epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

TARN pavers

GRANITARN

The Norwegian EPD Foundation

Owner of the declaration:
Granitarn SAS

Product:
TARN pavers

Declared unit:
1 tonne

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 018:2022 Part B for natural stone products, aggregates and fillers

Program operator:
The Norwegian EPD Foundation

Declaration number:
NEPD-11619-11543

Registration number:
NEPD-11619-11543

Issue date:
27.06.2025

Valid to:
27.06.2030

EPD software:
LCAno EPD generator ID: 892432

General information

Product

TARN pavers

Owner of the declaration:

Granitarn SAS
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Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-norge.no

Manufacturer:

Granitarn SAS

Declaration number:

NEPD-11619-11543

Place of production: Not

Granitarn SAS
260 route du Lac du Merle
81100 Burlats, France

This declaration is based on Product Category Rules:

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

Management system:

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.

Organisation no:

FR93313053365

Declared unit:

1 tonne TARN pavers

Issue date:

27.06.2025

Declared unit with option:

A1-A3, A4, A5, C1, C2, C3, C4, D

Valid to:

27.06.2030

Year of study:

2024

Functional unit:

Not applicable.

Comparability:

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

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Pedro Ferreira

Reviewer of company-specific input data and EPD: Børge Heggen Johansen, Energiråd AS

Verification of EPD tool:

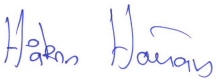
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Martin Erlandsson, IVL Swedish Res. Inst

(no signature required)

Approved:



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Pavers in TARN, according to European Product standard EN 1341, are especially used for public projects.

Product specification

Materials	Value	Unit
Stone	1000	kg
Packaging - Wood	21.16	kg

Technical data:

TARN contains approximately 40% plagioclase, 30 % quartz, 20% orthoclase and 10% biotite. . It is a durable material and is very suited for interior and exterior applications.

Technical property	Standard	Value
Hardness (Mohs)	-	6 - 7
Apparent density	EN 1936	2670 kg/m^3
Porosity	EN 1936	0.3 %
Flexural strength	EN 12372	15,9 ± 1,8 MPa (E- = 13 MPa)
Compressive strength	EN 1926	201 ± 12 MPa (E- = 177 MPa)
Wear resistance	EN 14157	17,2 mm
Frost resistance	EN 12371	OK

Market:

The market for pavers is mainly France, and surrounding countries (Belgium, Germany, Switzerland, etc.)

Reference service life, product

Depending on the application.

Reference service life, building or construction works

The lifespan of buildings is often assumed to be around 60 years.

LCA: Calculation rules

Declared unit:

1 tonne TARN pavers

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 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.

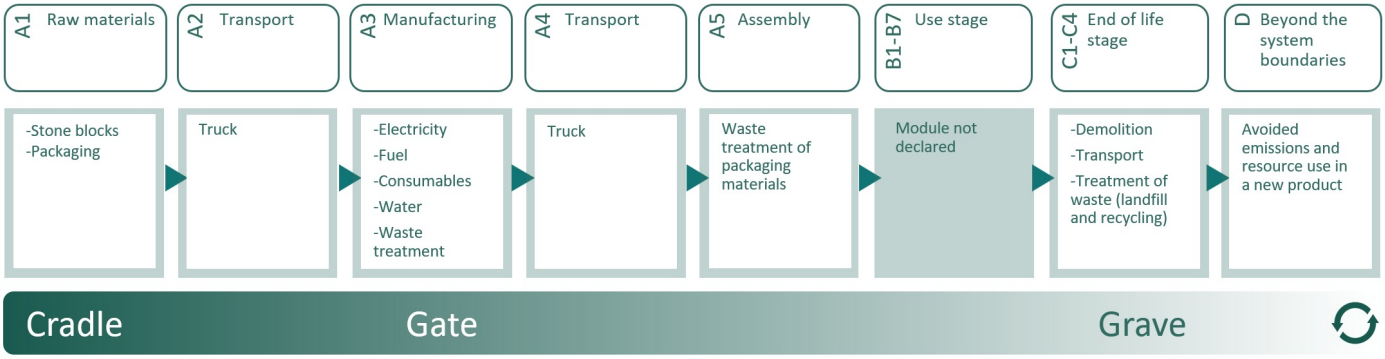
Materials	Source	Data quality	Year
Explosives	ecoinvent 3.6	Database	2019
Natural stone	LCA.no	Database	2024
Packaging - Wood	Modified ecoinvent 3.6	Database	2019

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	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

System boundary:

This EPD covers the production and transport of stone blocks and packaging materials (modules A1 and A2). Natural stone blocks are cut, faced and flamed. The products are transported to the market within a radius of 300 km. The standard end-of-life scenario for natural stone products other than aggregates is adopted in modules C and D.



Additional technical information:

Not applicable.

LCA: Scenarios and additional technical information

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

- Module A4 contains the transportation of finished products to customers in a radius of 300 km.
- Module A5 covers the waste treatment of packaging materials.
- Modules C and D accounts for the most likely end-of-life scenarios for stone products other than aggregates. It is assumed that 70% of the products are recycled into stone aggregates, while 30% is landfilled as inert waste.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tons, EURO6 (km)	53,3 %	300	0,023	l/tkm	6,90

Assembly (A5)	Unit	Value			
Waste, packaging, pallet, EUR wooden pallet, reusable, average treatment (kg)	kg	21,16			

De-construction demolition (C1)	Unit	Value			
Demolition of natural stone products (kg)	kg	1000,00			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tons, EURO6 (km)	53,3 %	50	0,023	l/tkm	1,15

Waste processing (C3)	Unit	Value			
Waste treatment, stone products after demolition (kg)	kg	700,00			

Disposal (C4)	Unit	Value			
Waste, stone to landfill (kg)	kg	300,00			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity (MJ)	MJ	0,72			
Substitution of thermal energy, district heating (MJ)	MJ	11,044			
Substitution of stone materials, as aggregates (kg)	kg	700,00			

LCA: Results

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

Environmental impact										
	Indicator	**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	1,19E+02	2,67E+01	3,21E+01	4,00E+00	4,45E+00	5,04E-01	1,29E+00	-1,70E+00
	GWP-fossil	kg CO_2 -eq	1,50E+02	2,67E+01	2,85E-02	4,00E+00	4,45E+00	4,97E-01	1,28E+00	-1,67E+00
	GWP-biogenic	kg CO_2 -eq	-3,19E+01	1,14E-02	3,21E+01	7,50E-04	1,90E-03	4,29E-03	1,09E-03	-3,21E-02
	GWP-luluc	kg CO_2 -eq	4,59E-02	8,13E-03	7,30E-06	3,15E-04	1,35E-03	6,88E-04	2,52E-04	-3,29E-03
	ODP	kg CFC11 -eq	3,11E-05	6,43E-06	4,55E-09	8,64E-07	1,07E-06	9,80E-08	6,26E-07	-4,66E-03
	AP	mol H+ -eq	7,07E-01	8,59E-02	2,29E-04	4,19E-02	1,43E-02	4,02E-03	1,25E-02	-1,50E-02
	EP-FreshWater	kg P -eq	1,99E-03	2,12E-04	3,41E-07	1,46E-05	3,54E-05	3,14E-05	9,59E-06	-4,83E-05
	EP-Marine	kg N -eq	2,17E-01	1,88E-02	9,82E-05	1,85E-02	3,14E-03	1,18E-03	4,70E-03	-5,18E-03
	EP-Terrestial	mol N -eq	2,47E+00	2,10E-01	1,05E-03	2,00E-01	3,50E-02	1,36E-02	5,18E-02	-6,07E-02
	POCP	kg NMVOC -eq	1,39E+00	8,24E-02	2,70E-04	5,57E-02	1,37E-02	3,64E-03	1,48E-02	-1,60E-02
	ADP-minerals&metals[1]	kg Sb-eq	1,13E-03	4,75E-04	4,62E-07	6,14E-06	7,92E-05	6,31E-06	1,14E-05	-1,43E-04
	ADP-fossil[1]	MJ	3,36E+03	4,33E+02	3,35E-01	5,51E+01	7,22E+01	1,54E+01	4,15E+01	-2,80E+01
	WDP[1]	m^3	2,74E+04	3,32E+02	5,15E-01	1,17E+01	5,54E+01	1,70E+03	8,73E+01	-1,28E+03

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

Not applicable.

Additional environmental impact indicators										
Indicator		**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
	PM	Disease incidence	3,63E-06	2,45E-06	2,79E-09	5,07E-06	4,08E-07	6,44E-08	2,67E-07	-3,39E-07
	IRP[2]	kgBq U235 -eq	2,47E+01	1,89E+00	1,21E-03	2,40E-01	3,16E-01	2,59E-01	1,80E-01	-2,55E-01
	ETP-fw[1]	CTUe	4,32E+03	3,17E+02	3,81E-01	3,01E+01	5,28E+01	1,09E+01	2,05E+01	-3,29E+01
	HTP-c[1]	CTUh	1,03E-07	0,00E+00	4,20E-11	1,00E-09	0,00E+00	7,00E-10	6,00E-10	-1,49E-09
	HTP-nc[1]	CTUh	1,77E-05	3,06E-07	2,03E-09	2,80E-08	5,11E-08	9,80E-09	1,20E-08	-3,91E-08
	SQP[1]	dimensionless	1,10E+03	4,97E+02	1,88E-01	6,69E+00	8,28E+01	8,73E+00	1,51E+02	5,54E+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	A1-A3	A4	A5	C1	C2	C3	C4	D
	PERE	MJ	4,52E+02	5,45E+00	6,87E-03	3,00E-01	9,09E-01	7,95E+00	6,38E-01	-1,20E+01
	PERM	MJ	2,94E+02	0,00E+00	-2,94E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	PERT	MJ	7,45E+02	5,45E+00	-2,94E+02	3,00E-01	9,09E-01	7,95E+00	6,38E-01	-1,20E+01
	PENRE	MJ	3,36E+03	4,33E+02	3,35E-01	5,51E+01	7,22E+01	1,54E+01	4,15E+01	-2,95E+01
	PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	PENRT	MJ	3,36E+03	4,33E+02	3,35E-01	5,51E+01	7,22E+01	1,54E+01	4,15E+01	-2,95E+01
	SM	kg	4,39E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	RSF	MJ	3,98E+00	1,91E-01	2,01E-04	0,00E+00	3,18E-02	0,00E+00	1,32E-02	-1,31E-01
	NRSF	MJ	6,81E+00	6,39E-01	2,28E-03	0,00E+00	1,07E-01	0,00E+00	3,79E-02	-4,69E-01
	FW	m^3	1,01E+00	4,93E-02	2,44E-04	2,83E-03	8,22E-03	2,64E-02	4,94E-02	-1,00E+00

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	A1-A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	2,17E-01	2,37E-02	0,00E+00	1,62E-03	3,95E-03	1,54E-03	0,00E+00	-6,58E-03
	NHWD	kg	8,35E+00	3,77E+01	1,06E+00	6,52E-02	6,28E+00	4,87E-02	3,00E+02	-2,20E-01
	RWD	kg	3,34E-02	2,96E-03	0,00E+00	3,82E-04	4,93E-04	1,63E-04	0,00E+00	-2,20E-04

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

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Output flow

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	CRU	kg	0,00E+00	0,00E+00	2,01E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	7,82E-01	0,00E+00	2,48E-05	0,00E+00	0,00E+00	7,00E+02	0,00E+00	0,00E+00
	MER	kg	2,33E-02	0,00E+00	1,05E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	EEE	MJ	1,39E-02	0,00E+00	7,30E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	EET	MJ	2,10E-01	0,00E+00	1,10E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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*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	8,75E+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).

Electricity mix	Source	Amount	Unit
Electricity, France (kWh)	ecoinvent 3.6	94,37	g CO2-eq/kWh
Electricity, photovoltaic, slanted-roof installation, multi-Si (kWh) - France	ecoinvent 3.6	79,31	g CO2-eq/kWh

Dangerous substances

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

Indoor environment

Not applicable.

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products									
Indicator	**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	1,33E+02	2,67E+01	2,85E-02	4,00E+00	4,45E+00	4,98E-01	1,29E+00	-1,78E+00

GWP-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

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EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
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