KNAUF PLASTERBOARD **ENVIRONMENTAL PRODUCT DECLARATION**

MULTISTOP 16 mm

In accordance with ISO 14025 and EN 15804+A2:2019/AC:2021

ECO PLATFORM EPD VERIFIED

AUSTRALASIA EPD® ENVIRONMENTAL PRODUCT DECLARATION

EPD® THE INTERNATIONAL EPD® SYSTEM

Programme operator:	The International EPD® System, www.environdec.com *EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, Email: info@environdec.com* *Fully aligned regional hub:* EPD Australasia, www.epd-australasia.com
Registration nr.:	EPD-IES-0014128
Date of issue:	2024-08-30
Valid until:	2029-08-30
Geographical scope:	Australia

An EPD should provide current information and may be updated if conditions change. This EPD is of multiple products, based on the average results of the product group. The product groups are the product type produced at the three different sites: Camellia, NSW; Port Melbourne, VIC; and Pinkenba, QLD. The averaging is based on the weighted average production of these sites. The stated validity is therefore subject to the continued registration and publication at www.epd-australasia.com

PROGRAM-RELATED INFORMATION AND VERIFICATION

Declaration owner	**Knauf Gypsum Pty Ltd** 3 Thackeray Street Camellia, NSW, 2142 knauf.com tecassist@knauf.com
Geographical Scope	Australia
Reference Year for Data	1 January 2022 - 30 December 2022
EPD programme operator:	**EPD Australasia Limited** epd-australasia.com info@epd-australasia.com EPD Australasia Limited 315a Hardy Street Nelson 7010, New Zealand **EPD International AB** info@environdec.com EPD International AB Box 210 60, SE-100 31 Stockholm, Sweden

PRODUCT CATEGORY RULES (PCR)

CEN standard EN 15804 served as the core Product Category Rules (PCR)

Product Category Rules (PCR):	PCR 2019.14 Construction Products, version 1.3.3
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.
Review Chair:	**Claudia A. Peña, University of Concepción, Chile.** The review panel may be contacted via the Secretariat www.environdec.com/contact

LIFE CYCLE ASSESSMENT (LCA)

LCA accountability:	**Barbara Nebel, thinkstep Pty Ltd** thinkstep-anz.com anz@thinkstep-anz.com thinkstep Pty Ltd 25 Jubilee Street, Perth, Western Australia 6151, Australia

THIRD-PARTY VERIFICATION

Independent verification of the declaration and data, according to ISO 14025:2006	☑ EPD verification by individual verifier
Third party verifier:	**Rob Rouwette** start2see Pty Ltd Rob.Rouwette@start2see.com.au
Verifier approved by:	EPD Australasia
Procedure for follow-up of data during EPD validity involved third-party verifier	☐ yes ☑ **no**


Build
on us.

WHAT IS AN ENVIRONMENTAL PRODUCT DECLARATION?

An Environmental Product Declaration (EPD) is a standardised document that provides detailed, quantified 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 Australia shines a light on key elements of its plasterboard product, from materials to manufacturing and disposal.

HOW TO USE THE EPD

An Environmental 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 Australia 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 optimisation in the built environment.

This EPD may contribute to the achievement of credit points under the Green Star rating tool of the Green Building Council Australia (GBCA), the Infrastructure Sustainability (IS) Rating and other leading green building rating schemes.

The data presented in this EPD can be quite technical, so if you need help interpreting the data, please contact tecASSIST@knauf.com

CONTENT.

NAVIGATING THE ENVIRONMENTAL PRODUCT DECLARATION (EPD)

Knauf's business philosophy is driven by performance, our partnerships and sustainability. By combining these elements, we deliver high-quality solutions that set new standards in the building materials industry.

WORK SMARTER DO MORE BUILD BETTER *with Knauf*

ABOUT KNAUF

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 300 production facilities and sales organisations in over 90 countries, 42,000 employees worldwide, and sales of €12.6 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.

For more information on Knauf, refer to knauf.com

PURPOSE, STRATEGY AND VALUES

OUR PURPOSE

WHAT DRIVES US

MAKE TOMORROW A HOME FOR ALL OF US

Knauf 100 – four ambitions for sustainable success on our road to 2032

OUR STRATEGY

WHAT LEADS US

We are a great employer for great **people**

We enable our **customers** to capture the best value

We act with **future generations** in mind

We achieve superior **performance**

OUR VALUES

WHAT UNITES US

MENSCHLICHKEIT

Everything we do, every decision we take, we have the well-being of everyone in society in mind.

PARTNERSHIP

We act as a team, and support and trust each other.
We grow together.

COMMITMENT

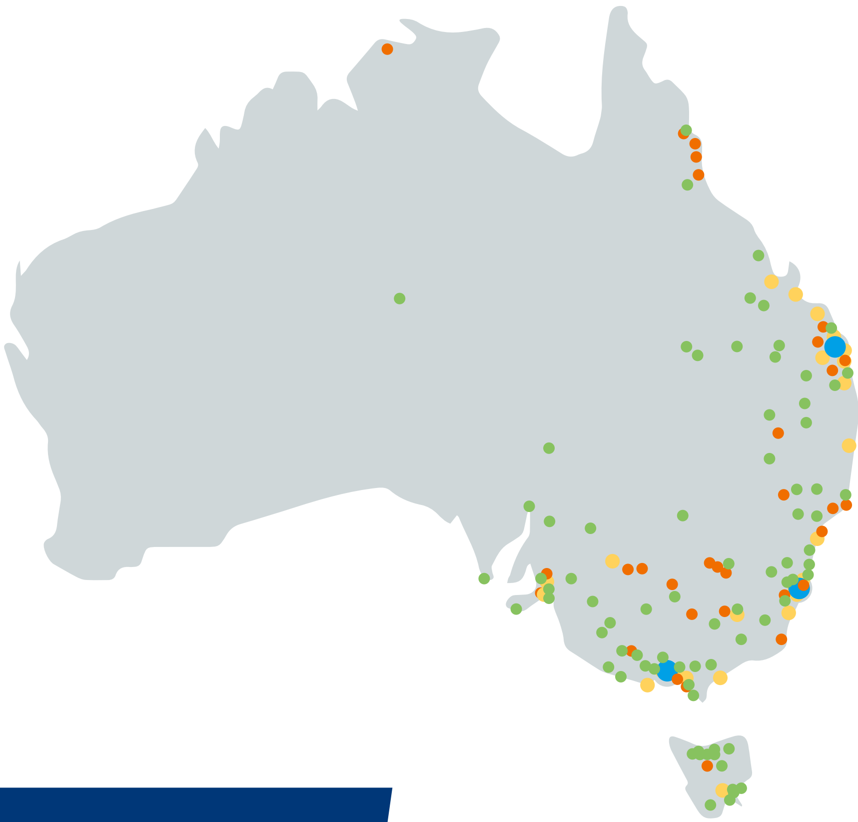
We are committed to our work, our colleagues, and our community. We take responsibility and always go the extra mile.

ENTREPRENEURSHIP

Our continued success is driven by a spirit of pioneering, innovation, and change. We take initiatives and deliver the best results.

KNAUF GYPSUM'S FOOTPRINT IN AUSTRALIA

- 3 Distribution Centres
- 26 Knauf Fulfilment Centres
- 62 Distributors
- Re-Seller Network: 600+ Hardware Stores



KNAUF MANUFACTURING PLANTS

Port Melbourne Plant — VICTORIA

Plasterboards and compounds

Camellia Plant — NEW SOUTH WALES

Plasterboards

Pinkenba Plant — QUEENSLAND

Plasterboards and cornices

Quality assurance

Knauf is a Quality Endorsed Company (Lic No 0400) conforming to AS/NZS ISO 9001 quality management systems requirements. All Australian Knauf plasterboard production facilities are certified under ISO 9002 quality systems, the model for quality assurance in production, installation, and servicing. Knauf plasterboard is machine-made under a continuous process to the requirements of AS/NZS 2588 gypsum plasterboard.

KNAUF'S SUSTAINABILITY PATHWAY

Thinking in generations and working sustainably 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 aims 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 decarbonise operations in a cost-efficient way, reduce water withdrawals by a fifth, and eliminate waste production from all plants, quarries, and mines.

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

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

RESEARCH AND DEVELOPMENT

From its inception in Iphofen, Germany, the Knauf Group has made ongoing research and development a core component of the company. Knauf is committed to finding new materials and methods that support long-term sustainability.

Not only does Knauf look for environmentally viable solutions in creating and sourcing materials, but the company also actively engages in research to develop ecologically sound structures. This includes the development of seismic resistance systems and materials. Quality management systems play a major role in maintaining consistently excellent products and solutions. The Knauf Group is certified by LGA InterCert and meets all the requirements of ISO 9001:2008.

ENVIRONMENT AND HEALTH CONSIDERATIONS

At Knauf, health and safety are core values. The company’s aim is to always be injury-free. A target of zero accidents at work for employees, visitors, and contractors is set by the business. In all aspects of the company’s activities, the health and safety rules and relevant regulations must be complied with. In addition, there are a number of definitive company safety procedures that determine the minimum standards expected by the company. To achieve the companys' safety objectives, Knauf ensures close cooperation with representatives from relevant enforcement agencies. Documented safety management systems are implemented both on-site and in central functions. These systems involve the systematic identification of hazards, risk assessment, and the development of safe work practices aimed at minimising or eliminating risks to an acceptable level. Audits and inspections are used to monitor standards of safety management, adherence to the law, and company procedures.

PRODUCT DESCRIPTION

MULTISTOP™ 3 is an excellent solution for projects demanding multiple functioning applications from internal linings. MULTISTOP™ 3 is suitable for a wide range of wall and ceiling applications, and is ideal for high traffic areas requiring fire, impact, and sound resistance.

MULTISTOP™ 3HI is a high impact product equipped with embedded mesh for even greater resistance and is designed for high foot traffic areas or places subject to frequent bumps, including school or office corridors and gymnasiums.

Features and benefits:

- impact resistance
- fire resistance
- acoustic performance.

In addition to fire, impact, and sound resistance, **MULTISTOP™ 4** provides water resistance, making it a safe and sustainable solution for office kitchens, cafeterias, food courts, restrooms, and change rooms where moisture may be an issue.

Features and benefits:

- soft and hard body impact resistance
- fire resistance
- water resistance
- sound resistance.

MULTISTOP™ 4 HI is suitable for projects requiring fire, impact, sound, and water resistance. It is an ideal solution for schools, hospitals, or where a multi-performing plasterboard is required. MULTISTOP™ 4 HI features an embedded mesh backing, designed to significantly improve impact resistance for areas that experience frequent soft and hard body bumps.

For projects where preventing mould is crucial, such as in hotel bathrooms, commercial restrooms, restaurants, cafes, and laboratories, the 13 mm **MULTISTOP™ 5** offers a solution with its anti-mould attributes, ensuring a cleaner, healthier environment.

13 mm MULTISTOP™ 5 is ideal for commercial applications such as healthcare, hospitality, and childcare, where mould resistance and plasterboard durability against incidental collisions are required.

Features and benefits:

- mould resistance
- impact resistance
- fire resistance
- water resistance
- sound resistance.

MULTISTOP™ 5 HI is designed for a wide range of commercial projects where the prevention of mould and resistance to fire, water, sound, and high impact is required. MULTISTOP™ 5 HI has a continuous fiberglass mesh-reinforced backing to provide toughness and durability for areas subjected to high traffic and impact levels.

Features and benefits:

- mould resistance
- impact resistance
- fire resistance
- water resistance
- sound resistance.

Table 1: Product information

PRODUCT	SITE
MULTISTOP 16 mm (3, 4, 5, 3HI, 4HI, 5HI)	Camellia, NSW
MULTISTOP 16 mm (3, 4, 5, 3HI, 4HI, 5HI)	Port Melbourne, VIC
MULTISTOP 16 mm (3, 4, 5, 3HI, 4HI, 5HI)	Pinkenba, QLD

Table 2: Industry classification

PRODUCT	CLASSIFICATION	CODE	CATEGORY
MULTISTOP 16 mm	UN CPC Ver.2	37530	Articles of plaster or of compositions based on plaster
	ANZSIC 2006	2032	Plaster Product Manufacturing

DECLARED UNIT AND REFERENCE SERVICE LIFE

The declared unit for the EPD is 1 m^2 of plasterboard.

Table 3: Conversion table mass (kg) per m^2

PRODUCT	KG/M²
MULTISTOP 3 (16 mm)	14.6
MULTISTOP 4 (16 mm)	14.6
MULTISTOP 5 (16 mm)	14.6
MULTISTOP 3HI (16 mm)	14.6
MULTISTOP 4HI (16 mm)	14.6
MULTISTOP 5HI (16 mm)	14.6

CONTENT DECLARATION

The composition of plasterboard products is given in Table 4 and Table 5. Due to the confidential nature of the composition, upper and lower limits are given per ingredient. Recycled material and biogenic material is also measured as the low and upper limits for all Knauf plasterboard products.

Table 4: Content declaration

PRODUCT COMPONENTS	WEIGHT, KG	POST-CONSUMER RECYCLED MATERIAL, WEIGHT-% OF PRODUCT	BIOGENIC MATERIAL, WEIGHT-% OF PRODUCT	BIOGENIC MATERIAL, KG C/DECLARED UNIT
Gypsum	4.60–16.5			
Paper	0.345–0.466	2.26–5.87	2.26–5.87	1.13–2.93
Microsilica	0–0.969			
Starch	0.0210–0.0830		0.357–0.401	0.179–0.201
Fibreglass	0–0.145			
Other additives	0.0356–0.252			
Water	0.782–2.40			
Total	**5.88–20.7***	**2.26–5.87**	**2.62–6.27**	**1.31–3.13**

** Range across our plasterboard products. This mass per declared unit for the products included in this EPD is provided in table 3.*

Table 5: Content declaration of packaging

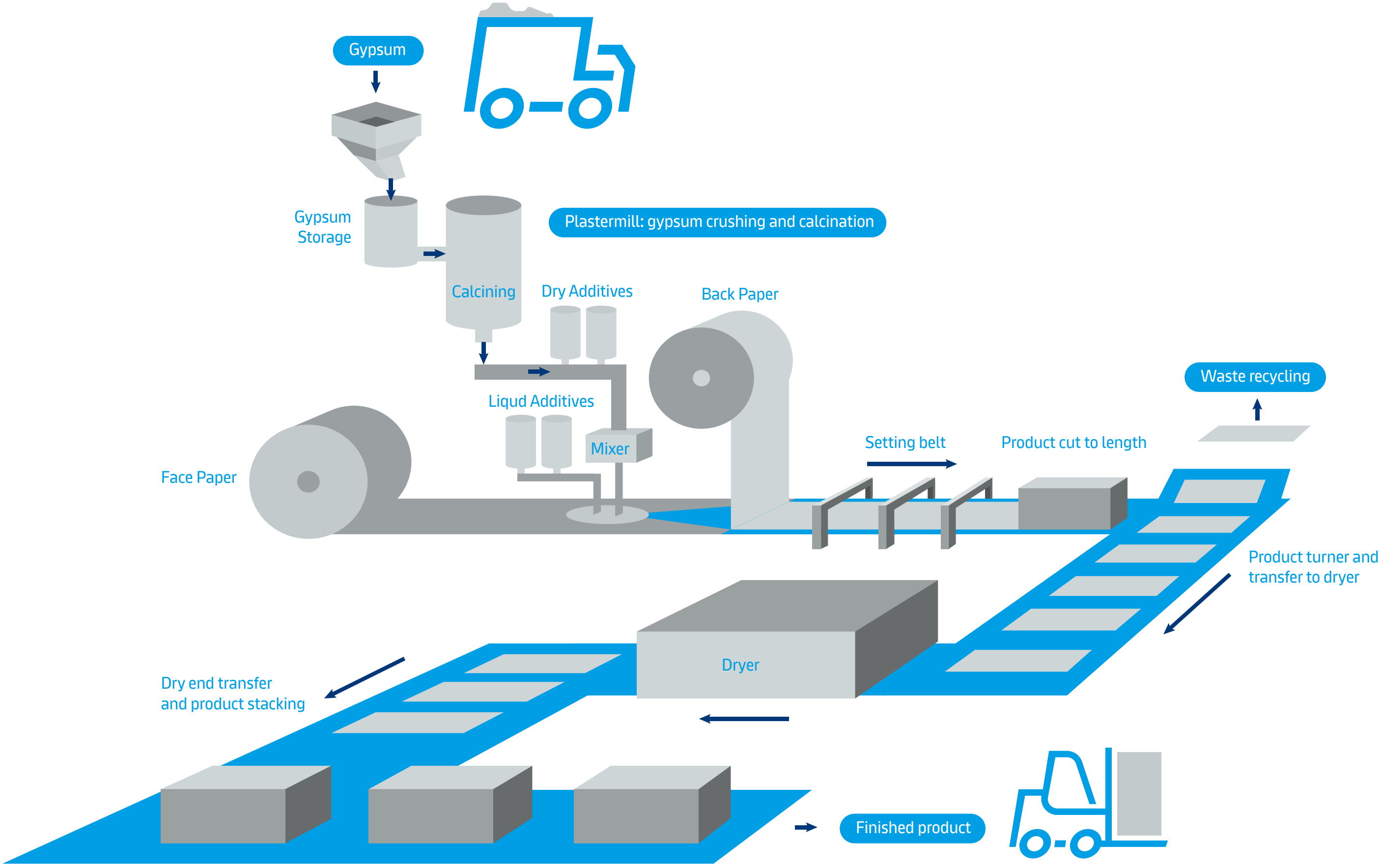
Knauf plasterboard does not use packaging.

PACKAGING MATERIALS	WEIGHT, KG	WEIGHT-%	WEIGHT BIOGENIC CARBON, KG C/DECLARED UNIT
Packaging	0	0	Not applicable
Total	0	0	Not applicable

DANGEROUS SUBSTANCES FROM THE CANDIDATE LIST OF SVHC FOR AUTHORISATION

None of the materials in this EPD are on the Candidate List of substances of very high concern (SVHC), by the European REACH Regulation at a concentration greater than 0.1% by mass.

THE PRODUCTION SYSTEM



Knauf plasterboard is manufactured using a continuous production process.

Raw materials are homogeneously mixed to form a gypsum slurry that is spread via hose outlets onto a paper liner on a moving belt conveyor. A second paper line is fed onto the production line from above to form the plasterboard. The plasterboard continues along the production line where it is finished, dried, and cut to size.

Apart from natural gypsum and recycled paper, the key inputs in the plasterboard manufacturing process are natural gas and water. Knauf aims to reduce its water withdrawals by 2 per cent yearly.

Installation

Knauf plasterboards are typically installed in Knauf wall and ceiling systems with Knauf jointing compound products and accessories. The type and number of layers of Knauf plasterboards used influences the structural, fire, acoustic, and thermal performance of the system.

All products must be installed in accordance with Knauf's recommendations and the current recommendations of AS/NZS 2589 Gypsum linings – applications and finishing.

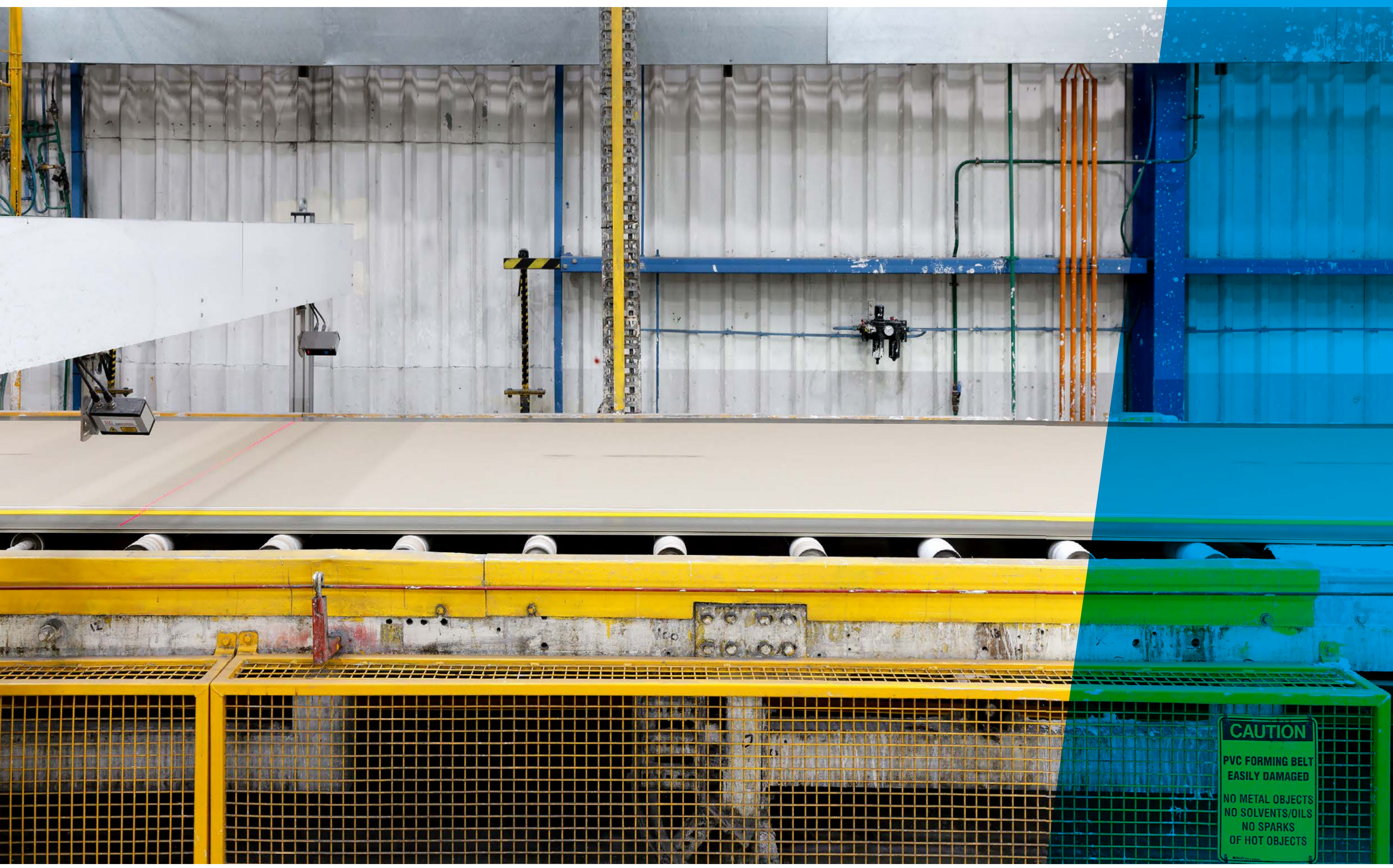
Product use and maintenance

When used in wall lining and ceiling systems, Knauf plasterboards provide a smooth and stable base for paint and other decorative finishes.

In normal use, no maintenance is generally required.

Recycling

Plasterboard waste can be recycled into new plasterboard or as soil conditioner.



SYSTEM BOUNDARIES

As shown in the table below, this EPD is of the type: Cradle to gate with options, modules C1–C4, module D and with optional modules A4–A5. Other life cycle stages (Modules B1-B7) are dependent on particular scenarios and best modelled at the building level.

Table 6: Modules included in the scope of the EPD

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
	Raw material supply	Transport of raw materials	Manufacturing	Transport to customer	Construction / Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport to waste processing	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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
GEOGRAPHY	AU	AU	AU	AU	AU								AU	AU	AU	AU	AU
SPECIFIC DATA	82 %			-		-	-	-	-	-	-	-	-	-	-	-	-
VARIATION: PRODUCTS	<10%			-		-	-	-	-	-	-	-	-	-	-	-	-
VARIATION: SITES	<10%			-		-	-	-	-	-	-	-	-	-	-	-	-

X = included in the EPD;

ND = Module not declared (such a declaration shall not be regarded as an indicator result of zero)

The processes hereafter are included in the product system to be studied. For modules beyond A3, the scenarios included are currently in use and are representative for one of the most probable alternatives.

PRODUCT STAGE (MODULE A1 - A3)

Plasterboard is manufactured by heating gypsum in a plaster mill (known as calcination) to remove moisture and produce stucco. The dry stucco powder is then mixed with water and additives to give each board its desired properties. The mixture is rolled out to a uniform thickness and paper is added to the top and bottom faces. The board is then dried and cut to size ready for distribution to customer.

Module A1 (raw material supply) includes the mining of gypsum in Australia, production of paper in Australia, production of additives, generation and transmission of electricity in Australia, and generation of thermal energy from natural gas.

Module A2 (transportation) includes transport of gypsum via road to port and shipping in a bulk carrier via sea to Camellia, NSW, Port Melbourne, VIC, and Pinkenba, QLD. Transport from port to production plant is via truck. Transport for paper and all other additives is a mixture of truck and sea freight.

Module A3 (manufacturing) includes production of stucco, the handling of raw materials on site and plasterboard production.

Since Module C is included in the EPD, the use of Module A1–A3 results without considering the results of Module C is discouraged.

Knauf plasterboards products were tested in accordance with the NSW EPA Recovered Plasterboard Order and meet all requirements.

CONSTRUCTION STAGE (MODULE A4, A5)

Module A4 (distribution) includes distribution from Knauf manufacturing sites to its distribution centres. An average distribution model is applied, which includes the distribution through Knauf's distribution centres across Australia.

Module A5 (installation) includes the materials used to install the plasterboard (jointing compound, jointing tape, and screws) and the production of plasterboard offcuts from installation, which are assumed to be landfilled. The installation of 1 m^2 of plasterboard requires the production of 1.15 m^2 of plasterboard (declared unit + offcuts). Module A1-A3 represents production of 1.15 m^2 plasterboard, and module A4 includes transport of 1.15 m^2 plasterboard to the construction site. The impacts of the 15% offcuts in module A5 are limited to the handling and processing of the waste.

Table 7: Transport to building site

SCENARIO INFORMATION	UNIT (expressed per functional unit or per declared unit)
Vehicle type used for transport e.g. long distance truck, boat etc.	Truck: - Bed-trucks: Truck, Euro 0 - 6 mix, 14 - 20t gross weight / 11.4t payload capacity - Semis: Truck, Euro 0 - 6 mix, 20 - 26t gross weight / 17.3t payload capacity - B-doubles: Truck, Euro 0 - 6 mix, more than 32t gross weight / 24.7t payload capacity Ship: - Bulk commodity carrier, 5,000 to 200,000 dwt payload capacity, ocean going
Distance (weighted average per site)	NSW, truck: 78 km (45% semis, 45% bed-trucks, 10% b-doubles) VIC, truck: 281 km (70% semis, 30% b-doubles) VIC, ship: 28 km QLD, truck: 223 km (20% semis, 80% b-doubles)
Capacity utilisation (including empty returns)	Trucks: 45% Ship: 90%
Bulk density of transported products	913 kg/m^3
Volume capacity utilisation factor (factor: =1 or < 1 or ≥ 1 for compressed or nested packaged products)	1

Table 8: Installation of the product in the building

SCENARIO INFORMATION	UNIT (expressed per functional unit or per declared unit)
Jointing compound (Gypsum plaster)	0.28 kg/m^2
Jointing tape (paper tape)	0.006 kg/m^2
Screws (stainless steel)	0.024 kg/m^2
Water use	0 m^3
Quantitative description of energy type and consumption during the installation process	0 MJ (Assumed manual installation)
Waste materials on the building site before waste processing, generated by the product's installation	15% of plasterboard is assumed to be offcut 15% of jointing compound and tape are assumed to be wasted
Output materials as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	15% of plasterboard is assumed to be sent to landfill 15% of jointing compound and tape are assumed to be sent to landfill
Direct emissions to ambient air, soil and water	n/a

END OF LIFE (MODULE C)

At the end of the building's life, it is anticipated that Knauf plasterboards will be removed from the building.

Module C1 (deconstruction/demolition) includes demolition of the whole building including plasterboards, using a 100-kW construction excavator. Fuel consumption is calculated at 0.172 kg diesel input per tonne of material.

Module C2 (transport to end-of-life) includes the transport by truck of waste plasterboard to landfill after building's demolition. The estimated transport distance by truck is 50 km with a capacity utilisation of 45%.

Module C3 (waste processing) does not present impact as the plasterboard waste is assumed to be landfilled in the main scenario.

Module C4 (disposal) includes plasterboard end-of-life in the landfill. An emission related to the landfill of construction products and paper is calculated. All biogenic carbon in paper is modelled as released at this stage.

Note: these values have been applied based on the mass of the declared unit.

Table 9: End of life scenarios for products

PROCESS	UNIT (expressed per functional unit or per declared unit of components products or materials and by type of material)
Collection process specified by type	0% collected separately
	100% collected with mixed construction waste
Recovery system specified by type	0% of plasterboard for re-use
	0% of plasterboard for recycling
	0% of plasterboard for energy recovery
Disposal specified by type	100% of materials in plasterboard to landfill

RECOVERY AND RECYCLING POTENTIAL (MODULE D)

Module D (reuse-recovery-recycling-potential) includes the energy recovered from the landfill of paper in plasterboard. For every 1 kg of paper in landfill, 0.513 MJ of electricity recovered from gas was considered. In the case of 1 kg of starch, 0.439 MJ of electricity is recovered.

LIFE CYCLE INVENTORY (LCI) DATA AND ASSUMPTIONS

All primary data represent an annual average from Knauf's 2022 calendar year (1 Jan 2022 to 31 Dec 2022). As such, all primary data fall within the mandatory five-year period required under EN 15804 and the PCR.

Sphera Solutions LCA for Experts (LCAFE) software version 10.8 was used. Data for all energy inputs, transport processes, packaging and raw materials are from Managed LCA Content (MLC) database version 2023.1 (Sphera, 2023). The reference year for the data ranges from 2019-2022 and therefore all datasets are within the 10-year limit allowable for generic data under EN 15804 and the PCR. Details for data used in the background system are given in section 3.4.

Upstream data

Australia-specific datasets have been used where available, including Australian electricity mix, diesel, and natural gas. Water inputs are modelled as tap water, regionalised for Australia.

The upstream production impacts for materials used in the plasterboard products were calculated based on the quantities in the BOM, uplifted for any production waste, and using dataset-specific impacts extracted from Sphera databases.

Electricity

The modelling of direct use of electricity considered the option of 'Residual electricity mix of the electricity supplier on the market', since Knauf sites use electricity from the grid without guarantee of origin. However, as residual mix composition in Australia (or states/territories) are not publicly available, we assumed a conservative scenario for the residual electricity mix. Conservative scenario means that all renewable electricity has been consumed and the remaining non-renewable sources are used in the mix.

The mix of electricity in the residual AU grid is 53.9 per cent hard coal, 26.3 per cent natural gas, 17.3 per cent brown coal, and 2.5 per cent heavy fuel oil. This results in an emission factor of 1.05 kg CO_2-eq/kWh for indicators GWP-GHG and GWP-GHG (IPCC AR5). However, since the Australian National Greenhouse Accounts Factors (Department of Climate Change, Energy, the Environment and Water, 2023) published a Residual Mix Factor (RMF) of 0.91 kg CO_2-eq/kWh, with all GWP-related indicators manually adjusted to correspond to the RMF.

Recycling and recycled inputs

Knauf has secondary material inputs from the use of paper (i.e. 80 per cent post-consumer recycled) in the production of plasterboard products. For the other raw materials inputs, no secondary inputs are used. All the paper in plasterboard is assumed to be landfilled at the end-of-life (modules A5 and C).

Gypsum in plasterboard is from primary sources.

Transport

Transport data was collected from Knauf for all input materials to all sites. The transport data included the transport modes and distances from suppliers. Transport distances were mapped against each line of Bill of Materials (BOM) data and used to calculate upstream transport impacts using the calculated input volumes. Where transport data was not available, a standard value of 50 km was used.

Explanation of Average / Representative Products & Variation

This EPD is of multiple products, based on the average results of the product group. The product groups are the product type produced at the three different sites: Camellia, NSW; Port Melbourne, VIC; and Pinkenba, QLD. The averaging is based on the weighted average production of these sites.

Cut off criteria

Personnel is excluded as per section 4.3.2 in the PCR (EPD International, 2024). Capital goods and infrastructure are excluded from this EPD. thinkstep-anz consistently excludes environmental impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process, ('capital goods') regardless of potential significance. An important exception is the inclusion of capital goods for electricity generation, where the capital goods are very important for modelling of changes towards more renewable generation. Capital goods related to electricity generation are included.

For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

Allocation

Where subdivision of processes was not possible, allocation rules listed in PCR section 4.5 have been applied.

Site level data for electricity, diesel for mobile plant (e.g. loaders), water, and lubricant usage are allocated by mass, based on the annual production of each plant.

For all refinery products, allocation by mass and net calorific value has been applied. The specific manufacturing route of every refinery product is modelled, and the impacts associated with the production of these products are calculated individually. Materials and chemicals needed in the manufacturing process are modelled using the allocation rule most suitable for the respective product. Specifically, some materials used in plasterboard products are relevant regarding allocation:

- Paper: for all cases, Knauf sources paper with label FSC Mix 80, so paper with 80% recycling content was assumed. The GWP-GHG impacts for Paper is 0.225 kg CO_2-eq/kg; Recycled paper input is sourced from pre-consumer and post-consumer waste material. No burden is associated with this material when it enters our lifecycle.
- Microsilica: Data for Microsilica used the dataset 'silica sand (flour)' from MCL databases. Possibly microsilica used by Knauf is from silica fume, in which case allocation would be relevant. This data should be reassessed using a more representative dataset upon EPD update.

End of life allocation for the landfill scenario follows an avoided burden approach: in cases where materials are sent to landfills, they are linked to an inventory that accounts for waste composition, regional leachate rates, landfill gas capture as well as utilisation rates (flaring vs. power production). A credit is assigned for power output using the regional grid mix.

Assumptions

Assumptions made during the LCI collection and modelling process are as follows:

- Cut-off criteria, as per the PCR 2019:14 v1.3.3 (EPD International, 2024), are reasonable in the context of the overall impacts of plasterboard production.
- Accuracy of the measured data falls within normal industrial weighing systems accuracy limits of +/-5%.
- Where specific life cycle inventory data were unavailable, proxy data were used.
- Data for microsilica used the dataset 'silica sand (flour)' from MCL databases. Possibly this data should be reassessed using a more representative dataset in future updates of this LCA.
- Site utilities and waste (e.g. water, wastewater, electricity, thermal energy, and waste) are allocated based on the stucco used for wet plasterboard production (i.e. all products have the same impact per kg stucco used).
- Off-cuts from installation are assumed to be landfilled (main scenario) or recycled (gypsum share only; additional scenario). Paper in plasterboard and installation materials are assumed to be landfilled.
- The plasterboard end-of-life includes demolition using excavator, transportation, and landfilling (main scenario) or recycling (gypsum share only; additional scenario). Similarly to installation, paper in plasterboard and installation materials are assumed to be landfilled.

DEFINITIONS: ENVIRONMENTAL IMPACT INDICATORS

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.

ASSESSMENT INDICATORS

The results tables describe the different environmental indicators for each product per declared unit, for each declared module. The EN 15804 reference package based on EF 3.0 is used.

Table 10	contains the core environmental impact indicators in accordance with EN 15804:2012+A2:2019, describing the potential environmental impacts of the product.
Table 11	shows the life cycle inventory indicators for resource use.
Table 12	displays the life cycle inventory indicators for waste and other outputs.
Table 13	provides additional environmental impact indicators in accordance with EN 15804:2012+A2:2019.
Table 14	displays biogenic carbon content indicators
Table 15	contains results for environmental impact indicators in accordance with EN 15804:2012+A1:2013 to aid backward comparability.
Table 18	contains core environmental impact indicators
Table 19	shows use of resources
Table 20	provides waste production and output flows
Table 21	contains additional environmental impact indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Energy indicators (MJ) are always given as net calorific value.

ENVIRONMENTAL PERFORMANCE

Results for 1 m^2 of plasterboard MULTISTOP 16 mm.

Table 10: EN15804+A2 Core environmental impact indicators

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	3.94	0.365	0.409	0.00931	0.0878	0	1.62	-0.0515
GWP-fossil	kg CO_2 eq.	4.71	0.365	0.171	0.00931	0.0878	0	0.199	-0.0515
GWP-biogenic	kg CO_2 eq.	-0.777	7.19E-05	0.238	1.94E-06	1.73E-05	0	1.42	-4.12E-06
GWP-luluc	kg CO_2 eq.	0.00207	4.74E-06	2.06E-04	1.19E-07	1.14E-06	0	5.34E-04	-6.48E-07
ODP	kg CFC 11 eq.	6.74E-12	3.09E-14	7.36E-13	7.76E-16	7.43E-15	0	4.69E-13	-5.85E-13
AP	mol H^+ eq.	0.0177	6.61E-04	0.00104	4.69E-05	1.57E-04	0	0.00149	-2.69E-04
EP-freshwater	kg P eq.	2.49E-05	5.95E-08	3.79E-07	1.49E-09	1.43E-08	0	3.56E-07	-3.60E-09
EP-marine	kg N eq.	0.00619	2.84E-04	1.81E-04	2.24E-05	6.72E-05	0	4.09E-04	-5.50E-05
EP-terrestrial	mol N eq.	0.0651	0.00312	0.00199	2.46E-04	7.39E-04	0	0.00450	-6.02E-04
POCP	kg NMVOC eq.	0.0160	6.58E-04	6.00E-04	6.27E-05	1.55E-04	0	0.00153	-1.53E-04
ADP-m&m*	kg Sb eq.	8.01E-06	1.32E-09	3.39E-06	3.33E-11	3.19E-10	0	8.23E-09	-1.88E-09
ADP-fossil*	MJ	70.4	4.95	2.33	0.125	1.19	0	2.59	-0.537
WDP*	m^3 world eq. deprived	0.492	0.00146	0.0247	3.67E-05	3.51E-04	0	0.0249	-0.0207

** Disclaimer: 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.*

Table 11: Life cycle inventory indicators on use of resource

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	15.4	0.0180	0.593	4.52E-04	0.00433	0	0.394	-0.200
PERM	MJ	9.04	0	1.36	0	0	0	7.68	0
PERT	MJ	24.4	0.0180	1.95	4.52E-04	0.00433	0	8.08	-0.200
PENRE	MJ	70.4	4.96	2.33	0.125	1.19	0	2.59	-0.537
PENRM	MJ	0	0	0	0	0	0	0	0
PENRT	MJ	70.4	4.96	2.33	0.125	1.19	0	2.59	-0.537
SM	kg	0.447	0	0.00563	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FWT	m^3	0.0221	2.90E-05	7.63E-04	7.29E-07	6.98E-06	0	7.24E-04	-2.88E-04

Table 12: Waste production and output flows

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	3.03E-05	3.58E-12	1.71E-09	9.00E-14	8.62E-13	0	5.57E-11	1.98E-12
NHWD	kg	0.298	1.07E-04	3.28	2.69E-06	2.57E-05	0	11.7	-1.84E-04
RWD	kg	7.32E-04	7.21E-07	5.83E-05	1.81E-08	1.74E-07	0	2.77E-05	-8.96E-08
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	3.47E-05	0	0.0325	0	0	0	0.186	0
EET	MJ	0	0	0	0	0	0	0	0

Table 13: EN15804+A2 Additional Environmental Impact Indicators

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO_2-eq	4.73	0.365	0.377	0.00931	0.0878	0	1.38	-0.0515
GWP-GHG (IPCC AR5)	kg CO_2-eq	4.71	0.365	0.361	0.00928	0.0877	0	1.29	-0.0515
PM	Disease incidences	2.15E-07	5.02E-09	1.68E-08	5.39E-10	1.14E-09	0	1.69E-08	-2.69E-09
IR[2]	kBq U235 eq.	0.122	9.01E-05	0.00781	2.26E-06	2.17E-05	0	0.00318	-1.17E-05
ETP-fw[1]	CTUe	18.3	2.12	0.927	0.0533	0.510	0	1.33	-0.0777
HTP-c[1]	CTUh	2.65E-09	3.54E-11	3.67E-08	8.90E-13	8.53E-12	0	2.02E-10	-5.10E-12
HTP-nc[1]	CTUh	2.58E-07	1.24E-09	7.52E-09	4.37E-11	2.98E-10	0	2.21E-08	-1.44E-10
SQP[1]	Dimensionless	78.3	0.00911	0.706	2.29E-04	0.00219	0	0.565	-0.00752

Disclaimer 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 experience with the indicator.*

Disclaimer 2: *This impact category deals mainly with the eventual impact of low dose ionising 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 ionising radiation from the soil, from radon and some construction materials, is also not measured by this indicator.*

Table 14: Biogenic Carbon Content

PARAMETER	UNIT	A1-A3
BCC-prod	kg C	0.242
BCC-pack	kg C	0

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

Table 15: EN15804+A1 Environmental Impact Indicators

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO_2 eq.	3.84	0.361	0.341	0.00918	0.0867	0	1.25	-0.0508
ODP	kg CFC-11 eq.	7.93E-12	3.64E-14	8.67E-13	9.14E-16	8.75E-15	0	5.52E-13	-6.89E-13
AP	kg SO_2 eq.	0.0134	4.73E-04	8.65E-04	3.27E-05	1.12E-04	0	0.00118	-2.21E-04
EP	kg PO_4^{3-} eq.	0.00237	9.63E-05	6.68E-05	7.53E-06	2.28E-05	0	1.42E-04	-1.87E-05
POCP	kg C_2H_4 eq.	8.82E-04	-8.53E-05	8.54E-05	3.06E-06	-2.06E-05	0	2.80E-04	-1.15E-05
ADPE	kg Sb eq.	8.00E-06	1.33E-09	3.38E-06	3.34E-11	3.20E-10	0	8.40E-09	-1.87E-09
ADPF	MJ	68.0	4.94	2.14	0.124	1.19	0	2.49	-0.535

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

The main differences from the main scenario are that plasterboard is assumed to reach module C3 with separation of gypsum share and paper share. Gypsum is assumed to be recycled into agricultural gypsum, while paper is assumed to be landfilled. Plasterboard recycling as a soil ameliorant is allowed in all states in Australia and is managed in accordance with local regulations.

INSTALLATION STAGE (MODULE A5)

Module A5 (installation) includes the materials used to install the plasterboard (jointing compound, jointing tape, and screws) and the production of plasterboard offcuts from installation. The difference from the main scenario is that offcuts are assumed to be recycled. Paper in plasterboards or joining tape is assumed to be landfilled.

Table 16: Installation of the product in the building

SCENARIO INFORMATION	UNITS (expressed per functional unit or per declared unit)
Jointing compound (gypsum plaster)	0.28 kg/m²
Jointing tape (paper tape)	0.006 kg/m²
Screws (stainless steel)	0.024 kg/m²
Water use	0 m³
Quantitative description of energy type and consumption during the installation process	0 kWh or MJ
Waste materials on the building site before waste processing, generated by the product's installation	15% of plasterboard is assumed to be offcut
	15% of jointing compound and tape are assumed to be wasted
Output materials as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	15% of plasterboard is assumed to be sent to recycling. The gypsum share is assumed to be recovered while the paper share is assumed to be landfilled.
	15% of jointing compound and tape are assumed to be sent to recycling. The gypsum share is assumed to be recovered while the paper share is assumed to be landfilled.
Direct emissions to ambient air, soil and water	n/a

END OF LIFE (MODULE C)

Module C1 (deconstruction/demolition) includes demolition of the whole building including plasterboards, using a 100-kW construction excavator. Fuel consumption is calculated at 0.172 kg diesel input per tonne of material.

Module C2 (transport to end-of-life) includes the transport by truck of waste plasterboard to recovery of plasterboard into recycled gypsum. The estimated transport distance by truck is 50 km with a capacity utilisation of 45%.

Module C3 (waste processing) includes the processing of plasterboard waste for recycling. Energy use is estimated as 0.0034 kWh of electrical energy from the Australian grid to process 1 kg of waste. The end of waste of gypsum is after the plasterboard was separated from the paper composition.

Module C4 (disposal) includes the end-of-life of paper in plasterboard in landfill. An emission related to the landfill of paper is calculated. All biogenic carbon in paper is modelled as released at this stage.

Note: these values have been applied based on the mass of the declared unit.

Table 17: End of life scenarios for products

PROCESS	UNIT (expressed per functional unit or per declared unit of components products or materials and by type of material)
Collection process specified by type	0% collected separately
	100% collected with mixed construction waste
Recovery system specified by type	0% of plasterboard for re-use
	100% of gypsum in plasterboard for recycling
	0% of plasterboard for energy recovery
Disposal specified by type	100% of paper in plasterboard to landfill

Table 18: EN15804+A2 Core environmental impact indicators

PARAMETER	UNIT	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	0.363	0.00931	0.0878	0.0162	1.46	-0.138
GWP-fossil	kg CO_2 eq.	0.123	0.00931	0.0878	0.0162	0.0291	-0.138
GWP-biogenic	kg CO_2 eq.	0.240	1.94E-06	1.73E-05	2.57E-07	1.43	-2.00E-05
GWP-luluc	kg CO_2 eq.	5.69E-05	1.19E-07	1.14E-06	1.61E-07	6.68E-06	-1.74E-06
ODP	kg CFC 11 eq.	6.14E-13	7.76E-16	7.43E-15	1.26E-15	3.74E-14	-5.21E-13
AP	mol H^+ eq.	6.97E-04	4.69E-05	1.57E-04	7.92E-05	2.89E-04	-7.14E-04
EP-freshwater	kg P eq.	2.83E-07	1.49E-09	1.43E-08	3.24E-10	1.40E-08	-1.86E-08
EP-marine	kg N eq.	9.33E-05	2.24E-05	6.72E-05	1.70E-05	9.84E-05	-2.64E-04
EP-terrestrial	mol N eq.	0.00102	2.46E-04	7.39E-04	1.86E-04	0.00108	-0.00290
POCP	kg NMVOC eq.	3.35E-04	6.27E-05	1.55E-04	4.73E-05	5.93E-04	-7.46E-04
ADP-m&m	kg Sb eq.	3.38E-06	3.33E-11	3.19E-10	5.08E-11	4.10E-10	-1.98E-09
ADP-fossil	MJ	1.69	0.125	1.19	0.179	0.330	-1.73
WDP	m^3 world eq. deprived	0.0194	3.67E-05	3.51E-04	0.00313	0.00630	-0.0185

Table 19: Use of resources

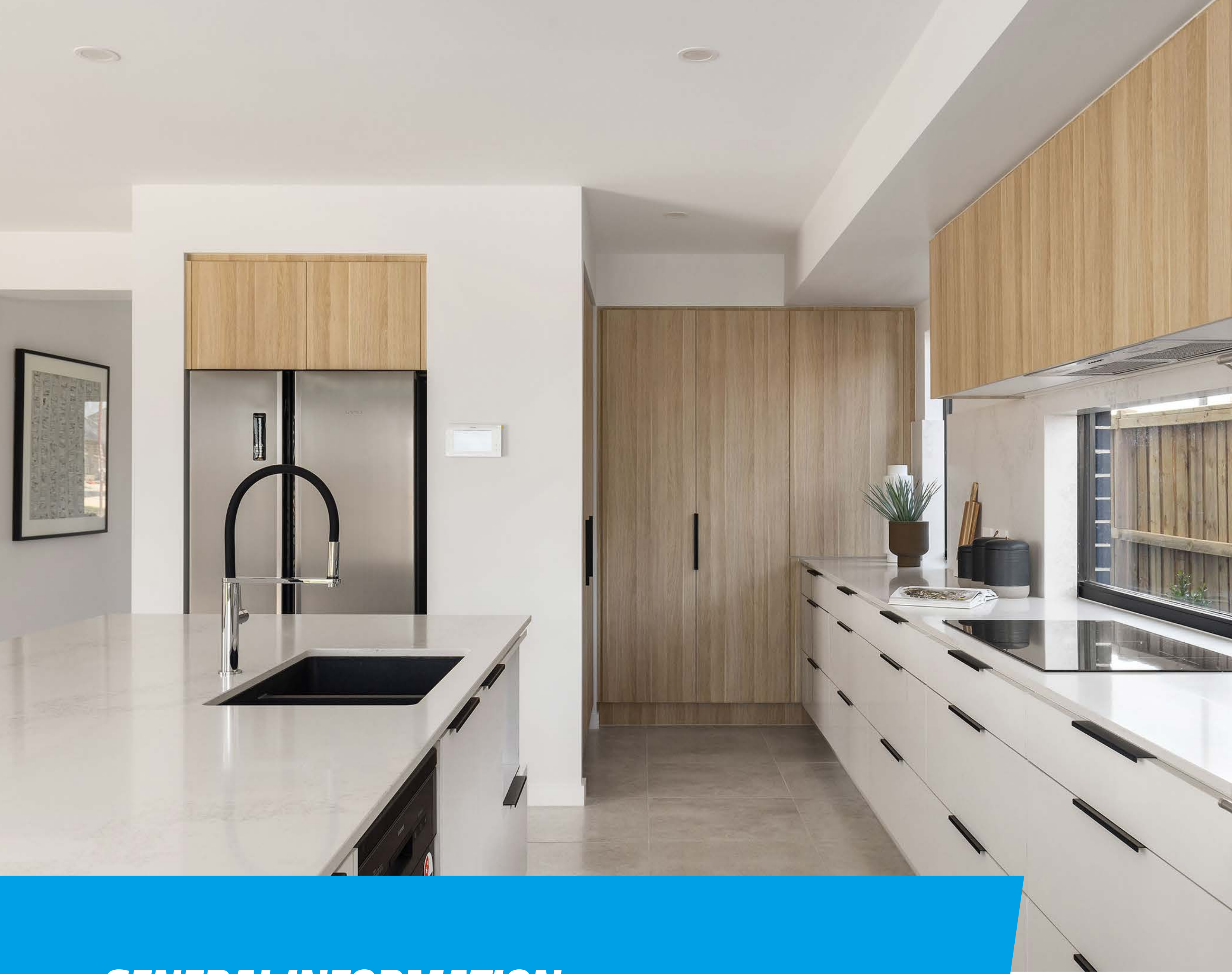
PARAMETER	UNIT	A5	C1	C2	C3	C4	D
PERE	MJ	0.488	4.52E-04	0.00433	5.81E-04	0.0258	-0.179
PERM	MJ	1.36	0	0	7.68	0	0
PERT	MJ	1.84	4.52E-04	0.00433	7.68	0.0258	-0.179
PENRE	MJ	1.69	0.125	1.19	0.179	0.331	-1.73
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	1.69	0.125	1.19	0.179	0.331	-1.73
SM	kg	0.00563	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FWT	m^3	6.01E-04	7.29E-07	6.98E-06	4.36E-05	1.53E-04	-2.59E-04

Table 20: Waste production and output flows

PARAMETER	UNIT	A5	C1	C2	C3	C4	D
HWD	kg	1.70E-09	9.00E-14	8.62E-13	3.06E-12	6.46E-12	8.87E-13
NHWD	kg	0.0864	2.69E-06	2.57E-05	4.18E-05	0.431	-1.85E-04
RWD	kg	5.10E-05	1.81E-08	1.74E-07	1.08E-08	1.89E-06	-2.21E-07
CRU	kg	0	0	0	0	0	0
MFR	kg	3.19	0	0	11.3	0	0
MER	kg	0	0	0	0	0	0
EEE	MJ	0.0325	0	0	0	0.186	0
EET	MJ	0	0	0	0	0	0

Table 21: EN15804+A2 Additional Environmental Impact Indicators

PARAMETER	UNIT	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO_2-eq	0.329	0.00931	0.0878	0.0162	1.21	-0.138
GWP-GHG (IPCC AR5)	kg CO_2-eq	0.313	0.00928	0.0877	0.0162	1.12	-0.138
PM	Disease incidences	1.26E-08	5.39E-10	1.14E-09	7.76E-10	2.08E-09	-2.27E-08
IR	kBq U235 eq.	0.00697	2.26E-06	2.17E-05	1.79E-06	1.99E-04	-2.78E-05
ETP-fw	CTUe	0.578	0.0533	0.510	0.0293	0.0945	-0.537
HTP-c	CTUh	3.66E-08	8.90E-13	8.53E-12	1.13E-12	1.19E-11	-1.23E-11
HTP-nc	CTUh	1.62E-09	4.37E-11	2.98E-10	4.34E-11	1.22E-09	-5.39E-10
SQP	Dimensionless	0.551	2.29E-04	0.00219	4.24E-04	0.0164	-39.6



GENERAL INFORMATION

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules).

Knauf has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes, 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 characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

The results for EN15804+A1 compliant EPDs are not comparable with EN15804+A2 compliant studies as the methodologies are different. Results that are EN15804+A1 compliant are given in this document to assist comparability with older EPDs.

EPD GLOSSARY FOR TABLES

ENVIRONMENTAL IMPACT	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	ODP
Acidification	AP
Eutrophication aquatic freshwater	EP-freshwater
Eutrophication aquatic marine	EP-marine
Eutrophication terrestrial	EP-terrestrial
Photochemical ozone formation	POCP
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals
Depletion of abiotic resources - fossil fuels	ADP-fossil
Water use	WDP

RESOURCE USE	ABB.
Renewable primary energy as energy carrier	PERE
Renewable primary energy resources as material utilisation	PERM
Total use of renewable primary energy resources	PERT
Non-renewable primary energy as energy carrier	PENRE
Non-renewable primary energy as material utilisation	PENRM
Total use of non-renewable primary energy resources	PENRT
Use of secondary material	SM
Use of renewable secondary fuels	RSF
Use of non-renewable secondary fuels	NRSF
Use of net fresh water	FW

WASTE CATEGORIES AND OUTPUT FLOWS	ABB.
Hazardous waste disposed	HWD
Non-hazardous waste disposed	NHWD
Radioactive waste disposed	RWD
Components for re-use	CRU
Materials for recycling	MFR
Materials for energy recovery	MER
Exported electrical energy	EEE
Exported thermal energy	EET

BIOGENIC CARBON CONTENT	ABB.
Biogenic carbon content - product	BCC-prod
Biogenic carbon content - packaging	BCC-pack

ADDITIONAL INDICATORS	ABB.
PCR GWP-GHG	GWP-GHG
Respiratory inorganics	PM
Ionising radiation - human health	IRP
Eco-toxicity - freshwater	ETP-fw
Human toxicity, cancer	HTPc
Human toxicity, non-canc.	HTPnc
Land use related impacts / soil quality	SQP

ENVIRONMENTAL IMPACT	ABB.
Global warming potential	GWP
Depletion potential of the stratospheric ozone layer	ODP
Acidification potential of land and water	AP
Eutrophication potential	EP
Photochemical ozone creation potential	POCP
Abiotic depletion potential – elements	ADPE
Abiotic depletion potential – fossil fuels	ADPF

ENVIRONMENTAL IMPACT - ALTERNATIVE SCENARIO (RECYCLING)	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	ODP
Acidification	AP
Eutrophication aquatic freshwater	EP-freshwater
Eutrophication aquatic marine	EP-marine
Eutrophication terrestrial	EP-terrestrial
Photochemical ozone formation	POCP
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals
Depletion of abiotic resources - fossil fuels	ADP-fossil
Water use	WDP

REFERENCES

Department of Climate Change, Energy, the Enviroment and Water. (2023).
Australian National Greenhouse Accounts Factors. Australian Governament.

EN 15804:2012+A1:2013; Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products .
Brussels: European Committee for Standardization.

EN 15804:2012+A2:2019; Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products .
Brussels: European Committee for Standardization.

General Programme Instructions for the International EPD® System. Version 4.0, dated 2021-03-29.
www.environdec.com.

ISO 14025:2006; Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
Geneva: International Organization for Standardization.

ISO 14040:2006; Environmental management – Life cycle assessment – Principles and framework.
Geneva: International Organization for Standardization.

ISO 14044:2006; Environmental management – Life cycle assessment – Requirements and guidelines.
Geneva: International Organization for Standardization.

PCR 2019:14 Construction Products, Version 1.3.3, 2024-03-01. EPD International.

Sphera. (2023). Life Cycle Inventory Database 2023 Documentation.
Retrieved from Sphera: https://sphera.com/product-sustainability-gabi-data-search/

KNAUF

Knauf Gypsum Pty Ltd

TECASSIST@KNAUF.COM

3 Thackeray Street Camellia NSW 2142 Australia

Knauf.com

Build on us.