ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

primaflex™

(from 3.2mm to 12mm)

EPD of multiple products based on a representative product

Malaysia production plant:

Saint-Gobain Prima Sdn Bhd,
Lot 127220, Kawasan Perusahaan
Kanthan, 31200 Chemor, Perak

Programme
The International EPD® System,
www.environdec.com
EPD registered through the fully aligned regional hub EPD Southeast Asia,
http://www.epd-southeastasia.com/

Programme operator
EPD international AB

Regional Hub
EPD Southeast Asia

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EPD-IES-0028673

Version:
01

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2026-03-16

Validity
5 years

Valid until
2031-03-16

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

General information

Programme information

PROGRAMME:	**The International EPD® System** EPD registered through the fully aligned regional hub: EPD Southeast Asia
ADDRESS:	**EPD International AB** Box 210 60, SE-100 31 Stockholm, Sweden **EPD Southeast Asia** Kencana Tower Level M, Business Park Kebon Jeruk Jl. Raya Meruya Ilir No.89, Jakarta Barat 11620, Indonesia
WEBSITE:	www.environdec.com www.epd-southeastasia.com
E-MAIL:	support@environdec.com

PCR information

Product Category rules (PCR)

CEN standard EN 15804:2012+A2:2019/AC:2021 as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction Products, version 2.0.1
Complementary PCR: complementary PCR for fibre cement products is currently under development

PCR review was conducted by: The Technical Committee of the International EPD® System
See www.environdec.com for a list of members.
Chairs of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair).

Verification

External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via

EPD verification through:

☒ Individual EPD verification without a pre-verified LCA/EPD tool
☐ Individual EPD verification with a pre-verified LCA/EPD tool
☐ EPD process certification* without a pre-verified LCA/EPD tool
☐ EPD process certification* with a pre-verified LCA/EPD tool
☐ Fully pre-verified EPD tool

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☒ EPD verification by individual verifier
Third party verifier:
Mamoru Yanagisawa at EPA Corporation
email: m.yanagisawa@epa-jp.com

Approved by: The International EPD© System

Procedure for follow-up of data during EPD validity involves third part verifier: ☐ Yes ☒ No

Ownership and limitations on use of EPD

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR

(including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterization factors); and be valid at the time of comparison.

Contact information

EPD Owner

Saint Gobain Malaysia and Singapore
Level 19, Tower 5,
Avenue 7, The Horizon,
Bangsar South, 59200 Kuala Lumpur,
Federal Territory of Kuala Lumpur

LCA Practitioner

ZHAO LIN
Contact:
lin.zhao@saint-gobain.com

NG KAH SENG
Contact:
kahseng.ng@saint-gobain.com

CELESTE B. JIMLI PERIJIN
Contact:
celestebeth.jimliperijin@saint-gobain.com

Programme Operator

EPD INTERNATIONAL EPD SYSTEM

EPD International AB
Box 21060
SE-100 31 Stockholm
Sweden

EPD Regional hub

SOUTHEAST ASIA EPD INTERNATIONAL EPD SYSTEM

Regional Hub EPD Southeast Asia
Kencana Tower Level M, Business Park Kebon Jeruk, Jl. Raya Meruya Ilir No.88, West Jakarta 11620, Indonesia
Contact:
admin@epd-southeastasia.com

Company Information

Manufacturer: Saint Gobain Malaysia and Singapore, Level 19, Tower 5, Avenue 7, The Horizon, Bangsar South, 59200 Kuala Lumpur, Federal Territory of Kuala Lumpur

Production Plant(s): Saint-Gobain Prima Sdn Bhd, Lot 127220, Kawasan Perusahaan Kanthan, 31200 Chemor, Perak

Description of the organization of the EPD owner: A world leader in lightweight and sustainable solutions, Saint-Gobain designs, manufactures, and distributes materials for the industrial and construction markets. It's integrated solutions for the renovation of public and private buildings, for light construction and for the decarbonization of construction and industry are developed through a continuous innovation process and offer durability and performance. The Group's commitment is guided by it's purpose, "MAKING THE WORLD A BETTER HOME".

Management system-related certification: ISO 9001 Quality Management System, ISO 14001 Environmental Management Systems, ISO 45001 Occupational Health and Safety (OH&S) Management Systems

LCA practitioner: Lin Zhao (lin.zhao@saint-gobain.com), Ng Kah Seng (kahseng.ng@saint-gobain.com), Celeste B. Jimli Perijin (celestebeth.jimliperijin@saint-gobain.com)

Communication: The intended use of this EPD is for B2B communication.

Product information

Product name: PRIMAflex

EPD for multiple products: ☐ No ☒ Yes, the EPD represents the following products:

PRIMAflex 3.2mm (representative product)
PRIMAflex 4.5mm
PRIMAflex 6.0mm
PRIMAflex 7.5mm
PRIMAflex 9.0mm
PRIMAflex 12mm

Visual representation of the product:

UN CPC CODE: 3751 Articles of concrete, cement and plaster

Manufacturing site(s): Saint-Gobain Prima Sdn Bhd, Lot 127220, Kawasan Perusahaan Kanthan, 31200 Chemor, Perak

Product description

PRIMAflex fibre cement boards are versatile panels, suitable for both internal and external applications. Typical uses include ceilings, eaves, facades, wall cladding, flooring, and permanent formwork. The

boards combine physical and mechanical properties that enable their use across a wide range of building applications. Each thickness variant is designed to meet specific performance requirements and application contexts, as outlined in the reference table below.

Product name	Thickness, mm	Application	Status
PRIMAflex	3.2, 4.5, 6.0, 7.5, 9.0, 12.0	For ceiling, partition, wall lining	Included in this EPD study
	16.0, 18.0, 20.0	For heavy duty wall, flooring, structural	Not included in this EPD study (covered in a separate EPD)

This Environmental Product Declaration (EPD) covers the environmental impacts of 1 m² of PRIMAflex fibre cement board with a thickness of 3.2 mm, dimensions of 1.22 m × 1.22 m, and a mass of 4.83 kg/m².

The scope of this EPD is limited to PRIMAflex boards manufactured in thicknesses of 3.2 mm, 4.5 mm, 6 mm, 7.5 mm, 9 mm, and 12 mm. The product mass scales at a rate of 1.509 kg/m² per mm of thickness. These variants are produced at the same manufacturing site using identical raw material compositions, with differences only in the quantities of raw materials required.

The 3.2 mm board has been selected as the representative product, as it accounts for the largest share of production volume. Environmental impacts for other thicknesses within this range can be derived using the conversion factors provided in the Declaration of Variation section of this EPD.

For more information: https://www.saint-gobain.my/products/prima-flex

Technical data/physical characteristics:

Parameter	Value / Description
EN Classification	A1
Reaction to fire	Class O (BS 476 Part 6 & 7); Class A1 EN 13501-1
Thermal conductivity	0.2 W/mK (EN 520:2004+A1:2009)

Application	Value / Description
Intended use and key functionalities	Suitable for internal & external applications including ceilings, partitions, and wall linings
Expected influence on the operational aspects and impact of the building or other construction work	None
Restrictions to a type of construction or building	None
Lifespan	50 years

Content declaration

The content declaration is representative of the 3.2 mm thickness.

Description of the main components and/or materials:

Quantity for 1 declared unit 4.83 kg of finished product

Product components	Mass (%)	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product
Cement	30 - 35	0%	0%	0
Sand	55 - 60	0%	0%	0
Pulp	5 - 10	0%	7.7%	0.06
Others	0.01 - 0.05	0%	0%	0
Sum	**100%**	**0%**	**7.7%**	**0.06**

Packaging materials	Mass (kg)	Mass-% (versus the product)	Biogenic material, kg C/product
Cardboard	0.00005 – 0.0001	0.0010%	0.0000215
Paper label	0.000005 – 0.00001	0.0001%	0.00000215
Polyethylene parts (LDPE)	0.0001 – 0.0002	0.0021%	-
Polypropylene (parts and straps)	0.0001 – 0.0002	0.0021%	-
Wooden pallet	0.0112 – 0.0113	0.2319%	0.004592

Hazardous substances

At the date of issue of this declaration, there is no “Substance of Very High Concern” (SVHC) in concentration above 0.1% by weight, and neither do their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

LCA information

TYPE OF EPD	Cradle to grave and module D
DECLARED UNIT	1 m² of PRIMAflex 3.2mm, as installed Product mass = 4.83 kg/m²
SYSTEM BOUNDARIES	Cradle to grave and module D
REFERENCE SERVICE LIFE (RSL)	The Reference Service Life (RSL) of the fibre cement board product is 50 years. This 50-year value is the amount of time that we recommend our products last for without refurbishment and corresponds to standard building design life.
CUT-OFF RULES	All data is available, no cut-off rules has been applied. In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than 5% of the whole mass and energy used, as well of the emissions to environment occurred. Flows related to human activities such as employee transport are excluded. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
ALLOCATIONS	Allocation has been avoided when possible and when not possible a mass allocation has been applied. The polluter pays and the modularity principles as well have been followed. **Allocation of materials for recycling:** - Post-consumer: When a flow enters the manufacturing process (A1-A3), it is treated with waste allocation (as defined in EN15804+A2). All the steps after its “End of Waste” status are quantified. The incoming flow contributes to module D and Secondary Materials indicator. - Pre-consumer: When a flow enters the manufacturing process (A1-A3), it is considered as an incoming coproduct that bears a fraction of the impact of the original manufacturing process where it was generated (which might be 0, e.g. in case of an economic allocation with a negligible (<1%) economic value). The incoming flow does not contribute to module D nor Secondary Materials indicator.
DATA QUALITY ASSESSMENT	Data quality of primary and secondary data had been judged by its precision (measured, calculated, or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied), and representativeness (geographical, technological, and temporal).
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope: Malaysia, Global Data is collected from 1 production site, Saint-Gobain Prima Sdn Bhd located in Malaysia Data collected for the year 2024
BACKGROUND DATA SOURCE	Databases from Sphera CUP2024.2 and ecoinvent v.3.10 EF Package 3.1
SOFTWARE	Sphera LCA for experts 10

Data quality declaration

Data quality information according to EN 15941	
Data collection	01/01/2024 – 31/12/2024
Sites used	**Saint-Gobain Prima Sdn Bhd**, Lot 127220, Kawasan Perusahaan Kanthan, 31200 Chemor, Perak
Geography	Produced in Perak, Malaysia Sold globally
Technology	The fibre cement boards are autoclave-cured to increase durability, flexibility, and dimensional stability
Averaging	100% of production by Saint-Gobain Prima Sdn Bhd
LCI/LCA database	Sphera CUP2024.2 and ecoinvent v.3.10
EPD used	None
Data Quality Scheme	EN 15804 :2012+A2:2019, Annex E, Table E.2
Use of fair data with more than 30% of a core impact	None
Use of Poor relevant data	None
Use of very poor relevant data	No very poor data used

Process	Source type	Source	Reference year	Data category	A1-A3 GWP-GHG [kg CO_2 eq.]
Manufacturing process					
Thermal energy	Database	Sphera 2024.2	<5 years old	Primary data	14.6%
Electricity	Database	Sphera 2024.2 /ecoinvent 3.10	<5 years old	Primary data	42.6%
Background datasets in A1-A3					
Other processes	Database	Sphera 2024.2 /ecoinvent 3.10	<5 years old	Secondary data	42.8%
				Total share of primary data	**57.2%**

A1-A3 GWP-GHG	2.35E+00

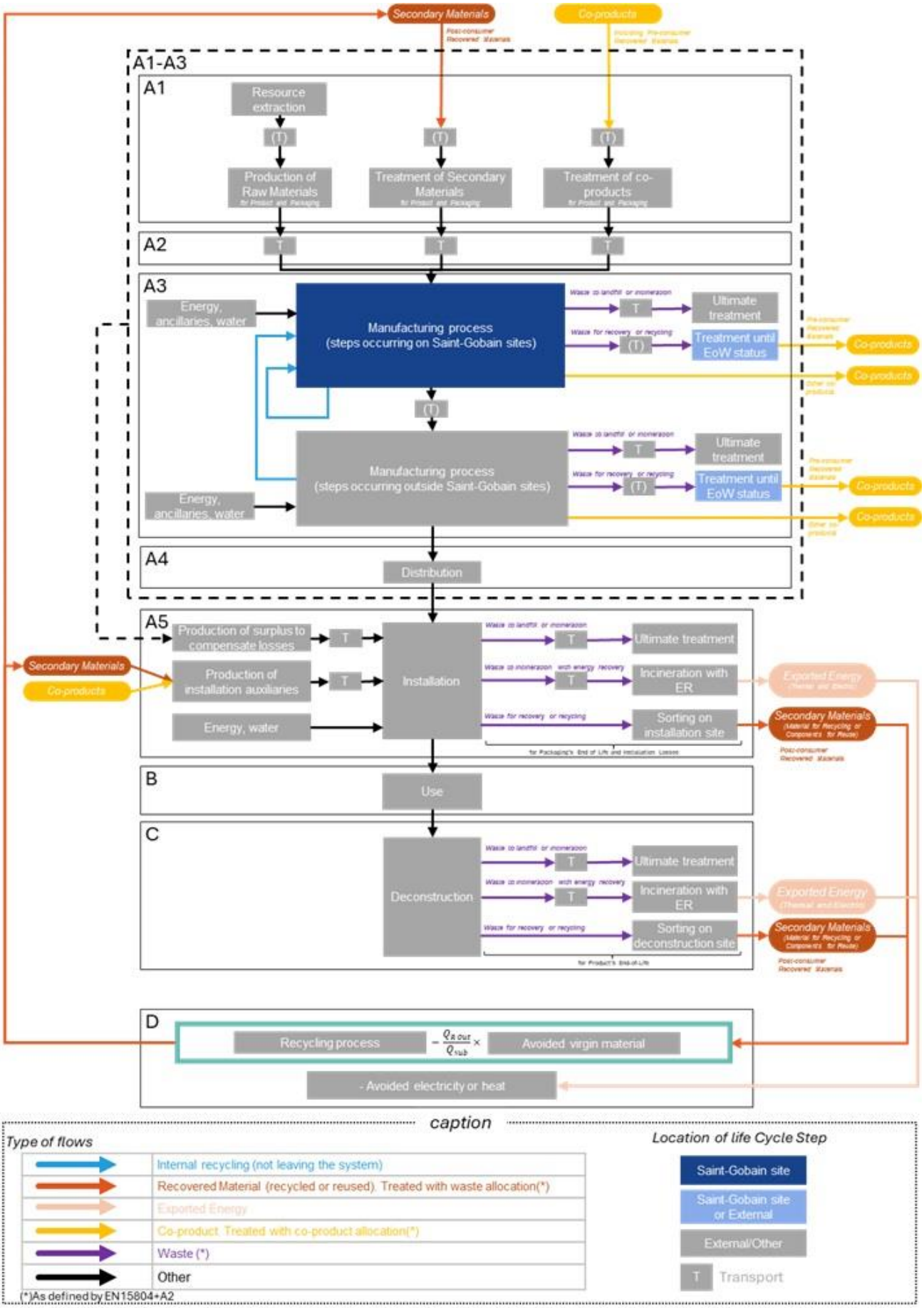
Description of system boundaries

System boundaries (X=included. MND=module not declared)

	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
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 - MY	GLO - MY	MY	MY	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Share of specific data	57.2%																
Variation – products*	40.59% - 274.91%																
Variation - sites	0%																

* This value is the minimum and maximum GWP-GHG variation between the products within the product range at a single manufacturing site

System boundaries when the end-of-waste state is reached:



Life cycle stages

A1-A3. Product stage

The product stage of fibre cement products is subdivided into 3 modules A1, A2 and A3 respectively “raw material supply”, “transport to manufacturer” and “manufacturing”.

A1. Raw materials supply

This module includes the extraction and transformation of raw materials.

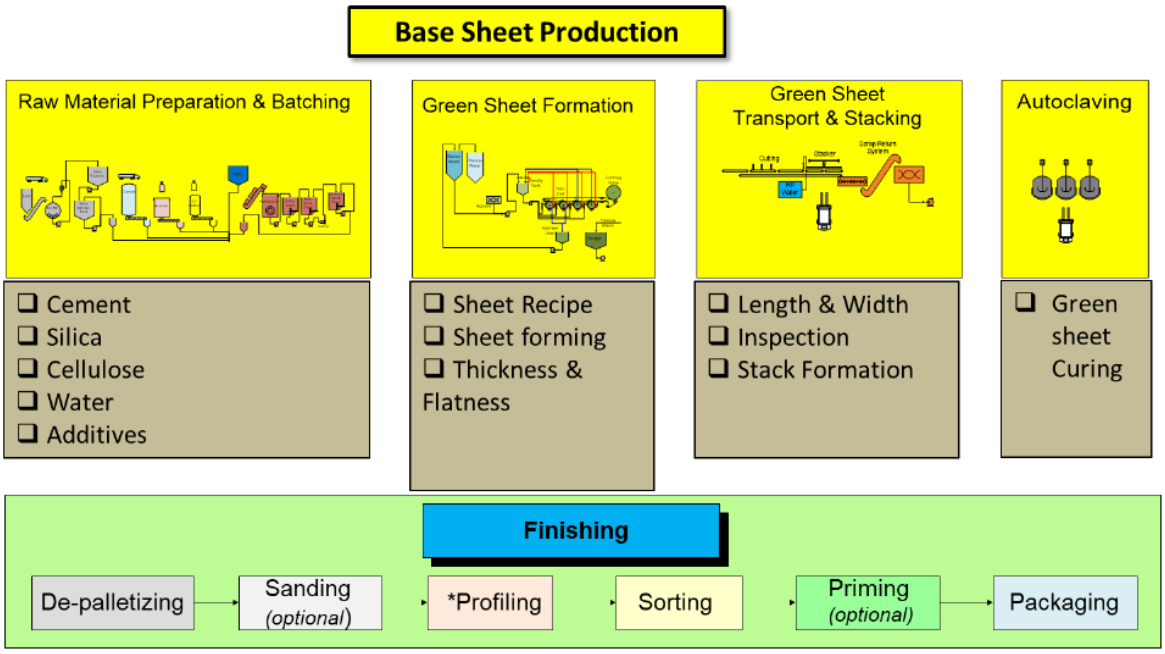
A2. Transport to the manufacturer

This module includes the transportation of raw materials and packaging to the manufacturing site. The modelling includes road, boat and/or train transportation.

A3. Manufacturing

This module includes the manufacture of products and the manufacture of packaging. The production of packaging material is considered at this stage. The processing of any waste arising from this stage is also included.

Manufacturing process flow diagram



**Profiling involves cutting, rebate, shiplap, V-edge profile etc..*

1. **Raw Material Preparation & Batching**. Raw Materials such as cement, silica, cellulose fibers, and additives are stored in dedicated containers, i.e. silos for powders and tanks for liquids. These raw materials are then weighed and batched according to the formulation and then transferred into a cone mixer.
2. **Green Sheet formation, transport and stacking**. After mixing, the resulted blend is converted into a feed slurry, which then processed by use of vats, agitators and a rotating sieve cylinder. The vats and agitators are used to store and maintain consistency, keeping the slurry in suspension. The rotating cylinder allows slurry to be deposited onto the sieve mesh and transferred via a felt system to a Size drum, which determines the thickness of the uncured

board, known as the Green Sheet. The Green Sheet is conveyed to the Water-Jet Cutting system to be trimmed to the required length and dimensions according to the production schedule.

3. **Autoclaving**. The trimmed Green Sheet will be stacked and separated by inter-leavers to prevent sagging. Thereafter, the Green Sheet is first air-cured, then loaded into wagons and transferred to the autoclave, where it undergoes high-temperature and high-pressure curing. Following this, the downstream process includes precision cutting, sorting, sanding, coding, and thorough quality control inspection of each stack.
4. **Stacking and Packaging.** After quality inspection, the finished boards are carefully stacked in uniform bundles to ensure stability during handling and transport. Protective spacers is placed between boards to prevent surface abrasion and edge damage. The stacks are then strapped using plastic bands to maintain alignment and minimize shifting. For added protection against moisture and dust, the strapped bundles are wrapped in polyethylene film. Depending on customer requirements, the packaged boards are either palletized for forklift handling or directly loaded into containers for shipment. Each package is labeled accordingly to facilitate traceability and safe delivery to end users.

A4-A5. Construction process stage

The construction process is divided into 2 modules: A4, Transport to the building site and A5, Installation in the building.

A4. Transport to the building site

This module includes transport from the production gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

Parameter	Value / Description
Fuel type and consumption of vehicle or vehicle type used for transport e.g., long-distance truck, boat, etc.	Freight truck, maximum load weight of 55 t, real load is 40 t and consumption of 0.33 liters per km
Distance	80 km
Capacity utilization (including empty returns)	73% (0% empty returns)
Bulk density of transported products*	1334 kg/m^3
Volume capacity utilization factor	1 (by default)

A5. Installation in the building

This module includes: the installation of the product, the surplus of raw materials and packaging (cradle to gate) to compensate for the loss of product during the installation, the transport and management of packaging and product waste.

Parameter	Value / Description
Ancillary materials for installation (specified by materials)	Screws: 19 units/m2 board
Water for on-site mixing of jointing compound	0 liters/m^2
Other resource use	None
Electricity for on-site mixing of jointing compound	0.001 MJ/m^2
Scrap rate at installation	5% for fibre cement and for ancillary materials 100% for packaging

Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	Fibre Cement board 0.45 kg/m² Packaging: 0.01 kg/m²
Transport of packaging waste	Landfill: 80 km
Output materials (specified by type) as results of waste processing at the building site e.g., of collection for recycling, for energy recovery, disposal (specified by route)	Fibre Cement Board: 100% to landfill Screws: 100% landfill Cardboard: 100% to landfill Paper label: 100% to landfill Polyethylene parts (LDPE): 100% to landfill Polyethylene (parts/straps): 100% to landfill Wooden pallet: 100% to landfill
Direct emissions to ambient air, soil, and water	None

B1-B7. Use stage (excluding potential savings)

The use stage is divided into the following modules:

- **B1:** Use
- **B2:** Maintenance
- **B3:** Repair
- **B4:** Replacement
- **B5:** Refurbishment
- **B6:** Operational energy use
- **B7:** Operational water use

The product has a reference service life of 50 years. This assumes that the product will last in situ with no requirements for maintenance, repair, replacement, or refurbishment throughout this period. Therefore, it has no impact at this stage.

C1-C4. End of Life Stage

This stage includes the next modules:

- **C1: Deconstruction, demolition.** The de-construction and/or dismantling of the product take part of the demolition of entire building. The energy considered for demolition is 0.045 MJ/m².
- **C2: Transport to waste processing**
- **C3: Waste processing for reuse, recovery and/or recycling**
- **C4: Waste disposal**, including physical pre-treatment and site management.

Description of the scenarios and additional technical information for the end of life:

Parameter	Value / Description
Collection process specified by type	4.83 kg of fibre cement board is 100% collected with mixed deconstruction and demolition waste for landfill
Recovery system specified by type	0% recycled

Disposal specified by type	100% to landfill
Assumptions for scenario development (e.g. transportation)	The waste will be transported by truck with 24 t payload, using diesel as a fuel consuming 38 liters per 100 km Transport distance to landfill: 80 km

D. Reuse/recovery/recycling potential

Module D is declared the environmental benefits and loads from reusable products, recyclable materials, or energy recovery. Module D considers:

- Inputs of secondary materials: recycled raw materials for product and packaging (pre- and post-consumer),
- Outputs of secondary materials: product and/or packaging sent to recycling,
- Exported energy (electric or thermal): product and/or packaging sent to incineration with energy recovery.

Environmental performance

As specified in EN 15804:2012+A2:2019/AC:2021 and the Product-Category Rules, the environmental impacts are declared and reported using the baseline characterization factors based on EF 3.1. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant.

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 the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

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 experienced with the following indicators:

- Resource use, mineral and metals [kg Sb eq.]
- Resource use, energy carriers [MJ]
- Water deprivation potential [m³ world equiv.]
- Land use [Pt]
- Human toxicity (cancer) [CTUh]
- Human toxicity(noncancer) [CTUh]
- Ecotoxicity (freshwater [CTUe]

Disclaimer 2: The impact category Ionizing radiation, human health [kBq U235 eq.] 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 material is also not measured by this indicator.

Disclaimer 3: The assumptions for the modules are in accordance with the project report (LCA study).

The following non-mandatory additional environmental indicators are not declared:

- Ecotoxicity freshwater [CTUe]
- Particulate Matter emissions [Disease incidence]
- Cancer human health effects [CTUh]
- Ionizing radiation - human health [kBq U235 eq.]
- Non-cancer human health effects [CTUh]
- Land Use [Pt].

Results refer to a declared unit of 1m^2 of installed fibre cement board 3.2 mm with a weight of 4.83 kg/m². The following results refer to a single product manufactured in a single plant.

Environmental Impacts

Environmental indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Climate Change [kg CO_2 eq.]	2.33E+00	1.38E-02	2.04E-01	-1.19E-01	0	0	0	0	0	0	1.94E-03	2.62E-02	0	6.72E-01	-1.08E-05
Climate Change (fossil) [kg CO_2 eq.]	2.95E+00	1.35E-02	1.86E-01	-1.19E-01	0	0	0	0	0	0	1.94E-03	2.57E-02	0	7.25E-02	-9.64E-06
Climate Change (biogenic) [kg CO_2 eq.]	-6.15E-01	3.73E-05	1.79E-02	0	0	0	0	0	0	0	1.57E-07	7.09E-05	0	5.99E-01	-1.04E-06
Climate Change (land use change) [kg CO_2 eq.]	7.86E-04	2.24E-04	9.93E-05	0	0	0	0	0	0	0	1.68E-07	4.26E-04	0	4.35E-04	-1.15E-07
Ozone depletion [kg CFC-11 eq.]	9.69E-11	1.34E-15	4.99E-12	0	0	0	0	0	0	0	2.97E-11	2.55E-15	0	1.98E-13	-3.70E-13
Acidification terrestrial and freshwater [Mole of H+ eq.]	5.92E-03	2.02E-05	4.03E-04	0	0	0	0	0	0	0	1.75E-05	4.03E-05	0	5.14E-04	1.69E-08
Eutrophication freshwater [kg P eq.]	4.35E-05	5.69E-08	2.26E-06	0	0	0	0	0	0	0	6.83E-09	1.08E-07	0	1.65E-07	-6.21E-10
Eutrophication marine [kg N eq.]	2.13E-03	7.72E-06	1.33E-04	0	0	0	0	0	0	0	8.12E-06	1.56E-05	0	1.32E-04	-2.05E-08
Eutrophication terrestrial [Mole of N eq.]	2.25E-02	9.03E-05	1.42E-03	0	0	0	0	0	0	0	8.89E-05	1.83E-04	0	1.46E-03	2.66E-08
Photochemical ozone formation - human health [kg NMVOC eq.]	5.81E-03	1.89E-05	3.76E-04	0	0	0	0	0	0	0	2.65E-05	3.78E-05	0	4.05E-04	3.52E-08
Resource use, mineral and metals [kg Sb eq.][1]	6.90E-08	1.13E-09	6.73E-07	0	0	0	0	0	0	0	6.92E-10	2.16E-09	0	4.70E-09	-9.77E-12
Resource use, energy carriers [MJ][1]	2.34E+01	1.74E-01	1.57E+00	0	0	0	0	0	0	0	2.51E-02	3.31E-01	0	9.55E-01	-9.21E-05
Water deprivation potential [m^3 world equiv.][1]	5.23E-01	1.98E-04	2.76E-02	0	0	0	0	0	0	0	7.80E-05	3.77E-04	0	8.27E-03	-1.17E-05

[1] The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

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Resource Use

Resources Use indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Use of renewable primary energy (PERE) [MJ][2]	5.36E+00	1.47E-02	5.18E-01	0	0	0	0	0	0	0	1.56E-04	2.80E-02	0	1.67E-01	1.03E-03
Primary energy resources used as raw materials (PERM) [MJ] [2]	5.61E+00	0	1.26E-01	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ] [2]	1.10E+01	1.47E-02	6.43E-01	0	0	0	0	0	0	0	1.56E-04	2.80E-02	0	1.67E-01	1.03E-03
Use of non-renewable primary energy (PENRE) [MJ] [2]	2.34E+01	1.74E-01	1.58E+00	0	0	0	0	0	0	0	2.51E-02	3.31E-01	0	9.55E-01	-9.21E-05
Non-renewable primary energy resources used as raw materials (PENRM) [MJ] [2]	2.51E-02	0	1.25E-03	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ] [2]	2.34E+01	1.74E-01	1.58E+00	0	0	0	0	0	0	0	2.51E-02	3.31E-01	0	9.55E-01	-9.21E-05
Use of secondary material (SM) [kg]	4.52E-05	0	2.26E-06	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	1.50E-02	1.65E-05	8.34E-04	0	0	0	0	0	0	0	1.81E-06	3.14E-05	0	2.53E-04	-2.72E-07

[2] From EPD International Construction Product PCR 2.0 (Annex 3). The option B was retained to calculate the primary energy use indicators.

Waste Category & Output flows

Waste Category & Output Flows	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (HWD) [kg]	1.10E-04	5.63E-12	5.49E-06	0	0	0	0	0	0	0	2.20E-05	1.07E-11	0	2.40E-10	-5.19E-08
Non-hazardous waste disposed (NHWD) [kg]	2.62E-01	2.70E-05	2.57E-01	0	0	0	0	0	0	0	1.70E-04	5.14E-05	0	4.85E+00	1.69E-06
Radioactive waste disposed (RWD) [kg]	2.31E-04	2.25E-07	1.93E-05	0	0	0	0	0	0	0	2.79E-09	4.27E-07	0	9.88E-06	3.14E-10
Components for re-use (CRU) [kg]	0	0	1.03E-02	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Additional voluntary indicators from EN 15804

Environmental indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE, RECOVERY RECYCLING
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
GWP-GHG [kg CO_2 eq.][3]	2.35E+00	1.38E-02	1.56E-01	-1.19E-01	0	0	0	0	0	0	1.94E-03	2.62E-02	0	7.31E-02	-1.08E-05

Information on biogenic carbon content

Biogenic Carbon Content	PRODUCT STAGE A1 / A2 / A3
Biogenic carbon content in product [kg]	0
Biogenic carbon content in packaging [kg]	4.47E-03

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2. The product contains biogenic carbon due to the cardboard, paper labels and wooden pallets used.

[3] 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 almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Environmental Impacts

Environmental indicators		100% landfill					100% recycling				
		END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING	END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING
		C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	Climate Change (total) [kg CO_2 eq.][(a)]	1.94E-03	2.62E-02	0	9.93E-02	-1.08E-05	1.94E-03	2.62E-02	4.68E-03	0	2.09E-01
	Climate Change (fossil) [kg CO_2 eq.]	1.94E-03	2.57E-02	0	9.82E-02	-9.64E-06	1.94E-03	2.57E-02	4.58E-03	0	2.20E-01
	Climate Change (biogenic) [kg CO_2 eq.]	1.57E-07	7.09E-05	0	2.81E-04	-1.04E-06	1.57E-07	7.09E-05	3.05E-05	0	-8.30E-03
	Climate Change (land use change) [kg CO_2 eq.]	1.68E-07	4.26E-04	0	8.60E-04	-1.15E-07	1.68E-07	4.26E-04	6.73E-05	0	-2.59E-03
	Ozone depletion [kg CFC-11 eq.]	2.97E-11	2.55E-15	0	2.00E-13	-3.70E-13	2.97E-11	2.55E-15	1.39E-14	0	-1.68E-08
	Acidification terrestrial and freshwater [Mole of H+ eq.]	1.75E-05	4.03E-05	0	5.55E-04	1.69E-08	1.75E-05	4.03E-05	2.23E-05	0	-2.22E-03
	Eutrophication freshwater [kg P eq.]	6.83E-09	1.08E-07	0	2.73E-07	-6.21E-10	6.83E-09	1.08E-07	1.28E-08	0	-5.34E-05
	Eutrophication marine [kg N eq.]	8.12E-06	1.56E-05	0	1.48E-04	-2.05E-08	8.12E-06	1.56E-05	1.01E-05	0	-4.67E-04
	Eutrophication terrestrial [Mole of N eq.]	8.89E-05	1.83E-04	0	1.64E-03	2.66E-08	8.89E-05	1.83E-04	1.12E-04	0	-4.24E-03
	Photochemical ozone formation - human health [kg NMVOC eq.]	2.65E-05	3.78E-05	0	4.43E-04	3.52E-08	2.65E-05	3.78E-05	2.79E-05	0	-2.82E-03
	Resource use, mineral and metals [kg Sb eq.][4]	6.92E-10	2.16E-09	0	6.86E-09	-9.77E-12	6.92E-10	2.16E-09	4.83E-09	0	-3.09E-06
	Resource use, energy carriers [MJ][1]	2.51E-02	3.31E-01	0	1.29E+00	-9.21E-05	2.51E-02	3.31E-01	8.14E-02	0	1.04E+00
	Water deprivation potential [m³ world equiv.][1]	7.80E-05	3.77E-04	0	8.65E-03	-1.17E-05	7.80E-05	3.77E-04	7.49E-04	0	-4.82E-01

[4] Disclaimer 2: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

[(a)] The total global warming potential (GWP-total) is the sum of GWP fossil. GWP biogenic and GWP land use change

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Resources Use

Resources Use indicators	100% landfill					100% recycling				
	END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING	END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING
	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Use of renewable primary energy (PERE) [MJ]	1.56E-04	2.80E-02	0	1.95E-01	1.03E-03	1.56E-04	2.80E-02	1.14E-02	0	-7.88E+00
Primary energy resources used as raw materials (PERM) [MJ] *	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	1.56E-04	2.80E-02	0	1.95E-01	1.03E-03	1.56E-04	2.80E-02	1.14E-02	0	-7.88E+00
Use of non-renewable primary energy (PENRE) [MJ]	2.51E-02	3.31E-01	0	1.29E+00	-9.21E-05	2.51E-02	3.31E-01	8.14E-02	0	1.04E+00
Non-renewable primary energy resources used as raw materials (PENRM) [MJ] *	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	2.51E-02	3.31E-01	0	1.29E+00	-9.21E-05	2.51E-02	3.31E-01	8.14E-02	0	1.04E+00
Input of secondary material (SM) [kg]	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m^3]	1.81E-06	3.14E-05	0	2.84E-04	-2.72E-07	1.81E-06	3.14E-05	2.34E-05	0	-3.92E-03

* For this study, both the product and its packaging are reported in the indicators "Use of renewable primary energy resources used as raw materials" ("PERM") and "Use of non-renewable primary energy resources used as raw materials" ("PENRM"). PERM and PENRM are reported as negative values when materials are recycled or recovered, but not when landfilled.

Waste Category & Output flows

Waste Category & Output Flows		100% landfill					100% recycling				
		END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING	END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING
		C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	Hazardous waste disposed (HWD) [kg]	2.20E-05	1.07E-11	0	2.50E-10	-5.19E-08	2.20E-05	1.07E-11	1.72E-11	0	-4.38E-02
	Non-hazardous waste disposed (NHWD) [kg]	1.70E-04	5.14E-05	0	4.85E+00	1.69E-06	1.70E-04	5.14E-05	0	0	-4.58E-01
	Radioactive waste disposed (RWD) [kg]	2.79E-09	4.27E-07	0	1.03E-05	3.14E-10	2.79E-09	4.27E-07	6.37E-07	0	3.12E-04
	Components for re-use (CRU) [kg]	0	0	0	0	0	0	0	0	0	0
	Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	1.55E+00	0	0
	Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0
	Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0
	Exported thermal energy (EET) [MJ]	0	0	0	0	0	0	0	0	0	0

Declaration of variation

Variations between products

According to PCR 2.0.1, since this EPD is multi-product, the variation of impact between products shall be declared.

The 3.2 mm PRIMAflex board is the representative product. The mass for all variant thicknesses is determined by a scaling rate of 1.509 kg/m² per mm. For environmental indicators, the multiplication factors are provided in the table below. To calculate the environmental profile for a variant thickness, the declared results of the representative product must be multiplied by the corresponding factor as shown in table below.

		Product Thickness (mm)					
	Unit	**3.2** (representative)	**4.5**	**6**	**7.5**	**9**	**12**
Mass	**kg/m²**	4.83	6.79	9.05	11.32	13.58	18.11
GWP-GHG							
Multiplication factor		1.0	1.406	1.875	2.343	2.812	3.749
GWP-GHG A1-A3	$kgCO_2eq/m^2$	2.35	3.303	4.405	5.506	6.607	8.809
GWP-GHG Total Variation	% Between Rep.		40.59%	87.45%	134.32%	181.18%	274.91%

Additional environmental information:

Electricity information

The factory based in Perak, Malaysia uses the following electricity description.

Parameter	Information
Location	Representative of residual in Malaysia
Geographical & technical representativeness	Coal 56% Natural Gas 43% Heavy fuel oi (HFO) 1% 2% transmission losses
Dataset version	Sphera CUP2024.2 ecoinvent 3.10 (medium voltage)
Source of electricity mix	Based on International Energy Agency (IEA) – Malaysia 2023
GWP-GHG CO_2 eq.	0.829 kg of CO_2 eq/kWh

Abbreviations

AIB Association of issuing bodies
DU Declared unit
EPD Environmental Product Declaration
eq. equivalents
FU Functional unit
g gram
GJ Giga Joules (as Net Calorific Value)
GWP-GHG Global Warming Potential - Greenhouse gas
IOBC Instantaneous Oxidation of Biogenic Carbon
EF Environmental Footprint
GO's Guaranty of origin
kg kilogram
kWh kilowatt-hour
L liter
LCA Life Cycle Assessment
LCI Life Cycle Inventory Analysis
LCIA Life Cycle Impact Assessment
MJ Mega Joules (as Net Calorific Value)
mm millimeters
PCR Product Category Rules
RSL Reference Service Life (in years)
ton metric ton

References

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Version history

Original version of the EPD, 2026-03-16