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Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Norgips Ultra Board 13 LBG



NORGIPS

EPD-Global

Owner of the declaration:
Norgips Norge AS

Product:
Norgips Ultra Board 13 LBG

Declared unit:
1 m2

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 010:2022 Part B for building boards

Program operator:
EPD-Global

Declaration number:
NEPD-8316-7970-EN

Issue date:
03.12.2024

Latest revision:
v3 date: 17.09.2026

Valid to:
03.12.2029

EPD software:
LCAno EPD generator
ID:
1735799/ 1401482

General information

Product

Norgips Ultra Board 13 LBG

Owner of the declaration:

Norgips Norge AS
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Program operator:

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Manufacturer:

Norgips Norge AS

Declaration number:

NEPD-8316-7970-EN

Place of production:

Norgips Norge AS
Svelvikveien 625
3060 Svelvik, Norway

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 010:2022 Part B for building boards

Management system:

ISO 14001:2015

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 information, life cycle assessment data and evidences.

Organisation no:

986 034 757

Declared unit:

1 m2 Norgips Ultra Board 13 LBG

Issue date:

03.12.2024

Declared unit with option:

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

Valid to:

03.12.2029

Year of study:

2025

Functional unit:

1 m2 covering surface of installed building board with a specific function, from cradle-to-grave, with activities
needed for a study period of 60 years for the building.

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-Global'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-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global'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-Global. NEPDT96 Knauf

Developer of EPD: Øystein Edland

Reviewer of company-specific input data and EPD: Trond Even Fagerli

Verification of EPD tool:

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

Approved:

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

Product

Product description:

Norgips Ultra Board 13 LBG is a gypsum board consisting of a fiberglass reinforced plaster core with high density. The front and back paper liners are overlapped and glued together on the backside of the gypsum board. The long sides have tapered edges for easy treatment with compound, the short sides are cut.
The product is particularly suitable for the cladding of internal walls, ceilings and partitions in all types of buildings. Norgips Ultra Board 13 LBG provides the toughest and most robust wall construction with classified fire and sound requirements. Norgips Ultra Board 13 LBG makes it possible to mount fixtures directly into the board without the need for plugs. Norgips Ultra Board 13 LBG is a new generation of gypsum board that is significantly stronger than a traditional gypsum board.
Norgips Ultra Board 13 LBG is produced with 100 % renewable energy and liquefied bio gas (LBG).

Product specification

Norgips Ultra Board 13 LBG is produced in various width and lengths, but in the same thickness and it is therefore no variations of the product per square meter.

Materials	kg	%
Additives	0.0565	0.4677
Adhesive	0.0008	0.006622
Adhesive and sealant	0.3107	2.57
Chemical	0.0681	0.5637
Gypsum	7.68	63.57
Recycled cardboard	0.388	3.21
Recycled gypsum	1.92	15.89
Water	1.66	13.71
Total	12.08	100.00

Packaging	kg	%
Packaging - Cardboard	0.0524	94.08
Packaging - Plastic	0.0033	5.92
Total incl. packaging	12.14	100.00

Technical data:

More product information is available on www.norgips.no/www.norgips.se

Produced according to:	Weight:	Thickness	Reaction to fire
EN 520 - Gypsum plasterboards	12,1 kg/m2	12,5 mm	A2-s1,d0

Market:

Norway and Sweden

Reference service life, product

60 years

Reference service life, building or construction works

60 years

LCA: Calculation rules

Declared unit:

1 m2 Norgips Ultra Board 13 LBG

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 when specific information are missing. 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. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Additives	ecoinvent 3.10.1	Database	2023
Additives	ecoinvent 3.10.1	Database	2024
Additives	ecoinvent 3.10.1; supplier	Client Specific	2019
Adhesive	ecoinvent 3.10.1	Database	2023
Adhesive and sealant	EPD-DBC-20220147-IBF1-EN	EPD	2021
Chemical	ecoinvent 3.10.1	Database	2023
Chemical	ecoinvent 3.11	Database	2024
Gypsum	Supplier	Specific	2019
Packaging - Cardboard	ecoinvent 3.10.1	Database	2023
Packaging - Plastic	ecoinvent 3.10.1	Database	2023
Recycled cardboard	S-P-08304	EPD	2021
Recycled gypsum	LCA.no	Database	2024
Water	Environmental Footprint 3.1	Database	2021

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

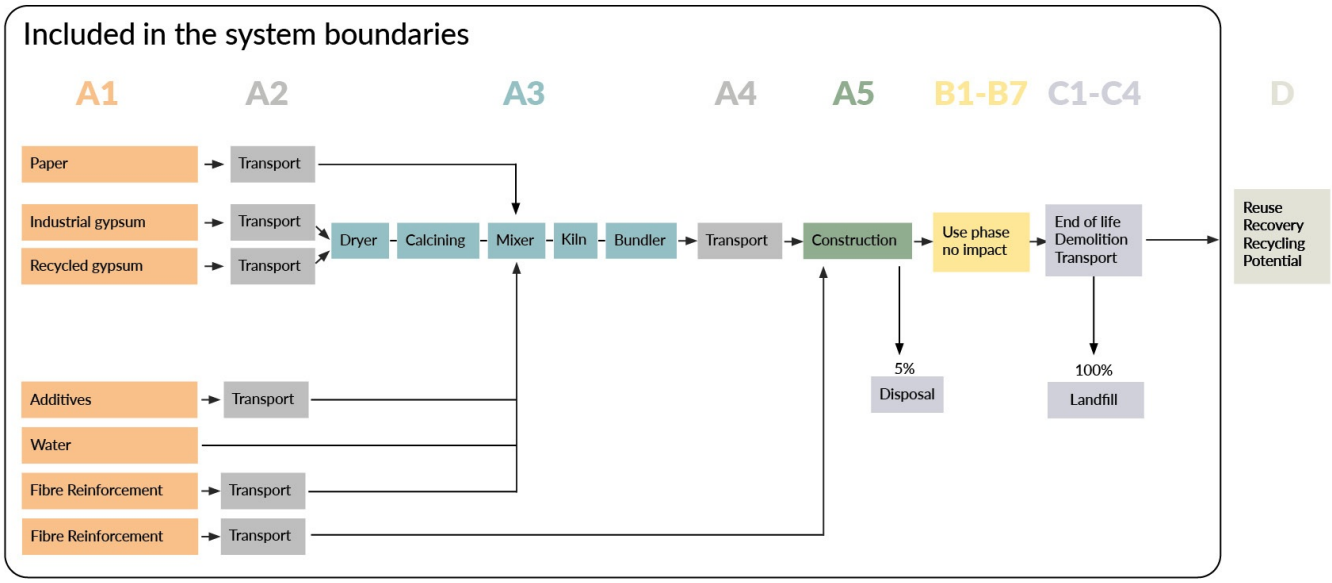
Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	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:

Flow chart for the life cycle (A1-A5 and C1-C4) with system boundaries are shown in the figure below.

This EPD includes the 100% end-of-life scenarios:
Pages 6-10 show EPD results with end-of-life landfill.
Pages 11-15 show EPD results with end-of-life recycling.

Modul D is also declared outside the life cycle with material and energy substitution from net recovery and is further explained in the scenarios.



Additional technical information:

The calcined gypsum is transferred to the mixer where water and additives are added. The slurry is distributed to a plasterboard liner where the edges are folded and a new layer of plasterboard liner is glued on to form a sandwich. The board line is continuous transferred along the production line, cut to suitable lengths and dried in a kiln. The dried boards are cut to the correct lengths and stacked in pallets.

LCA: Scenarios and additional technical information (End-of-life landfilling)

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

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Train, Electrical (km) - Norway	42.0 %	90.00	0.051	kWh/tkm	4.59
Truck, Biogas, 80.2% Capacity Utilisation, Class50, EURO 6 (km)	80.2 %	150.00	0.026	l/tkm	3.90
Truck, Diesel, 69.2% Capacity Utilisation, Class50, EURO 6 (km)	69.2 %	60.00	0.012	l/tkm	0.72

Assembly (A5)	Unit	Value			
Electricity, Norway (kWh)	kWh	0.000333			
Material loss from installation (percent)	Units	0.05			
Waste, packaging, folding chipboard, to average treatment (kg)	kg	0.0524			
Waste, packaging, plastic film (LDPE), to average treatment (kg)	kg	0.0033			

De-construction demolition (C1)	Unit	Value			
Default scenario from PCR - demolition and landfill (kg)	kg	12.40			
Electricity, Norway (kWh)	kWh	0.004166			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (kgkm) - Europe	55.0 %	50.00	0.023	l/tkm	1.15

Disposal (C4)	Unit	Value			
Landfilling of gypsum	kg	12.40			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity, in Norway (MJ)	MJ	0.002997			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	0.04535			

LCA: Results (End-of-life landfilling)

The LCA results are presented below for the declared unit defined on page 2 of the EPD document. The result tables are given using a market-based approach for foreground system (A3). More information about transparent reporting of electricity in the additional requirements section.

Environmental impact										
	Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	1.26E+00	1.06E-01	1.89E-01	1.02E-04	6.26E-02	4.66E-01	1.24E-01	-2.73E-04
	GWP-fossil	kg CO_2 -eq	1.52E+00	9.53E-02	9.55E-02	9.97E-05	6.26E-02	0.00E+00	1.24E-01	-2.63E-04
	GWP-biogenic	kg CO_2 -eq	-2.56E-01	1.11E-02	9.30E-02	2.27E-06	4.06E-05	4.66E-01	1.96E-04	-4.54E-07
	GWP-luluc	kg CO_2 -eq	2.50E-03	8.53E-05	1.33E-04	4.66E-07	2.44E-05	0.00E+00	3.42E-05	-9.07E-06
	ODP	kg CFC11 -eq	3.39E-08	1.92E-08	2.93E-09	3.00E-12	1.21E-09	0.00E+00	3.89E-09	-1.92E-05
	AP	mol H+ -eq	9.65E-03	5.60E-04	5.91E-04	1.38E-06	1.48E-04	0.00E+00	1.37E-03	-2.29E-06
	EP-FreshWater	kg P -eq	1.95E-04	6.32E-06	2.08E-05	1.05E-07	4.37E-06	0.00E+00	2.08E-04	-4.30E-08
	EP-Marine	kg N -eq	2.34E-03	1.44E-04	1.46E-04	1.20E-07	3.87E-05	0.00E+00	3.41E-04	-7.15E-07
	EP-Terrestial	mol N -eq	2.42E-02	1.60E-03	1.51E-03	1.46E-06	4.19E-04	0.00E+00	3.66E-03	-7.73E-06
	POCP	kg NMVOC -eq	6.92E-03	6.27E-04	4.64E-04	4.45E-07	2.57E-04	0.00E+00	1.34E-03	-2.14E-06
	ADP-minerals&metals[1]	kg Sb-eq	2.95E-05	4.20E-06	1.71E-06	1.58E-08	1.79E-07	0.00E+00	2.44E-07	-4.32E-09
	ADP-fossil[1]	MJ	2.70E+01	1.82E+00	1.65E+00	1.20E-03	9.40E-01	0.00E+00	2.89E+00	-3.73E-03
	WDP[1]	m^3	6.77E+00	2.57E+00	4.69E-01	5.23E-03	4.81E-03	0.00E+00	1.75E-02	-1.14E-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"

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

The LCA results in the EPD are calculated using a specific methodological approach for accounting energy resources, see the additional requirements section for more information. In this EPD the following approach was used: Market-based approach.

Additional environmental impact indicators										
Indicator		**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
	PM	Disease incidence	5.12E-08	2.00E-08	4.99E-09	8.00E-12	6.05E-09	0.00E+00	2.08E-08	-1.32E-10
	IRP[2]	kgBq U235 -eq	7.75E-02	1.56E-02	4.93E-03	3.80E-05	1.13E-03	0.00E+00	3.85E-03	-2.68E-05
	ETP-fw[1]	CTUe	4.84E+00	1.71E+00	4.49E-01	2.09E-03	1.11E-01	0.00E+00	1.93E+00	-1.96E-02
	HTP-c[1]	CTUh	1.73E-09	0.00E+00	8.90E-11	0.00E+00	0.00E+00	0.00E+00	5.00E-11	0.00E+00
	HTP-nc[1]	CTUh	1.83E-08	2.54E-09	1.27E-09	1.30E-11	6.05E-10	0.00E+00	3.45E-09	-2.10E-11
	SQP[1]	dimensionless	7.84E+00	4.22E+00	1.01E+00	6.43E-04	9.46E-01	0.00E+00	7.09E+00	-2.51E-02

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"

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	7.55E+00	4.97E-01	4.09E-01	1.73E-02	1.53E-02	0.00E+00	6.07E-02	-2.32E-02
	PERM	MJ	1.03E+00	0.00E+00	-5.45E-01	0.00E+00	0.00E+00	-3.64E-01	0.00E+00	0.00E+00
	PERT	MJ	8.59E+00	4.97E-01	-1.37E-01	1.73E-02	1.53E-02	-3.64E-01	6.07E-02	-2.32E-02
	PENRE	MJ	2.06E+01	1.76E+00	1.32E+00	1.20E-03	9.40E-01	0.00E+00	2.89E+00	-3.73E-03
	PENRM	MJ	5.12E+00	0.00E+00	-1.33E-01	0.00E+00	0.00E+00	-4.98E+00	0.00E+00	0.00E+00
	PENRT	MJ	2.57E+01	1.76E+00	1.19E+00	1.20E-03	9.40E-01	-4.98E+00	2.89E+00	-3.73E-03
	SM	kg	1.00E+01	0.00E+00	5.01E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	6.12E-04	1.35E-03	9.94E-05	9.48E-09	5.13E-06	0.00E+00	1.74E-05	-1.34E-06
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.37E-03
	FW	m^3	1.61E-01	6.79E-03	8.43E-03	1.22E-04	1.39E-04	0.00E+00	0.00E+00	-2.65E-05

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"

End of life - Waste

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	7.69E-02	3.03E-03	4.14E-03	1.25E-05	1.36E-03	0.00E+00	0.00E+00	-2.51E-06
	NHWD	kg	1.74E+00	3.58E-01	7.35E-01	5.34E-04	2.72E-02	0.00E+00	1.24E+01	-1.75E-04
	RWD	kg	8.81E-03	2.45E-03	5.63E-04	8.32E-09	2.80E-07	0.00E+00	0.00E+00	-1.89E-08

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"

End of life - Output flow

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	3.83E-02	0.00E+00	5.17E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MER	kg	2.10E-11	0.00E+00	4.20E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	3.85E-06	0.00E+00	6.15E-05	0.00E+00	0.00E+00	0.00E+00	1.20E-03	0.00E+00
	EET	MJ	1.47E-05	0.00E+00	1.37E-04	0.00E+00	0.00E+00	0.00E+00	2.69E-03	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"

Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	1.30E-01
Biogenic carbon content in accompanying packaging	kg C	2.23E-02

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

LCA: Scenarios and additional technical information (End-of-life recycling)

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

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Train, Electrical (km) - Norway	42.0 %	90.00	0.051	kWh/tkm	4.59
Truck, Biogas, 80.2% Capacity Utilisation, Class50, EURO 6 (km)	80.2 %	150.00	0.026	l/tkm	3.90
Truck, Diesel, 69.2% Capacity Utilisation, Class50, EURO 6 (km)	69.2 %	60.00	0.012	l/tkm	0.72

Assembly (A5)	Unit	Value			
Material loss from installation (percent)	Units	0.05			
Electricity, Norway (kWh)	kWh	0.000333			

De-construction demolition (C1)	Unit	Value			
Recycled gypsum sent to recycling (kg)	kg	1.92			
Waste scenario for project specific EPDs - demolition and recycling	kg	10.16			
Electricity, Norway (kWh)	kWh	0.003414			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (kgkm) - Europe	55.0 %	50.00	0.023	l/tkm	1.15

Waste processing (C3)	Unit	Value			
Gypsum to recycling	kg	11.57			
Sorting of waste gypsum plasterboard at sorting plant (kg)	kg	12.08			
Waste treatment per kg Non-hazardous waste, incineration with fly ash extraction - C3 (kg)	kg	0.508			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity, in Norway (MJ)	MJ	0.3019			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	4.57			
Substitution of natural gypsum (kg)	kg	9.65			

LCA: Results (End-of-life recycling)

The LCA results are presented below for the declared unit defined on page 2 of the EPD document. The result tables are given using a market-based approach for foreground system (A3). More information about transparent reporting of electricity in the additional requirements section.

Environmental impact										
	Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	1.26E+00	1.06E-01	1.01E-01	8.40E-05	6.26E-02	5.98E-01	0	-4.91E-02
	GWP-fossil	kg CO_2 -eq	1.52E+00	9.53E-02	1.12E-01	8.17E-05	6.26E-02	5.69E-01	0	-4.81E-02
	GWP-biogenic	kg CO_2 -eq	-2.56E-01	1.11E-02	-1.08E-02	1.86E-06	4.06E-05	2.86E-02	0	-1.53E-04
	GWP-luluc	kg CO_2 -eq	2.50E-03	8.53E-05	1.36E-04	3.82E-07	2.44E-05	1.05E-04	0	-9.20E-04
	ODP	kg CFC11 -eq	3.39E-08	1.92E-08	3.07E-09	2.00E-12	1.21E-09	7.17E-09	0	-1.93E-03
	AP	mol H+ -eq	9.65E-03	5.60E-04	1.72E-02	1.13E-06	1.48E-04	3.34E-01	0	-7.27E-04
	EP-FreshWater	kg P -eq	1.95E-04	6.32E-06	1.31E-05	8.62E-08	4.37E-06	5.63E-05	0	-5.81E-06
	EP-Marine	kg N -eq	2.34E-03	1.44E-04	1.67E-04	9.84E-08	3.87E-05	8.11E-04	0	-2.49E-04
	EP-Terrestial	mol N -eq	2.42E-02	1.60E-03	1.65E-03	1.20E-06	4.19E-04	6.89E-03	0	-3.28E-03
	POCP	kg NMVOC -eq	6.92E-03	6.27E-04	1.53E-03	3.64E-07	2.57E-04	2.27E-02	0	-7.62E-04
	ADP-minerals&metals[1]	kg Sb-eq	2.95E-05	4.20E-06	1.77E-06	1.30E-08	1.79E-07	1.55E-06	0	-3.47E-04
	ADP-fossil[1]	MJ	2.70E+01	1.82E+00	1.75E+00	9.87E-04	9.40E-01	5.24E+00	0	-6.64E-01
	WDP[1]	m^3	6.77E+00	2.57E+00	4.79E-01	4.29E-03	4.81E-03	2.25E-01	0	-1.21E-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"

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

The LCA results in the EPD are calculated using a specific methodological approach for accounting energy resources, see the additional requirements section for more information. In this EPD the following approach was used: Market-based approach.

Additional environmental impact indicators										
Indicator		**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
	PM	Disease incidence	5.12E-08	2.00E-08	2.30E-08	6.00E-12	6.05E-09	3.84E-07	0	-2.53E-08
	IRP[2]	kgBq U235 -eq	7.75E-02	1.56E-02	6.24E-03	3.12E-05	1.13E-03	3.05E-02	0	-4.34E-03
	ETP-fw[1]	CTUe	4.84E+00	1.71E+00	5.72E-01	1.71E-03	1.11E-01	4.77E+00	0	-2.24E+00
	HTP-c[1]	CTUh	1.73E-09	0.00E+00	1.06E-10	0.00E+00	0.00E+00	3.89E-10	0	-3.70E-11
	HTP-nc[1]	CTUh	1.83E-08	2.54E-09	2.10E-09	1.10E-11	6.05E-10	2.06E-08	0	-2.18E-09
	SQP[1]	dimensionless	7.84E+00	4.22E+00	9.85E-01	5.27E-04	9.46E-01	6.70E+00	0	-3.09E+00

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"

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	7.55E+00	4.97E-01	4.33E-01	1.41E-02	1.53E-02	5.54E-01	0	-2.37E+00
	PERM	MJ	1.03E+00	0.00E+00	3.35E-02	0.00E+00	0.00E+00	-3.63E-01	0	0.00E+00
	PERT	MJ	8.59E+00	4.97E-01	4.67E-01	1.41E-02	1.53E-02	1.91E-01	0	-2.37E+00
	PENRE	MJ	2.06E+01	1.76E+00	1.43E+00	9.87E-04	9.40E-01	5.24E+00	0	-6.64E-01
	PENRM	MJ	5.12E+00	0.00E+00	8.47E-03	0.00E+00	0.00E+00	-4.95E+00	0	0.00E+00
	PENRT	MJ	2.57E+01	1.76E+00	1.44E+00	9.87E-04	9.40E-01	2.85E-01	0	-6.64E-01
	SM	kg	1.00E+01	0.00E+00	5.01E-01	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00
	RSF	MJ	6.12E-04	1.35E-03	9.99E-05	7.77E-09	5.13E-06	2.83E-05	0	-1.41E-04
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	-1.38E-01
	FW	m^3	1.61E-01	6.79E-03	6.24E-03	1.00E-04	1.39E-04	-4.35E-02	0	-2.81E-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"

End of life - Waste

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	7.69E-02	3.03E-03	8.37E-03	1.03E-05	1.36E-03	8.61E-02	0	-9.83E-04
	NHWD	kg	1.74E+00	3.58E-01	3.34E+00	4.38E-04	2.72E-02	6.47E+01	0	-2.86E-02
	RWD	kg	8.81E-03	2.45E-03	5.63E-04	6.82E-09	2.80E-07	7.03E-06	0	-2.29E-06

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"

End of life - Output flow

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00
	MFR	kg	3.83E-02	0.00E+00	5.82E-01	0.00E+00	0.00E+00	1.16E+01	0	0.00E+00
	MER	kg	2.10E-11	0.00E+00	1.85E-08	0.00E+00	0.00E+00	3.69E-07	0	0.00E+00
	EEE	MJ	3.85E-06	0.00E+00	4.94E-03	0.00E+00	0.00E+00	9.87E-02	0	0.00E+00
	EET	MJ	1.47E-05	0.00E+00	8.61E-04	0.00E+00	0.00E+00	1.72E-02	0	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"

Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	1.30E-01
Biogenic carbon content in accompanying packaging	kg C	2.23E-02

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

Additional requirements

Transparent reporting of energy

The table below presents GWPtotal values for energy resources used in the manufacturing phase (A3), calculated with both the location-based and market-based approach. This information is provided for transparency, allowing EPD users to understand the impact of these methodological choices. In this EPD, the following methodology was used in the main results: Market-based approach.

Energy source	Data source	Amount	Unit	GWP-total [kg CO_2-eq/unit]	SUM [kg CO_2-eq]
Location based approach					
Electricity, Norway, low voltage	ecoinvent 3.10.1	0.54	kWh	0.02	0.01
Market based approach					
Electricity, Norway, Guarantees of Origin, Å Enetlios, Validity 2025, 100% hydropower	ecoinvent 3.10.1	0.54	kWh	0.01	0.01
Electricity, Norway, low voltage, residual mix	ecoinvent 3.10.1	0.00	kWh	0.62	0.00

Dangerous substances

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

Indoor environment

Emissions to indoor air are tested by RISE in 2020 and evaluated according to EN 16516.
The test are performed according to ISO 16000-9 and the calculation and reporting of TVOC according to EN 16516.
The test results of Norgips Ultra Board 12.5 mm Typ DFIR are in compliance with the emission requirements of Sintef Miljøcertifikat.
The emission results can be compared to different Emission Labelling Systems.

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products (End-of-life landfilling)									
Indicator	**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	1.75E+00	1.06E-01	1.08E-01	1.02E-04	6.26E-02	0.00E+00	1.24E-01	-2.69E-04

Additional environmental impact indicators required in NPCR Part A for construction products (End-of-life recycling)									
Indicator	**Unit**	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	1.75E+00	1.06E-01	1.24E-01	8.40E-05	6.26E-02	5.70E-01	0	-4.86E-02

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

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.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21
Vold, M. et al. (2022) EPD generator for Building boards
Background information for EPD generator application and LCA data, LCA.no report number 05.22
NPCR Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge.
NPCR 010 Part B for Building Boards. Ver. 4.0, March 2022, EPD-Norge.

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