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ENVIRONMENTAL PRODUCT DECLARATION

SHEETROCK STANDARDCORE 16MM

In accordance with: ISO 14025, EN15804+A2:2019/AC:2021, ISO 21930

Programme	The International EPD® System , www.environdec.com
Programme	EPD International AB, EPD is registered through the fully aligned regional hub: EPD Southeast Asia www.epd-southeastasia.com
EPD registration	EPD-IES-0019970
Publication	2025-07-29
Validity	2030-04-23
Revision date	2025-10-01

An EPD should provide current information and may be updated if condition change. This EPD represents a single product, with results specific to this product's life cycle assessment. The product is produced at Knauf Manufacturing plant: The Siam Gypsum Industry (Songkhla) Co., Ltd Southern Industrial Estate (Chalung), 9/7 Moo 4 Tambon Chalung, Amphur Hadyai, Songkhla, 90110, Thailand

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ECO PLATFORM EPD VERIFIED

Programme-related information and verification

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programs, or not compliant with EN 15804, 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 characterization factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com
EPD registration number:	**EPD-IES-0019970**
Published:	**2025-07-29**
Valid until:	**2030-04-23**
EPD owner	**ENTITY:** Knauf Sdn. Bhd. Lot 606, Jalan Lagoon Selatan, 47500 Subang Jaya, Selangor, Malaysia Contact: Jiaxin Li (epd.apac@knauf.com)
Product Category Rules:	PCR 2019:14. Construction products (EN 15804+A2) Version 1.3.4 and C-PCR-031 Gypsum-based construction products (EN 17328:2024)
Product group classification:	UN CPC 37530
Reference year for plant data:	2023
Geographical application scope:	Malaysia and Singapore

CEN standard EN 15804+A2 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14. Construction products (EN 15804+A2) Version 1.3.4 Complementary product category rules (C-PCR) to PCR 2019:14:c-PCR-003 (EN 16757:2017) Gypsum-based construction products (EN 17328:2024) Version: 2024-08-06
PCR review was conducted by: The Technical Committee of the International EPD@ System
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD verification by EPD Process Certification* ☒ EPD verification ☐ Pre-verified tool Third-party verification: *Muhammad ARFAN, Bureau Veritas,* an approved certification body accountable for third-party verification. Third-party verifier is accredited by: SWEDAC - Sverige AB 1236 *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see the GPI.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☐ No

General information

What is an environmental product declaration?

An Environmental Product Declaration (EPD) is a standardized document that provides detailed, qualified environmental data of a product, based on a life cycle assessment (LCA), It outlines the environmental impact of a product throughout its lifecycle, from raw material extraction and processing, through to its use, and disposal or recycling. This includes impacts like greenhouse gas emissions, water use, and resource depletion.

Through this EPD, Knauf Gypsum shines a light on key elements of its plasterboard product, from materials to manufacturing and disposal.

How to use the EPD

An Environment Product Declaration (EPD) is different to a product eco-label in that it doesn't tell you if a product is good or bad. Instead, it provides the independent and verified data required to understand the environmental performance of Knauf Gypsum plasterboard products in your project.

Knauf Gypsum has developed this EPD as part of its commitment to provide transparency on the potential environmental impacts of its plasterboard products over their life cycle.

Using EPDs in the context of a life cycle assessment (LCA) for a whole structure or development can help enable better environmental optimization in the built environment.

This EPD may contribute to achieving credit points under the Innovation scope of the Singapore GreenMark rating, the Whole Life carbon section, the LEED rating, and other leading green building ratings.

Information about the company

The Knauf Group is one of the world's leading manufacturers of modern insulation materials, dry lining systems, plasters and accessories, thermal insulation composite systems, floor screed, floor systems, and construction equipment and tools. With more than 320 production facilities and sales organizations in over 90 countries, 42,500 employees worldwide, and sales of €15.6 billion, the Knauf Group is one of the largest players in the industry, holding market share in Europe, the United States (US), South America, Asia, Africa, and Australia.

The Knauf Group believes that the best innovations start with a purpose; a focus on why the innovation is needed and who will benefit from it. The business's focus is to deliver innovations that help companies in the construction sector to work smarter, do more, and build better. This is achieved through investing in purposeful innovation, expanding into different markets and constantly searching for new ways to increase performance and productivity. This commitment to innovation and focus on customers is inspired by a desire to empower architects, contractors, and workers alike to improve the way societies live by changing the way buildings are designed and built. Knauf is committed to delivering only the best to its customers and partners.

Knauf's sustainability pathway

Thinking in generations and working sustainability have been key attributes of the Knauf family business from the very start. As a result, the Knauf Group is free to make bold decisions, even when the benefits will extend beyond our lifetime and be felt by our children and grandchildren.

Knauf has embraced this challenge with the ambition to become an industry leader in sustainable construction. The business's goal is to reach net-zero by 2045 - five years ahead of the Paris agreement. When Knauf turns 100 in 2032, the company aim globally to cut directly controlled CO2 emissions in half (baseline taken in 2021.)

The Knauf family of businesses goes beyond providing construction materials. Sustainable solutions live in homes and workplaces - the places people call 'home'.

Knauf only uses 100 per cent recycled paper liners on its plasterboard. Knauf plasterboard is highly durable, simple to recycle, and does not deteriorate naturally.

2032 ***CO_2 emissions cut in half***

2045 ***Net-Zero Achieved***

Over the next two decades, Knauf will decarbonize operations in a cost-efficient way, reduce water withdrawals by a fifth, and eliminate waste production from all plants, quarries, and mines.

The gypsum in our products is naturally formed and essential to creating low-emissions buildings. Knauf plasterboard products are GECA certified.

Beyond these targets, Knauf is integrating sustainability into its culture, its operations, and its solutions.

Name and location of production site:

The intended application of this product in the construction industry is within Malaysia and Singapore. The data utilized for the production stage life cycle assessment is related to production plant located in Songkhla, Thailand.

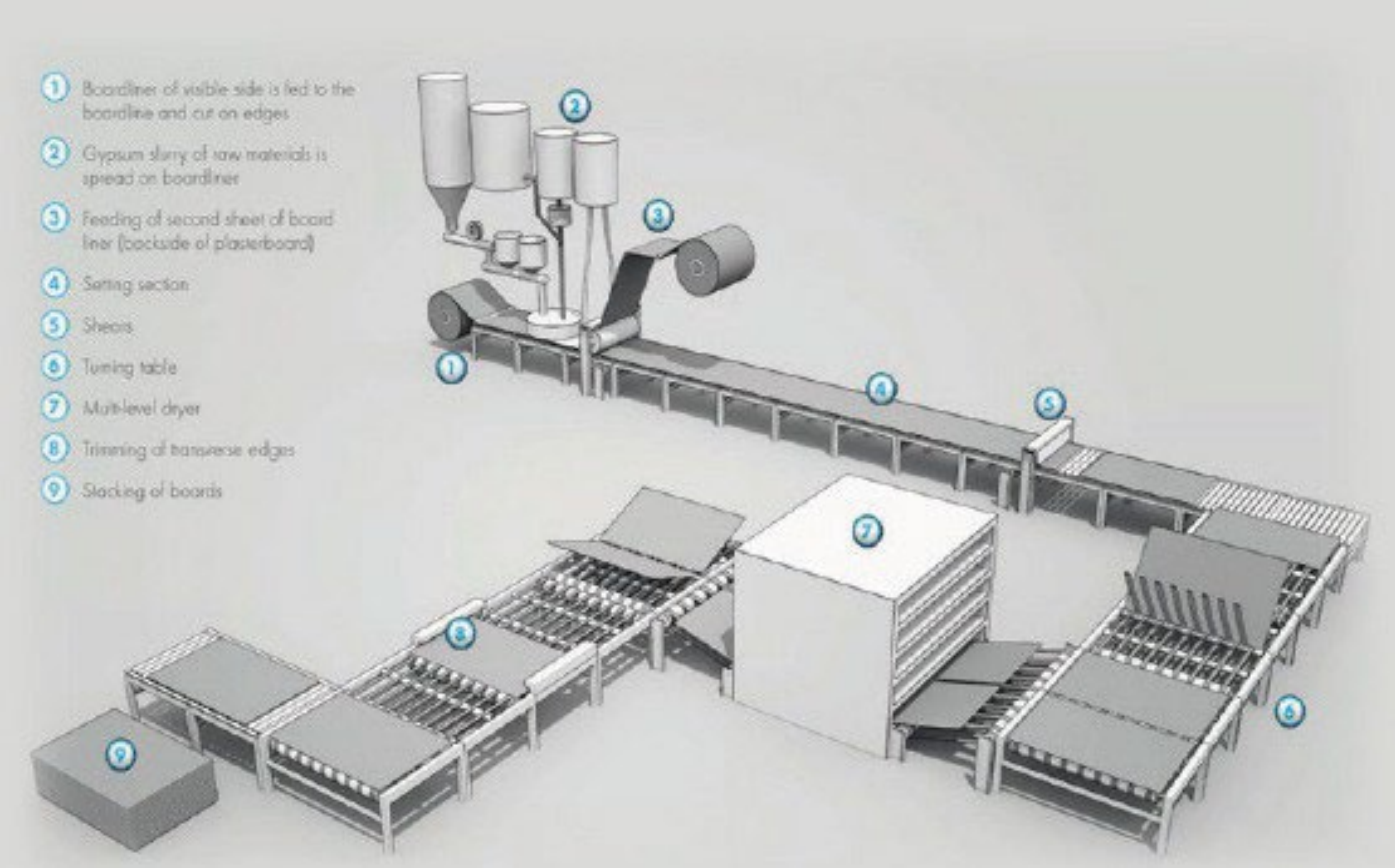
Product-related or management system-related certifications:

The site is ISO 9001 and ISO 14001 certified.
Address: Southern Industrial Estate (Chalung), 9/7 Moo 4, Tambon Chalung, Amphur Hadyai, Songkhla 90110, Thailand.

Information about gypsum plasterboard production

Production starts with raw materials mainly locally sourced, but some could be transported from other parts of the world.

To produce plasterboards, crushed gypsum is calcined to dehydrate the feedstock. The board components are suspended in silos in liquid phase and spread on a continuous sheet of board liner (visible face, lower layer). The liner is bend on the sides for edge shaping. The slurry is covered with a second sheet of board liner (back surface) in the forming station and the edges of the visible face board liner are flipped upwards. As the board moves down a conveyer line, the gypsum sets continuously. The hardened product reaches the shear, where automatic blades determine the length of the plasterboard. Then, plasterboards are dried in a multi-level dryer to the permitted residual moisture level. Drying is followed by the cutting of the boards to achieve a smooth termination. Finally, the plasterboards are pile into pallets and covered with a plastic protection.



Product information

Product name: Sheetrock StandardCORE 16 mm

Product identification: Gypsum plasterboard

Product description: Sheetrock StandardCORE is composed of re-engineered lightweight gypsum plaster core encased in the recycled face and back papers with significant properties for durability and stability. The panels have a superior sag-resistant performance that allows for greater spans. Knauf Sheetrock StandardCORE can be fixed to timber, metal framing, and masonry construction. The product is compliant with Singapore safety product listing and Malaysia Bomba certification.

Geographical scope: The manufacturing is done in Songkhla, Thailand. Energy-related information is described in the next section. Regarding the market area, the product is mainly marketed in Malaysia and Singapore.

Technical characteristics:

Parameter	Value	Unit
Thicknes	16	mm
Weight	10.95	kg/m^2
Reaction to fire	Non combustible	to BS 476 Pt.4
	Class	to BS 476 Pt.6&7
Nominal Density	684	kg/m^3
Edge	Tapered	

UN CPC code:
37530: Articles of plaster or of compositions based on plaster

LCA information

Functional unit / declared unit:
The declared unit is 1m2 of plasterboard Sheetrock StandardCORE with a thickness of 16 mm.

Reference service life:
The RSL of 50 years used in this analysis corresponds to the average life of plasterboards in general.

Time representativeness & Information on Specific Data:
Plant production data for the complete year 2023 is used. The product considered in this EPD is produced in Songkhla, Thailand.

The data which is used to carry out the LCA calculations contain 65% specific data and less than 35% generic data. Data quality information used in this EPD is compliant with EN 15941.

Upstream data for raw materials, energy, and transportation were sourced from generic databases and industry averages where supplier-specific data was not available. These datasets were selected based on their geographical and technological relevance to ensure representativeness.

Database(s) and LCA software used:
The LCA model, the data aggregation and environmental impacts are using background data from Ecoinvent and its content version 3.10. The impact models used are those indicated in EN 15804:2012+A2:2019.

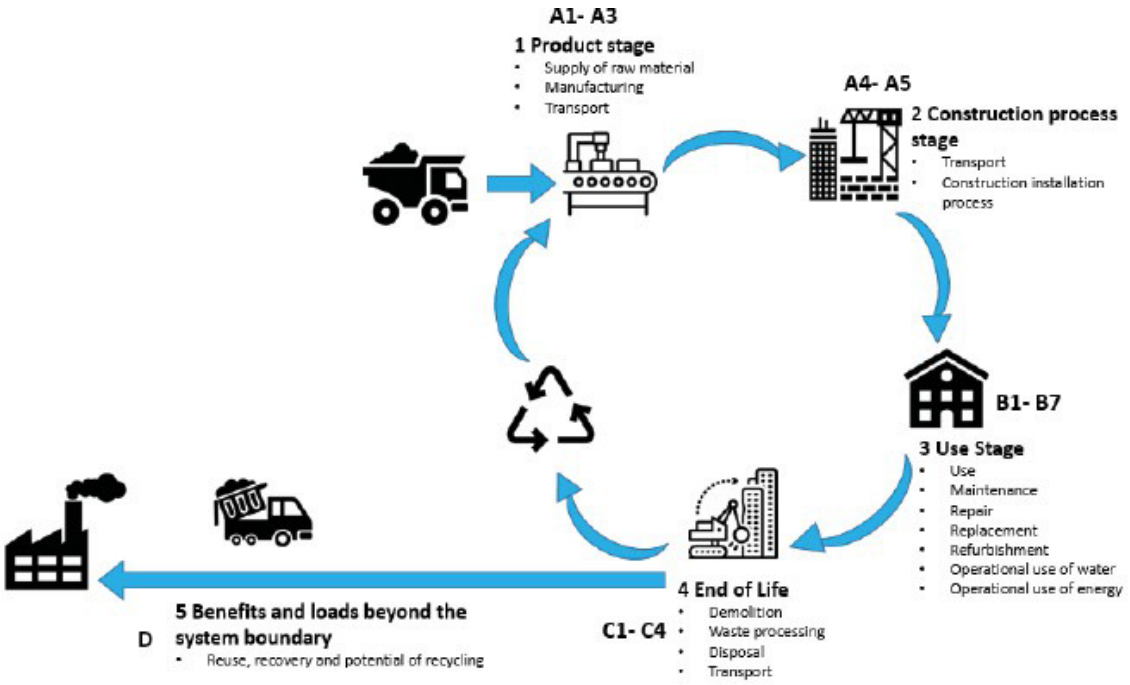
Energy information:
Energy input (reference year: 2020 of the Thailand national grid consumption mix, based on Ecoinvent v3.10 data from 2020: IEA World Energy Statistics and Balances) is selected. The emission of CO2 is 0.769kg per kWh for electricity.

Cut-off criteria:
At least 99% of the total mass and energy flows across the life cycle stages assessed are included. Neglected processes cumulatively contribute less than 1% to the total impacts for all environmental indicators. Energy use, transport, and packaging materials are accounted for across all relevant life cycle stages, and no significant processes have been omitted.

Allocation:
Wherever possible, allocation was avoided by dividing the unit process to be allocated into sub-processes and collecting input and output data related to these sub-processes. As the Plant manufactures 10 types of plasterboard products, the production system was divided into the sub-processes of individual product manufacturing for the collection of inventory data. Where only site-wide information was available and allocation could not be avoided, the inputs and outputs were partitioned through mass allocation, based on the respective production quantities of the ten products. This was applied to the processes of transport of raw materials to site (A2), transport of production waste to treatment facilities (under A3), and downstream processes (A4, A5, C1-C4).

Assumptions:
Assumptions made during the LCI collection and modelling process are as follows:
- Inbound (raw materials) and outbound (finished products) transport distances, as well as ancillary construction materials used in Module A5, were provided by Knauf based on company sales and distribution information.
- A conservative assumption of 0% recycled (or 100% landfilled) was adopted for the end-of-life scenario.
- Damage to plasterboard during transport (A4) has not been included in impact calculations, as losses are estimated to be less than 1% and considered negligible according to the cut-off criteria.

System diagram:



Description of system boundaries:

The system boundary of the EPD follows the modularity approach defined by the EN 15804:2012+A2:2019.

The type of EPD is cradle-to-grave.

For a comprehensive assessment, it is strongly recommended to consider the results from all the modules. Relying exclusively on Modules A1-A3 may lead to incomplete conclusions.

A comprehensive list and detailed explanations of each stage within the EPD are available as follows.

The product stage (A1-A3) includes:

- A1 - raw material extraction and processing, processing of secondary material input (e.g. recycling processes),
- A2 - transport to the manufacturer and
- A3 - manufacturing.

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of-waste state or disposal of final residues during the product stage.

The LCA results are presented in an aggregated format for the product stage, where modules A1, A2, and A3 are consolidated into a single module, denoted as A1-A3.

Product	**10.95 kg/m²**
Thickness	**16 mm**
Area	**1 m²**
Packaging - Plastic	**0.0038 kg**
Packaging - Plastic strap	**0.0013 kg**
OPP	**0.0003 kg**
Corner protection	**0.0006 kg**
Wooden	**0.0007 kg**

The construction process stage includes:
- A4 – transport to the construction site and
- A5 – installation into the building.

The transport to the building site (A4) included in this LCA use following parameters:

Parameter	Value
Average transport distance (truck)	500 km
Type of fuel and vehicle used for transport (truck)	Truck, unspecified (average lorry classes and EURO classes) Fuel type: diesel, provides a fleet average that includes different lorry classes as well as EURO classes Freight train Fuel type: Diesel, electricity or hard coal
Truck capacity utilization	80% of the weight capacity
Loss of plasterboard on site	1%
Packaging – wooden pallet	100% recycled

During the installation (A5) of plasterboard, screws, joint tape, fillers and water are generally used. The parameters below were considered.

Parameter	Value
Screws	10 of screws per m^2
Joint compound	0.3 kg per m^2
Joint tape	0.77 m per m^2
Water	-
Loss of ancillary materials on site	0.8 kg/m^2

The treatment and the transport of the packaging waste after the installation of the product (A5) has been considered.

The Use stage (B1-B7) includes:
- B1: Use
- B2: Maintenance
- B3: Repair
- B4: Replacement
- B5: Refurbishment
- B6: Operational Energy Use
- B7: Operational Water Use

Once installation is complete, no actions or technical operations are required during the use stages until the end of life. Therefore, the Sheetrock Impactstop 16mm has no impact on this stage.

The end-of-life stage includes:
- C1 – de-construction, demolition,
- C2 – transport to waste processing,
- C3 – waste processing for reuse, recovery and/or recycling and
- C4 – disposal.

This includes provision of all transport, materials, products and related energy and water use.

Although gypsum products from Knauf are partly recycled at their end-of-life, an established collection system does not yet exist in all countries. Therefore, the assumption chosen in this study, 100% landfill (C4) after the use phase, is the most conservative approach.

Energy consumption for demolition and deconstruction	0.000846 kg diesel or 0.0033 MJ thermal energy per kg plasterboard dismantled
Disposal type	100% landfill
Average transport distance waste (C2)	50 km
Type of vehicle used for transport	Truck, unspecified (average lorry classes and EURO classes) Fuel type: diesel; provides a fleet average that includes different lorry classes as well as EURO classes.

Module D includes reuse, recovery and/or recycling potentials. According to EN 15804:2012+A2:2019, any declared benefits and loads from net flows leaving the product system not allocated as co-products and having passed the end-of-waste state shall be included in module D. The benefits considered in module D originate from packaging recycling or incineration.

Recycled material:

The gypsum waste generated during the manufacturing process is recycled internally and fed back into the plasterboard production process.

Recycled content for the liner (cardboard) ranges from 40 to 50%.

Additional information:

All raw materials used in the manufacture of the declared product, the required energy, water consumption and the resulting emissions are considered in the LCA. As a result, recipe components with a share of less than 1% are included. All neglected processes contribute less than 5% to the total mass or less than 5% to the total energy consumption. For information, the impact of the gypsum plasterboard plant construction or manufacturing equipment is not taken into account in the life cycle assessment. Allocation criteria with by products are based on cost.

Ancillary materials required for fixing and installation are included in the scope of this LCA. The impact of any additional construction products or materials (steel profiles, for example) is not included in this EPD and should be accounted for at the building level.

The scenarios included are currently in use and are representative for one of the most probable alternatives. Additional declaration of representative mixes for the relevant region is permissible.

Name and contact information of LCA practitioner:

EnviroSolutions & Consulting Sdn Bhd (ESC)
Level 39, WeWork Mercu 2, 3, Jalan Bangsar, KL Eco City, 59200 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur
Contact: enquiries@envirosc.com

Content Declaration

The product does not contain substances on the "Candidate List of Substances of Very High Concern for Authorization" in force at the time of the EPD publication under the REACH regulation (if above 0.1% of the mass).

Product Components	Weight %	Post-consumer recycled material % (out of total)	Biogenic material, kg C/ component % (out of total)	Biogenic material, kg C/product
Gypsum	96.51	0	0	0
Liner	2.93	0	<1	<1
Starch	0.17	0	0	0
Fibreglass	0	0	0	0
Microsilica	0	0	0	0
MgO	0	0	0	0
Silicone	0	0	0	0
Additives	0.27	0	0	0

Packaging Materials	Weight, kg/DU or FU	Weight-% (versus the product)	Biogenic material, kg C/product
Packaging - Plastic sheet	0.0038	0.0343	0
Packaging - Plastic strap	0.0013	0.0122	0
Packaging - OPP tape	0.0003	0.0029	0
Packaging - Corner protection plastic	0.0006	0.0051	0
Wooden pallet	0.0007	0.0059	0.0006
TOTAL	0.0067	0.0604	0.0006

Declared Modules, geography, share of specific data (in GWP-GHG indicator) & data variation

Life cycle stages and the description of the system boundaries for the reference product LCA (X=included in the LCA, MND = module is not declared)

MODULE	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END-OF-LIFE STAGE				RESOURCE RECOVERY STAGE
	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	Reuse-Recovery-Recyclin - potential
	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	TH	TH MY SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	M Y SG	MY SG
Specified data used	>65%																
Variation - products	0%																
Variation - sites	0%																

*Variation regarding the average EPD result in terms of GWP-GHG indicator amongst products covered with this EPD
** Variation regarding the average EPD result in terms of GWP-GHG indicator

According to PCR 2019:14 v1.3.4, infrastructure should be outside of the system boundary. However, infrastructure impacts could have been considered in some Ecoinvent 3.10 background datasets.

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Environmental performance

Potential environment impacts: 1m² of plasterboard Sheetrock StandardCORE with a thickness of 16 mm and weight of 10.95 kg/m²

These results are representative of all the products mentioned in the EPD.

ENVIRONMENTAL IMPACTS										
Parameter	Unit	A1-3***	A4	A5	B1-B7	C1	C2	C3	C4	D**
GWP-fossil	kg CO2 eq.	2.00E+00	6.85E-01	5.25E-01	0	3.63E-03	8.44E-02	0	6.76E-02	0
GWP-biogenic	kg CO2 eq.	-2.26E-01	2.79E-04	1.02E-02	0	3.62E-07	2.80E-06	0	4.98E-01	0
GWP-luluc	kg CO2 eq.	2.34E-02	4.52E-04	4.33E-04	0	3.15E-07	3.45E-05	0	3.51E-05	0
GWP-total	kg CO2 eq.	1.79E+00	6.85E-01	5.26E-01	0	3.63E-03	8.44E-02	0	5.66E-01	0
ODP	kg CFC 11 eq.	6.13E-08	8.61E-09	3.74E-09	0	5.55E-11	1.23E-09	0	1.95E-09	0
AP	mol H^+ eq.	2.05E-02	5.01E-03	2.93E-03	0	3.27E-05	3.83E-04	0	4.79E-04	0
EP-freshwater	kg P eq.	1.06E-03	1.01E-04	1.69E-04	0	1.06E-07	6.77E-06	0	5.61E-06	0
EP-marine	kg N eq.	5.65E-03	1.95E-03	5.43E-04	0	1.52E-05	1.44E-04	0	1.82E-04	0
EP-terrestrial	mol N eq.	5.81E-02	2.13E-02	5.80E-03	0	1.66E-04	1.57E-03	0	1.99E-03	0
POCP	kg NMVOC eq.	1.72E-02	6.39E-03	1.81E-03	0	4.96E-05	5.41E-04	0	7.14E-04	0
ADP-mineral&metals*	kg Sb eq.	3.75E-04	1.90E-06	1.95E-05	0	1.30E-09	2.70E-07	0	1.07E-07	0
ADP-fossil*	MJ	3.37E+01	9.01E+00	5.84E+00	0	4.74E-02	1.20E+00	0	1.66E+00	0
WDP*	m^3 world eq.	6.77E-01	7.38E-02	1.26E-01	0	1.16E-04	5.60E-03	0	4.63E-03	0
Acronymys	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-mineral&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									

** Disclaimer 2: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

***: [Life Cycle D stage covers benefits and loads beyond the system boundary stage (reuse, recovery and recycling potential) therefore, when summing up results, this stage should be considered separately].*

**** The indicator's results are calculated using a reference product, with equal weighting between plants, if this is a single plant, it means 100% for that plant.*

Note: The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

The results of Modules A1-A3 should not be used in isolation without considering the results of Module C (end-of-life stage). Environmental impacts from the product's full life cycle must be evaluated to ensure a comprehensive understanding.

Potential environment impact – additional mandatory and voluntary indicators

Indicator	Unit	Tot.A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG [2]	kg CO2 eq.	2.03E+00	6.85E-01	5.26E-01	0	3.63E-03	8.44E-02	0	6.77E-02	0

[2] 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

Use of resources: 1m^2 of Sheetrock StandardCORE plasterboard with a thickness of 16 mm and weight 10.95 kg/m^2

These results are representative of all the products mentioned in this EPD.

RESOURCES USE										
Parameter	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE [3]	MJ	2.19E+01	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	1.54E-02	0
PERM [3]	MJ	4.55E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
PERT [3]	MJ	2.65E+01	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	1.54E-02	0
PENRE [3]	MJ	1.07E+01	2.68E+00	5.64E+00	0	3.62E-02	1.84E-05	0	1.66E+00	0
PENRM [3]	MJ	4.27E-01	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
PENRT [3]	MJ	1.11E+01	2.68E+00	5.64E+00	0	3.62E-02	1.84E-05	0	1.66E+00	0
SM	kg	0.00E-00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
RSF	MJ	7.23E-06	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
FW	m^3	6.52E-03	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	1.72E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels, NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

**: [Life Cycle D stage covers benefits and loads beyond the system boundary stage (reuse, recovery and recycling potential) therefore, when summing up results, this stage should be considered separately].*
**** The indicator's results are calculated using a reference product, with equal weighting between plants, if this is a single plant, it means 100% for that plant.*

[3] From International EPD PCR 1.3.4. for Construction Products, the option B, mentioned in Annex 3, was used for the calculation if the primary energy use indicators.

Waste production and output flow: 1m² of Sheetrock StandardCORE plasterboard with a thickness of 16 mm and weight of 10.95 kg/m²

These results are representative of all the products mentioned in this EPD.

OUTPUT FLOWS AND WASTE CATEGORIES										
Parameter	Unit	A1-3***	A4	A5	B1-B7	C1	C2	C3	C4	D*
Hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	1.84E-03	0
Non-hazardous waste disposed	kg	1.37E-02	0.00E+00	1.29E+00	0	0.00E+00	0.00E+00	0	1.08E+01	0
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	2.58E-07	0
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
Material for recycling	kg	9.83E-04	0.00E+00	7.33E-04	0	0.00E+00	0.00E+00	0	0.00E+00	0
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00	0	0.00E+00	0

**: [Life Cycle D stage covers benefits and loads beyond the system boundary stage (reuse, recovery and recycling potential) therefore, when summing up results, this stage should be considered separately].*
**** The indicator's results are calculated using a reference product, with equal weighting between plants, if this is a single plant, it means 100% for that plant.*

Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	kg C	kg CO2 eq.
Biogenic carbon content in product	0.1235	0.4528
Biogenic carbon content in packaging	0.0006	0.0022

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

LCA information

ENVIRONMENTAL IMPACTS

All impact categories are dominated by the production. This is mainly due to raw material use and energy consumption during the production of the plasterboard.

The Global Warming Potential (GWP-total) is dominated by the production, mostly due to directly process emissions and energy consumption but significantly reduced through the use of electricity from renewable sources.

The Depletion Potential of the Stratospheric Ozone layer (ODP) is mostly influenced by the manufacturing phase (module A1-A3) and significantly influenced using electricity.

The Acidification Potential (AP) is mainly influenced by the production.

The Eutrophication Potential (all EP indicators in total) is mainly influenced by production.

The Formation Potential of Tropospheric Ozone (POCP) is dominated by emissions from the manufacturing processes (including energy use) and raw materials.

The Abiotic Depletion Potential for Non-Fossil Resources (ADP-minerals&metals) is dominated by the raw materials production.

The Abiotic Depletion Potential for Fossil Resources Potential (ADP-fossil) is mainly influenced by energy consumption for the production as well as transport of finished products to construction sites from the use of fossil fuel vehicles.

RESOURCES USE

Total Use of Non-Renewable Primary Energy Resources (PENRT) is dominated by the production of plasterboard products.

Total Use of Renewable Primary Energy Resources (PERT) is dominated by the production stage due to use of wood chips as an energy source.

Definitions: Environmental Impact Indicators

Indicator	Definition
Climate change (global warming potential) (GWP-total, GWP-fossil, GWP-biogenic, GWP-luluc)	Measures the impact of greenhouse gases on global warming, where: **1.** GWP-total is the total global warming potential. **2.** GWP-fossil measures the impact of greenhouse gases originating from fossil fuels. **3.** GWP-biogenic assesses the impact of greenhouse gases from plant based materials and other biogenic sources. **4.** GWP-luluc evaluates the impact of greenhouse gases due to land use and land use change.
Ozone depletion potential (ODP)	Measures the potential impact of a product on stratospheric ozone depletion.
Acidification potential (AP)	Is an indicator of a product's potential to increase environmental acidity in soil and water. It indicates the products ability to release hydrogen ions (H+), resulting in decreased pH.
Eutrophication potential (EP-fw, EP-m, EP-t)	Measures the potential for a product to contribute to excessive nutrients (typically nitrogen and phosphorus) in soil and water environments.
Photochemical ozone formation potential (POFP)	Assesses the potential for volatile organic compounds (VOCs) and nitrogen oxides (NOx) to form ground-level ozone. POFP indicates a product's contribution to air pollution.
Abiotic resource depletion (ADP-mm, ADP-f)	Is the potential for a product to contribute to the depletion of non-living (abiotic) resources. This indicator is divided into: ■ Abiotic resource depletion (minerals and metals which measures the depletion of non-renewable mineral resources. ■ Abiotic resource depletion (fossil fuels) which measures the depletion of fossil fuel resources.
Water depletion potential (WDP)	Is an indicator that assesses the potential for a product to contribute to water resource depletion.

EPD Glossary for Tables

Environmental Impact Category	Indicator ABB.
Climate change - total	GWP-Total
Climate change-fossil	GWP-Fossil
Climate change-biogenic	GWP-Biogenic
Climate change-land use and land use change	GWP-LULUC
Ozone depletion	GWP-GHG
Acidification	ODP
Eutrophication aquatic freshwater	AP
Eutrophication aquatic marine	EP-Freshwater
Eutrophication terrestrial	EP-Marine
Photochemical ozone formation	EP-Terrestrial
Depletion of abiotic resources-minerals and metals	POCP
Depletion of abiotic resources-fossil fuels	ADP_e
Climate change-total	ADP_f

Resource Use	Indicator ABB.
Renewable primary energy resources used as energy carries	PERE
Renewable primary energy resources used as raw materials	PERM
Total renewable primary energy resources	PERT
Non-renewable primary energy resources used as energy carries	PENRE
Non-renewable primary energy resources used as raw materials	PENRM
Total non-renewable primary energy resources	PENRT
Secondary material	SM
Renewable secondary fuels	RSF
Non-renewable secondary fuels	NRSF
Net use of fresh water	FW

Environmental Waste Categories and Output Flows	Indicator ABB.
Hazardous waste disposed	HW
Non-hazardous waste disposed	NHWD
Radioactive waste disposed	RWD
Components for reuse	CRU
Materials for recycling	MFR
Materials for energy recovery	MER
Exported energy, electricity	EEE
Exported energy, thermal	EET

References

International EPD® System
General Programme Instructions of the International EPD® System. Version 5.0.
Product category rules (PCR): PCR 2019:14 v1.3.4. Construction products (EN 15804+A2) Version 1.0

Complementary product category rules (C-PCR) to PCR 2019:14: C-PCR-031 Gypsum-based construction products (EN 17328:2024) Version: 2024-08-06

ISO 21930:2017
Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

EN 17328:2024
Complementary product category rules for gypsum-based construction products

ISO 14021
ISO 14021:2016 Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)

ISO 14025
DIN EN ISO 14025:2011-10: Environmental labels and declaration - Type III environmental declarations - Principles and procedures

EN 15804:2012+A2:2019/AC:2021
EN15804:2012+A2:2019/AC:2021: Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products

EN 15941:2024
Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

Ecoinvent
Version 3.10 - Allocation, cut-off, EN15804

Life Cycle Assessment of Gypsum Plasterboard Production - Final Report (Background Report)

Updates

The updated version of the EPD reports includes an editorial change, removing Knauf Singapore Pte. Ltd. as the additional EPD owner. This adjustment was made at the request of EPD International to ensure that each EPD has only one owner under a single registration number.

Calculation errors in the GWP-GHG values in the previously published EPD were identified. This issue has now been corrected, and the updated EPD reflects the accurate values.

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