X	X

System boundary:

This EPD covers the production and transport of explosives (modules A1 and A2) used in the extraction of stone. Natural stone blocks do not undergo any treatment. The products are transported at site at Oppdal Sten for further processing. The standard end-of-life scenario for natural stone products other than aggregates is adopted in modules C and D.





LCA: Scenarios and additional technical information

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

Production in Oppdal, Norway. Product is assumed to be transported from Oppdal to a local user. Waste scenarios are considered for Norway.

Transport from production place to assembly/user (A4)

Transport from production place to assembly/user (A4)	Capacity utilisation (incl. return) [%]	Distance [km]	Fuel/Energy consumption	Unit	Value
Truck*	56	400	0,017	l/tkm	6,73

*The truck is modelled as "Transport, freight, lorry >32 metric ton, EURO5 {RER}| transport, freight, lorry >32 metric ton, EURO5 | Cut-off, U", modified to 0,34 l/km, 20-ton load and adjusted to 81 % fossil diesel and 19 % biodiesel.

All production is normally delivered directly from Oppdal to building site. As scenario a distance of 400 km delivered by lorry (>32 t) is calculated. This is corresponding to the distance from Oppdal to a Eastern Norway.

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0
Recycling	kg	1000
Energy recovery	kg	0
To landfill	kg	0
Add/remove rows acc. to relevance		

It is assumed that the slate is recycled together with other inert materials. No energy for crushing is needed. The scenario for use, is fill material in noise barriers along roads. Therefore, no emissions from waste treatment have been considered. Transport to waste processing is included (C2), 50 km.

Transport to waste processing (C2)

Transport from production place to assembly/user (C2)	Capacity utilisation (incl. return) [%]	Distance [km]	Fuel/Energy consumption	Unit	Value
Truck*	56	50	0,045	l/tkm	2,25

*The truck is modelled as "Transport, freight, lorry 16-32 metric ton, EURO5 {RER}| transport, freight, lorry 16-32 metric ton, EURO5 | Cut-off, U".

Benefits and loads beyond the system boundaries (D)

Benefits and loads beyond the system boundaries (D)	Unit	Value
Substitution of stone materials	kg	1000

LCA: Results

The result tables are given using a location based approach for foreground system (A3)
More information about transparent reporting of electricity in the additional requirements section.

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO ₂ eq	6,05E+01	3,02E+01	0,00E+00	3,77E-03	0,00E+00	0,00E+00	-3,37E+00
GWP - fossil	kg CO ₂ eq	6,05E+01	3,02E+01	0,00E+00	3,77E-03	0,00E+00	0,00E+00	-3,37E+00
GWP - biogenic	kg CO ₂ eq	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP - luluc	kg CO ₂ eq	1,03E-02	1,26E-02	0,00E+00	1,58E-06	0,00E+00	0,00E+00	-2,64E-03
ODP	kg CFC11 eq	4,87E-01	6,71E-07	0,00E+00	8,39E-11	0,00E+00	0,00E+00	-3,84E-08
AP	molc H ⁺ eq	7,32E-02	1,24E-01	0,00E+00	1,55E-05	0,00E+00	0,00E+00	-2,77E-02
EP- freshwater	kg P eq	1,80E-01	2,53E-03	0,00E+00	3,17E-07	0,00E+00	0,00E+00	-8,00E-04
EP -marine	kg N eq	1,99E-02	4,48E-02	0,00E+00	5,60E-06	0,00E+00	0,00E+00	-8,19E-03
EP - terrestrial	molc N eq	2,55E-01	4,89E-01	0,00E+00	6,11E-05	0,00E+00	0,00E+00	-1,11E-01
POCP	kg NMVOC eq	7,11E-02	1,93E-01	0,00E+00	2,41E-05	0,00E+00	0,00E+00	-2,71E-02
ADP-M&M ²	kg Sb-Eq	1,41E-04	7,45E-05	0,00E+00	9,31E-09	0,00E+00	0,00E+00	-5,30E-05
ADP-fossil ²	MJ	6,98E+01	4,29E+01	0,00E+00	5,36E-03	0,00E+00	0,00E+00	-1,03E+01
WDP ²	m ³	3,76E+00	2,43E+00	0,00E+00	3,04E-04	0,00E+00	0,00E+00	-9,48E-01

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

Reading example: 9.0 E-03 = 9.0*10⁻³ = 9.0* $\frac{1}{10} \cdot \frac{1}{10} \cdot \frac{1}{10}$ = 0.009

9.0 E+03 = 9.0*10³ = 9.0*10*10*10=9000

Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PM	Disease incidence	8,12E-07	3,30E-06	0,00E+00	4,12E-10	0,00E+00	0,00E+00	-5,45E-07
IRP ¹	kBq U235 eq.	4,99E-01	7,25E-01	0,00E+00	9,07E-05	0,00E+00	0,00E+00	-1,32E-01
ETP-fw ²	CTUe	1,38E+02	2,24E+02	0,00E+00	2,80E-02	0,00E+00	0,00E+00	-2,21E+01
HTP-c ²	CTUh	1,07E-08	6,74E-09	0,00E+00	8,42E-13	0,00E+00	0,00E+00	-1,83E-09
HTP-nc ²	CTUh	3,24E-07	4,75E-07	0,00E+00	5,94E-11	0,00E+00	0,00E+00	-6,73E-08
SQP ²	Dimensionless	1,39E+03	1,11E+03	0,00E+00	1,39E-01	0,00E+00	0,00E+00	-9,78E+01

PM: Particulate matter emissions; **IRP:** Ionising radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects; **SQP:** Land use related impacts / soil quality

¹ 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.

² 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

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	1,75E+02	9,21E+00	0,00E+00	1,15E-03	0,00E+00	0,00E+00	-1,74E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,75E+02	9,21E+00	0,00E+00	1,15E-03	0,00E+00	0,00E+00	-1,74E+01
PENRE	MJ	6,99E+01	4,29E+01	0,00E+00	5,36E-03	0,00E+00	0,00E+00	-1,03E+01
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	6,99E+01	4,29E+01	0,00E+00	5,36E-03	0,00E+00	0,00E+00	-1,03E+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
FW	m ³	5,17E-01	7,11E-02	0,00E+00	8,89E-06	0,00E+00	0,00E+00	-4,30E-01

PERE Renewable primary energy resources used as energy carrier; **PERM** Renewable primary energy resources used as raw materials; **PERT** Total use of renewable primary energy resources; **PENRE** Nonrenewable primary energy resources used as energy carrier; **PENRM** Nonrenewable primary energy resources used as 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** Use of net fresh water.

End of life – Waste

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	2,94E-02	1,40E-02	0,00E+00	1,75E-06	0,00E+00	0,00E+00	-2,52E-02
NHWD	kg	1,99E+04	5,34E+01	0,00E+00	6,67E-03	0,00E+00	0,00E+00	-9,82E-01
RWD	kg	1,47E-04	1,80E-04	0,00E+00	2,25E-08	0,00E+00	0,00E+00	-3,11E-05

HWD Hazardous waste disposed; **NHWD** Non-hazardous waste disposed; **RWD** Radioactive waste disposed.

End of life – output flow

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
CRU	kg	3,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	3,48E-01	0,00E+00	0,00E+00	0,00E+00	1,00E+03	0,00E+00	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	1,82E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	1,78E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU Components for reuse; **MFR** Materials for recycling; **MER** Materials for energy recovery; **EEE** Exported electric energy; **EET** Exported thermal energy.

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	Value
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in the accompanying packaging	kg C	1,42E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 (approx. 3.67) kg CO₂

Additional requirements

Transparent reporting of energy

The EPD provides in the main result tables environmental impact categories based on a location based approach. The information below is provided so EPD users are able to understand the effect of these methodological choices.

The table below shows calculation of GWP-total for energy resources used in the process (A1 and A3) for each approach.

Module	Energy source	Data source	Amount	Unit	GWP _{total} [kg CO ₂ - eq/unit]	SUM [kg CO ₂ - eq]
Location based approach						
A1	Electricity, low voltage {NO} market for Cut-off, U	Simapro	66 117	kWh	0,034	2 248
A3	Electricity, low voltage {NO} market for Cut-off, U	Simapro	103 199	kWh	0,034	3 509
Market based approach						
A1	Residual mix electricity, foreground	NVE	66 117	kWh	0,534	35 306
A3	Residual mix electricity, foreground	NVE	103 199	kWh	0,534	55 108

The residual mix is calculated using the following methodology:

The residual mix for Norway is based on the product declaration for electricity purchases without guarantees of origin, NVE 2024. For a detailed description of the methodology: Issuance Based Residual Mix Calculation Methodology, Published 31.03.2020, Version 1.1, [https://www.aib-net.org/sites/default/files/assets/facts/residual mix/2022/RM%20EAM%20IB%20Calculation%20Methodology%20V1_2.pdf](https://www.aib-net.org/sites/default/files/assets/facts/residual%20mix/2022/RM%20EAM%20IB%20Calculation%20Methodology%20V1_2.pdf)

Additional environmental impact indicators required 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.

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ -eq.	6,10E+01	3,02E+01	0,00E+00	3,77E-03	0,00E+00	0,00E+00	-3,37E+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.
- ☐ The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.
- ☐ The product contains dangerous substances, more then 0,1% by weight, given by the REACH Candidate List, see table.
- ☐ The product contains no substances given by the REACH Candidate list.
- ☐ The product is classified as hazardous waste, see table.

Name	CAS no.	Amount

Indoor environment

Not applicable.

Carbon footprint

While a carbon footprint analysis has not been conducted for the product separately, the results section does include an evaluation of Global Warming Potential (GWP) with such an analysis. The GWP total results presented in this EPD document represents the carbon footprint of the product studied

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	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
ISO 21930:2017	Sustainability in building construction - Environmental declaration of building products
NPCR 018 2020 2022 v1 15804A2 2022 v.1 EPD Norway	Part B for Crushed Stones and Stone Products
LCA report Oppdal Sten	Helseth, Inger Adele, Wærp, Silje, Oddbjørn Dahlstrøm Andvik LCA-report for Oppdal Sten AS.
ecoinvent v. 3 Inventories	Allocation, cut-off by classification, Swiss Centre of Life Cycle



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