

# Environmental Product Declaration

## Gypsum Board - FR-DF 15.0mm

Manufactured by [Knauf LLC](#) in accordance with ISO 14025 and EN 15804:2012 + A2:2019/AC:2021



Programme:	The International EPD® System
Programme Operator:	EPD International AB
S-P Code:	S-P-12099
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Geographical Scope:	Global

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com).

# Programme Information

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)

## Product Category Rules (PCR):

PCR 2019:14 Construction products, version 1.3.1, Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works

PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile

## UN CPC Code: 37990

Non-metallic mineral products (including mineral wool, expanded mineral materials, worked mica, articles of mica, non-electrical articles of graphite or other carbon and articles of peat).

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

## Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., LCA Studio, Šárecká 5, 16000 Prague 6 - Czech Republic

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes  No

Knauf LLC has the sole ownership, liability, and responsibility for this EPD.

### The International EPD® System

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# How to read this EPD?

An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes several sections described below.

## 1. General and Program Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the program operator, geographical scope, etc. The second page states the standards followed and gives information about the program operator, third-party verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

## 2. Company and Product/Service Information

Information about the company and the investigated product is given in this section. It summarizes the characteristics of the product provided by the manufacturer. It also includes information about the product such as product composition and packaging.

## 3. LCA Information

LCA information is one of the most important parts of the EPD as it describes the functional/declared unit, time representativeness of the study, database(s) and LCA software, along with system boundaries.

The table presented in this part has columns for each stage in the life cycle. The considered stages are marked 'X' whereas the ones that are not considered are labeled as 'NR'. Not all EPDs consider the full life cycle assessment for a product's entire life stages. The 'System Boundary' page is also the place where one can find detailed information about the stages and the assumptions made.

## 4. LCA Results

The results of the Life Cycle Assessment analysis are presented in table format. The first column in each table indicates the name of the impact category and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material—in this case, 1 m<sup>2</sup> FR-DR 15.0 mm gypsum board. The benefits of reuse/recycling of the declared product is reflected in this section.

The first impact in the table is global warming potential (GWP), which shows how much CO<sub>2</sub> is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land use related impacts, etc. The second table provides results for resource use and the third table is about the waste produced during the production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

## About the Knauf LLC

With a history spanning over 80 years, Knauf is a global market leader in the field of sustainable lightweight construction. Knauf factories worldwide produce modern dry construction systems, plasters, insulation materials and environmentally friendly solutions. In addition, our portfolio includes paints, flowing screeds and flooring systems, as well as machines and tools for the application of these products. Every year, we invest substantially in the construction and modernization of our production facilities worldwide, as well as in the training and further education of its employees. The Knauf Group continues to operate as a family business and is present in more than 90 countries with around 80 raw materials processing plants and over 300 manufacturing plants on all continents. The Group is managed by the general partners Alexander Knauf, Jörg Kampmeyer, and Dr. Uwe Knotzer. In 2022, Knauf employed around 41,500 employees worldwide and generated sales of 15.4 billion euros.



In the G.C.C. region, our Knauf headquarter is located in Dubai, United Arab Emirates with a manufacturing plant in Ras Al Khaimah, UAE and Salalah, Oman. Knauf's high performing, innovative systems are fast and easy to install and are manufactured to meet ASTM, EN-BS and DIN Standards, owing to the opportunity to meet any client requirements in the region.

Knauf is committed not only towards its Products and Systems but also to its employees. Within the framework of its four key K-Values; Partnership, Commitment, Entrepreneurship and Menschlichkeit (translating to mean "the human touch"), Knauf looks after its people and drives a sense of passion throughout the entire staff body. It is this passion that is evidently projected to the customer as each staff member lives out the four values in their daily working lives.



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# About FR-DR 15.0 mm

## Knauf Fire Resistant Board FR

Knauf Fire Resistant Board offers improved fire protection when used as part of a complete Knauf system. It is ideal for drywall applications requiring greater fire resistance.

Knauf Fire Resistant Board is made from an aerated gypsum core with glass fibers and has premium paper liners on each side. The board is ideally suited to receive Knauf jointing finishes before decoration.

### Areas of Application:

Suitable for drywall partition, wall linings, ceilings, and shaftwall applications where superior Fire Protection is required.

### Key Benefits:

- Strong and versatile.
- Enhanced fire resistance performance.
- Good sound insulation performance
- Fully recyclable
- Quick and easy to install.
- Multiple layers can be used for added performance.

### Compliance Standards

- BS EN 520:2004+A1:2009

Gypsum plasterboards. Definitions, requirements, and test method  
Type D: Gypsum plasterboard with controlled density.  
Type F: Gypsum plasterboard with improved core adhesion at high temperature.

**Fire Classification: A2-s1, d0** (BS EN 13501-1:2007+A1:2009)



### Product Content

Material	Weight percentage (%)
Stucco	59 %
*Water	40 %
Liquifiers	<1%
Retarders	<1%
Accelerators	<1%

\*Almost all the water used during the production processes releases after the production.

### Packaging Content

Material	Weight percentage (%)
Support board	95.5 %
Stripes / legs	4.0 %
Metal corner	0.3 %
PET strap	0.2 %

# System Boundary

## A1 - Raw Material

This stage includes raw materials extraction and pre-treatment processes before production. Main materials used in the product are stucco, water, starch, accelerators, liquifiers, and retarders.

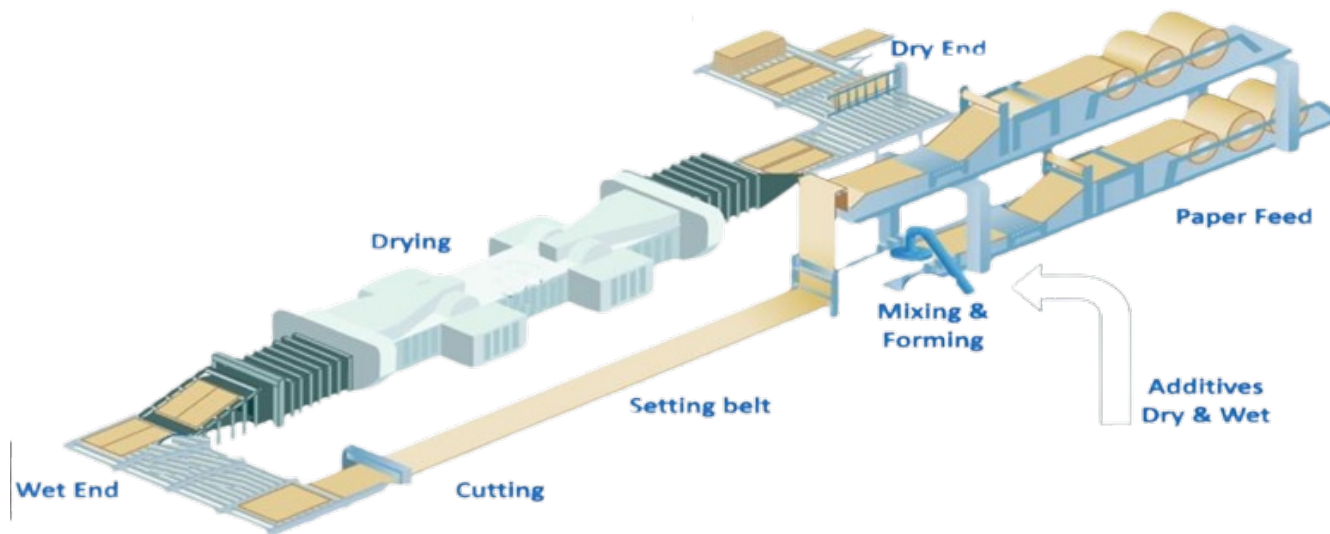
## A2 - Raw Material Transport

This stage is relevant for the delivery of materials to the production plant and within the plant. Highway and seaway transports are dominant means of transport at this stage. Transport routes and distances are supplier-specific and provided by the manufacturer.

## A3 - Manufacturing

Knauf gypsum plasterboard is manufactured in a continuous production process. A gypsum slurry is made up from stucco, water and other additives, in a continuous mixer. This slurry spreads, in a uniform stream, from multiple outlet hoses onto a moving sheet of paper. As the board is actually produced upside down, this paper will form the front face of the plasterboard. Discs 'score' this paper allowing it to be easily folded at the edges. The 'back face' paper, fed from above the production line, is applied to the slurry via a forming head set to the desired board thickness. At this point the front face paper is folded at the edges, producing an enclosed envelope of paper slurry.

Once formed, the board travels the length of the production line on a series of setting belts, and sections of rollers to the shear. During this journey, the plaster core has time to set, or harden, and the required product information (including: product name and type, relevant British Standards, date and time of manufacture) is printed on the back of the boards via an ink jet printer. At the shear, the long train of board is cut into panels of specific length. These smaller boards are then turned over and passed into a multi-level dryer. During the drying period, the excess water, which was required to form the initial slurry, is gently evaporated off. After the boards have dried, they are trimmed and stacked to form pallets. These pallets are then placed in the warehouse after which they will be loaded onto trucks for distribution.



# System Boundary

## **A4 - Transport to Site**

This stage is relevant for the delivery of final product to the intended markets and customers. Highway and seaway transportation are involved in this stage. The transport routes and distances are supplier-specific and provided by the manufacturer.

## **A5 - Installation**

During the installation of the product at site several materials and electricity are used. These materials are UW track, CW stud, hammer fixing, drywall screw, sealant and readygrips. Impacts of these materials per 1 m<sup>2</sup> production is considered at this stage.

## **B1–B7 - Use Stages**

There are no releases of substances during use to report in B1. The product requires no maintenance, repair or refurbishment, therefore, no ancillary material, water or energy inputs are required in B2, B3 or B5, nor is any waste generated in these modules. Plasterboard does not require replacement during the Reference Service Life; therefore no energy or material inputs are required in B4.

## **C1 - De-construction**

This stage includes the impacts during the dismantling of the gypsum board at site. Same energy (electricity) input during the installation process is considered at this stage.

## **C2 - Waste Transport**

This stage includes the transportation of discarded products to the waste processing/disposal area. 100 km distance by trucks is assumed.

## **C3 - Waste Processing**

It is assumed that no waste processing is needed at the end-of product life cycle.

## **C4 - Disposal**

Impacts of landfilling the product is considered at this stage.

## **D - Future reuse, recycling and energy recovery potentials**

It is assumed that gypsum boards are landfilled at the end-of their life. The recycling benefit of some portion of packaging materials are considered at this stage.

# LCA Information

## Function Unit

1m<sup>2</sup> (15.0 mm) Knauf Fire Resistant Gypsum Board.

## Conversion factor:

Weight of 1m<sup>2</sup> investigated gypsum board is 12.5 kg. Thus, a mass conversion factor of 0.080 should be used.

## System Boundary

Cradle to grave and module D (A + B + C + D).

## Reference Service Life

When used in partition, wall lining and ceiling systems, Knauf Plasterboards provide a smooth face, ideal for direct decoration or application of a plaster finish. In normal use, no maintenance is required, during the 60-year reference service life. Knauf plasterboards are sufficiently durable to remain in place for the lifetime of a building.

## Cut-Off Rules

1% cut-off is applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

## REACH Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

## Background Data

For all LCA modelling and calculation, Gabi (v10.7.1.28.) LCA software is used.

## LCA Modelling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirements are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations.

## Period Under Review

The data used for LCA study concerns the year 2022.

## Electricity Modeling

The modeled electricity data for manufacturing is taken from Gabi (v10.7.1.28.) which has a carbon density of 0.475 kg CO<sub>2</sub> eq. / kWh.

## Allocations

Energy consumption and raw material transportation were weighted according to 2022 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the total waste generation in 2022.

## Reason for the Revision

Company and product information texts are updated.

# LCA Information

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefits and Loads	
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / Demolition	Transport	Waste Processing	Disposal		
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules Declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Geography	GLO	GLO	UAE	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	
Specific Data Used	> 90%					-	-	-	-	-	-	-	-	-	-	-	-	
Variation - Products	0%					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	0%					-	-	-	-	-	-	-	-	-	-	-	-	-

(X = Module included, ND = Not declared)

Core environmental impact indicators (Mandatory)	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP - Fossil	kg CO <sub>2</sub> eq.	3.37E+00	1.59E-01	3.45E-01	0.00E+00	7.91E-03	1.01E-01	0.00E+00	1.92E-01	-1.63E-02
GWP - Biogenic	kg CO <sub>2</sub> eq.	-3.93E-02	-2.01E-03	1.92E-02	0.00E+00	1.21E-05	-1.50E-03	0.00E+00	4.55E-01	2.49E-05
GWP - Luluc	kg CO <sub>2</sub> eq.	5.49E-03	1.27E-03	2.09E-04	0.00E+00	2.61E-07	9.38E-04	0.00E+00	4.08E-04	-6.78E-06
GWP - Total	kg CO <sub>2</sub> eq.	3.34E+00	1.59E-01	3.64E-01	0.00E+00	7.92E-03	1.01E-01	0.00E+00	6.48E-01	-1.63E-02
ODP	kg CFC-11 eq.	1.00E-07	1.35E-14	8.15E-13	0.00E+00	3.13E-16	8.87E-15	0.00E+00	4.86E-13	4.87E-14
AP	mol H+ eq.	1.13E-02	6.13E-04	1.03E-03	0.00E+00	4.73E-06	1.38E-04	0.00E+00	1.47E-03	-3.71E-05
EP - Freshwater	kg P eq.	2.83E-04	5.06E-07	6.39E-07	0.00E+00	5.08E-10	3.69E-07	0.00E+00	1.09E-06	-1.16E-09
EP - Marine	kg N eq.	3.26E-03	2.47E-04	2.05E-04	0.00E+00	2.05E-06	4.96E-05	0.00E+00	4.17E-04	-8.90E-06
EP - Terrestrial	mol N eq.	3.39E-02	2.77E-03	2.23E-03	0.00E+00	2.27E-05	5.90E-04	0.00E+00	4.56E-03	-9.63E-05
POCP	kg NMVOC	8.31E-03	6.55E-04	7.47E-04	0.00E+00	6.05E-06	1.20E-04	0.00E+00	1.36E-03	-2.97E-05
*ADPE	kg Sb eq.	1.10E-05	9.12E-09	4.13E-06	0.00E+00	8.42E-11	6.58E-09	0.00E+00	7.72E-09	-1.71E-10
*ADPF	MJ	5.47E+01	2.14E+00	4.97E+00	0.00E+00	1.31E-01	1.38E+00	0.00E+00	2.52E+00	-1.22E-01
*WDP	m <sup>3</sup> depriv.	9.43E-01	1.62E-03	5.19E-02	0.00E+00	4.13E-04	1.17E-03	0.00E+00	2.03E-02	-2.32E-04

Additional environmental impact indicators (Mandatory)	Unit
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**GWP-GHG	kg CO <sub>2</sub> eq.	3.38E+00	1.61E-01	3.64E-01	0.00E+00	7.92E-03	1.03E-01	0.00E+00	6.05E-01	-1.63E-02
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Additional environmental impact indicators (Optional)	Unit
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PM	disease inc.	1.53E-07	1.27E-08	2.49E-08	0.00E+00	4.09E-11	1.08E-09	0.00E+00	1.74E-08	-5.42E-10
***IR	kBq U-235 eq.	1.07E-01	3.95E-04	1.60E-02	0.00E+00	5.77E-06	2.58E-04	0.00E+00	2.94E-03	2.41E-04
ETP-FW	CTUe	9.38E+00	1.50E+00	1.32E+00	0.00E+00	1.20E-03	9.70E-01	0.00E+00	1.63E+00	-1.86E-02
*HTP - C	CTUh	6.04E-08	3.00E-11	1.47E-08	0.00E+00	1.00E-12	1.96E-11	0.00E+00	2.14E-10	-2.55E-11
*HTP - NC	CTUh	4.25E-08	1.28E-09	5.50E-08	0.00E+00	4.03E-11	8.64E-10	0.00E+00	2.30E-08	2.32E-11
*SQP	Pt	8.79E+00	7.80E-01	3.28E+00	0.00E+00	2.92E-04	5.75E-01	0.00E+00	4.68E-01	1.16E-02

<b>Acronyms</b>	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.
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<b>Legend</b>	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A4: Transport, A5: Installation, C1: Demolition, C2: Waste transport, C3: Waste processing, C4: Waste disposal, D: Benefits beyond system boundary
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Information on biogenic carbon content according to EN 15804+A2	
Biogenic carbon content in product	kg C 0
Biogenic carbon content in packaging	kg C 0

Indicators describing resource use (Mandatory)	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	3.20E+00	1.33E-01	1.08E+00	0.00E+00	3.30E-04	9.75E-02	0.00E+00	3.89E-01	2.04E-02
PERM	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	0.00E+00
PERT	MJ	3.20E+00	1.33E-01	1.08E+00	0.00E+00	3.30E-04	9.75E-02	0.00E+00	3.89E-01	2.04E-02
PENRE	MJ	5.47E+01	2.14E+00	4.98E+00	0.00E+00	1.31E-01	1.38E+00	0.00E+00	2.52E+00	-1.23E-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	0.00E+00
PENRT	MJ	5.47E+01	2.14E+00	4.98E+00	0.00E+00	1.31E-01	1.38E+00	0.00E+00	2.52E+00	-1.23E-01
SM	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	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	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	0.00E+00	0.00E+00
FW	m <sup>3</sup>	2.25E-02	1.47E-04	2.03E-03	0.00E+00	9.90E-06	1.07E-04	0.00E+00	6.08E-04	-1.05E-05
<b>Acronyms</b>	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water.									
<b>Environmental information describing waste categories (Mandatory)</b>		<b>Unit</b>								
HWD	kg	5.80E-09	7.77E-12	1.47E-08	0.00E+00	2.32E-11	5.11E-12	0.00E+00	6.31E-11	-3.04E-13
NHWD	kg	7.14E-02	2.94E-04	5.83E-01	0.00E+00	2.89E-05	1.99E-04	0.00E+00	1.24E+01	1.76E-03
RWD	kg	1.66E-04	2.74E-06	8.90E-05	0.00E+00	4.27E-08	1.79E-06	0.00E+00	2.93E-05	2.18E-06
<b>Environmental information describing Output flow (Mandatory)</b>		<b>Unit</b>								
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	0.00E+00
MFR	kg	1.56E-01	0.00E+00	4.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
EE (Electric)	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	0.00E+00
EE (Thermal)	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	0.00E+00
<b>Acronyms</b>	HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy thermal.									
<b>*Disclaimer 1</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 experience with the indicator.									
<b>**Disclaimer 2</b>	GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013									
<b>***Disclaimer 3</b>	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.									

# References

ISO 9001:2015/ Quality Management Systems

ISO 50001:2018/ Energy Management Systems

GPI/ General Programme Instructions of the International EPD® System. Version 4.0.

ISO 14020:2000/ Environmental Labels and Declarations — General principles

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006)

PCR for Construction Products and Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.3.1.

The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. [www.environdec.com](http://www.environdec.com)

Ecoinvent / Ecoinvent Centre, [www.ecoinvent.org](http://www.ecoinvent.org)

GaBi LCA Software, Sphera/ [www.sphera.com/life-cycle-assessment-lca-software/](http://www.sphera.com/life-cycle-assessment-lca-software/)

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