



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

9mm Fiber Cement Board

Taisyou International Business Co., Ltd.



EPD HUB, HUB-5799

Published on 20.03.2026, last updated on 20.03.2026, valid until 19.03.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Taisyou International Business Co., Ltd.
Address	No.10,Lukung Rd.,Lukung city,Chang-hwa shien 50544, Taiwan.
Contact details	trade@taisyou.com.tw
Website	https://www.taisyou.com.tw/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	Not Applicable
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	RCI
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	D.V, as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	9mm Fiber Cement Board
Additional labels	Not applicable
Product reference	946
Place(s) of raw material origin	Taiwan & Asia
Place of production	Taichung, Taiwan
Place(s) of installation and use	Taiwan & Asia
Period for data	Calendar Year 2022
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	52,9

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit: 1 Declared unit of Fiber Cement Board is a finished board, 1220 x 1830 x 9 mm in size and 30kg in weight.
Declared unit mass	30 kg
Mass of packaging	0,097465 kg
GWP-fossil, A1-A3 (kgCO₂e)	45,4
GWP-total, A1-A3 (kgCO₂e)	41,8
Secondary material, inputs (%)	3,21
Secondary material, outputs (%)	0,1
Total energy use, A1-A3 (kWh)	139
Net freshwater use, A1-A3 (m³)	0,27

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Founded in 1996, Taisyou International Business Co., Ltd. is the largest manufacturer for asbestos-free Calcium Silicate Board and Fiber Cement Board in Taiwan. Our operating philosophy is to produce the highest quality building materials and make strong efforts in environmental protection and recycling. All of our products and building materials are developed and manufactured under the International Accreditation System ISO 9002, so they may be specified with total confidence.

PRODUCT DESCRIPTION

Taisyou cement board is a light weight, high quality building material. It's development and know-how was sourced from Japan and is now produced by Taisyou. This product contains inorganic raw materials and cellulose fiber reinforcement as the main materials. Some materials are from recycled powder or power plant waste ash; therefore, it meets the requirements to be a Green-Label product. Due to the high temperature and pressure of the autoclave process, it is very durable and stable. Taisyou cement board does not contain any asbestos fibers and conforms with safety requirements for consumers. Most of the applications of cement board are in partition wall construction, this type of partitioning system has only 20% of the total weight compared to traditional reinforced concrete wall construction. Other common applications include the cladding of steel columns and beams in steel framed construction and use in fire rated partitions and envelopes.

Further information can be found at:

<https://www.taisyou.com.tw/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	N/A
Minerals	90,67	Asia
Fossil materials	0	N/A
Bio-based materials	9,33	Taiwan

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	1,060909
Biogenic carbon content in packaging, kg C	0,043636

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit: 1 Declared unit of Fiber Cement Board is a finished board, 1220 x 1830 x 9 mm in size and 30kg in weight.
Mass per declared unit	30 kg
Functional unit	-
Reference service life	50 years

SUBSTANCES, REACH - VERY HIGH CONCERN

Product contains no Substances of Very High Concern as defined by European Chemicals Agency (REACH materials) in quantities above 1000 ppm

Substances of very high concern	EC	CAS
Not applicable	-	-
Not applicable	-	-
Not applicable	-	-
Not applicable	-	-

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

Material Preparation and Mixing (A1):

1. The processed raw and recycled materials are transported to the manufacturing facility, where they are measured and mixed.
2. Water is added to the dry mixed materials to form a homogenous slurry.
3. Additives may be included at this stage to enhance properties like fire resistance or structural strength.

Board Formation:

4. The slurry is poured onto a conveyer belt that runs above a catchment trough.
5. The slurry travels along the conveyer belt, passing under rollers that have been adjusted to the boards thickness. Excess liquid is squeezed from the slurry as it is formed into a ribbon of semi-solid paste, the liquid is collected in the catchment trough below the conveyor belt.
6. Trimming wheels cut the ribbon of slurry to the correct width, with the offcut material falling into the catchment trough where it will return to its slurry form with the previously removed excess liquid.
 - a. The slurry mix in the catchment trough is pumped back to the Material Preparation and Mixing station where the % solids/weight is verified and the slurry added back into the mixing process, effectively eliminating any production waste.
7. At the end of the conveyer belt, the trimmed ribbon is cut to the board length and stacked in preparation for curing.

Board Curing (A1-A3):

8. Once the boards are cut to size and stacked. The stacked boards are placed in presses and pre-dried (air drying). The presses ensure that

the boards maintain their shape and do not warp during the pre-drying process.

9. The boards then undergo the high-pressure autoclaving curing process to harden and chemically bond the cementitious matrix.

Board Drying (A1-A3):

10. After the boards have been cured, they are separated from their stacks and placed into racks ready for drying.
11. The boards are then passed through an electric tunnel oven to complete the drying process and remove any other moisture from the product.

Finishing and Cutting (A3):

12. Once the curing process has been completed, the boards are re-stacked and moved to the finishing station.
13. The stacked boards have final trimming to ensure all of the boards meet the production dimensions.
 - a. Any offcuts from the trimming process are ground down to a powder and sent back to the Material Preparation and Mixing station where it is added back into the slurry, effectively eliminating any production waste.
 - b. Boards cut to standardized sizes and may undergo surface finishing such as sanding, texturing, or coating to meet specific project specifications.

Packaging and Distribution:

14. The finished boards are stacked onto shipping pallets.
15. Pallets of boards are protected with corner guards and wrapped with plastic film.
16. Wrapped pallets are marked for shipment (shipping numbers stenciled with spray paint onto the plastic wrappings).
17. Completed orders are shipped from the factory by truck.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Section A4-Transportation is not declared in this EPD.

Section A5-Packaging waste from installation has been accounted for and calculated in section C-End of Life

PRODUCT USE AND MAINTENANCE (B1-B7)

Section B-Module Not Declared

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Packaging Waste Accounting:

Packaging materials associated with the delivery of the cement wall boards are not declared in Module A5, as the construction and installation stage is outside the scope of this EPD. To ensure mass and impact balance and avoid omission of packaging-related flows, the end-of-life treatment of packaging materials is reported within the end-of-life modules (C1–C4).

The treatment scenarios applied reflect standard waste management practices local to the manufacturing location at the time of the EPD calculations. Packaging-related impacts are modeled separately from the cement wall board product and do not affect the declared product performance. This approach is applied for completeness and transparency and does not imply a physical linkage between product and packaging end-of-life timing.

Deconstruction and Collection (C1)

Product:

1. At the end of a building's service life, or during renovation works, cement wall boards are removed as part of building demolition or selective deconstruction activities.
2. Removal of interior wall boards is typically carried out manually, particularly during renovation and interior refurbishment projects, allowing boards to be separated from other building components.
3. Mechanical demolition methods are generally applied during full-building demolition or where wall boards are integrated into structural assemblies, resulting in fragmented material and mixed mineral waste streams.
4. Removed cement wall boards are collected on site and temporarily stored prior to transport to licensed waste handling or treatment facilities.

Packaging:

5. Wooden pallets used for transport are collected separately and returned to the pallet rental or pooling system for continued reuse.
6. Plastic wrapping and corner protection elements are removed during unpacking and collected as mixed packaging waste.

Transport (C2)

Product:

7. Collected cement wall board waste is transported by truck from the demolition or renovation site to material recovery facilities, inert waste processing facilities, or licensed landfill sites.
 - a. Where site-specific transport distances are not available, a standard distance of 50 km is assumed based on the location of the manufacturing facility and primary market area.

8. Transportation is carried out using standard construction waste vehicles in accordance with applicable construction and demolition waste regulations.

Packaging:

9. Returned wooden pallets are transported back to the pallet rental or pooling operator for inspection, repair, and redistribution.
10. Plastic and paper/cardboard packaging waste is transported to licensed waste treatment facilities using standard municipal or commercial waste collection systems.

Sorting, Processing, and Recycling (C3)

Product:

11. At waste handling or recovery facilities, cement wall boards are handled as part of inert mineral construction and demolition waste streams.
12. Boards may be sorted manually or mechanically to remove non-mineral contaminants such as fasteners, coatings, or attached materials.
13. Intact or minimally damaged boards may be separated for potential reuse in non-structural or temporary applications.
 - a. Reuse is dependent on board condition, contamination levels, and local demand.
14. Broken or fragmented boards may be crushed and processed into secondary aggregate.
 - a. The processed material may be used in applications such as road sub-base, backfilling, or other low-grade construction uses.
15. Recycling of cement wall boards into new cementitious products is technically possible but remains limited in practice and dependent on available processing technologies and quality control requirements.

Packaging:

16. Wooden pallets returned to the rental system may undergo inspection and repair prior to reuse.
17. Plastic wrapping and protection materials are not typically recycled and are directed to thermal treatment as described in C4. Paper/cardboard packaging is either processed through the appropriate recycling process or directed to similar thermal treatment as described in C4.

Disposal (C4)

Product:

18. Where reuse or recycling is not feasible, cement wall boards are disposed of in licensed landfill facilities for inert construction waste.
19. Cement-based materials are non-combustible, chemically stable, and non-hazardous, resulting in minimal emissions during landfill disposal.
20. Incineration is not a typical treatment route for cement wall boards due to their mineral composition and lack of calorific value.

Packaging:

21. Packaging materials are treated by incineration in licensed facilities.
 - a. Incineration is carried out primarily for volume reduction; energy recovery is not assumed.
 - b. The resulting ash is disposed of per local best practices.
22. Wooden pallets returned to the rental system may undergo inspection and repair prior to reuse.
23. Continued reuse of wooden pallets within rental or pooling systems may result in avoided production of new pallets.

Energy Scenario (Electricity and Heat):

24. Electricity required for the manufacturing process is supplied from medium-voltage, non-renewable grid electricity, reflecting typical industrial supply conditions at the manufacturing location at the time of the EPD calculations.

25. Thermal energy for the manufacturing process is supplied by firewood and natural gas, with all flows fully accounted for in the LCA inventory and impact calculations.
26. Diesel fuel used on-site is for forklift operation and other material handling activities; it is modeled as fuel input in the LCA inventory and accounted for in energy-related impacts, but it does not contribute to thermal energy.
27. While the scenario table in the EPD report does not display a separate heat value, all thermal energy consumption is included in the declared results.

production. Realization of benefits depends on local recycling practices at the time of the EPD calculations.

Benefits and Loads Beyond the System Boundary (D)

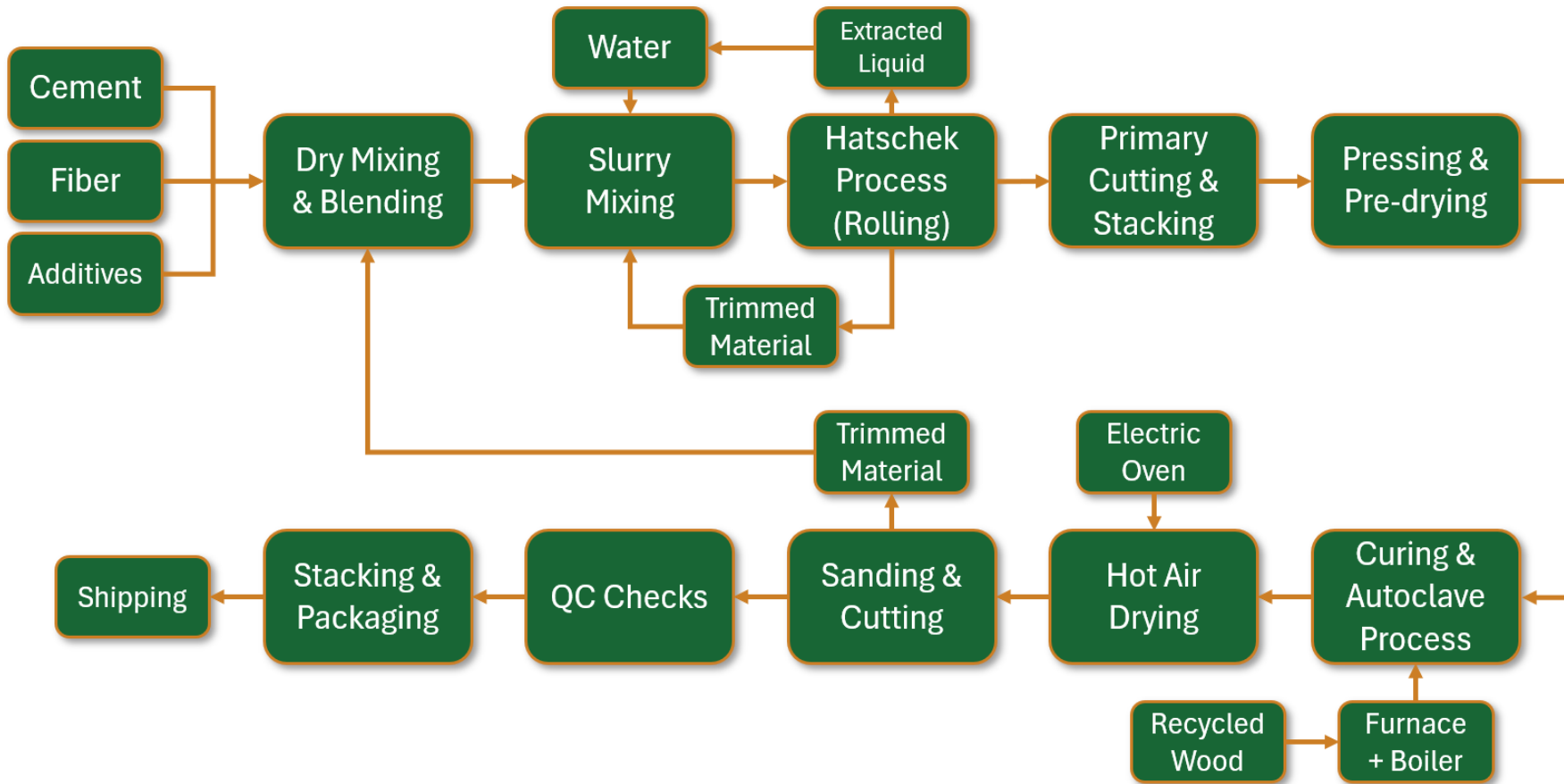
Product:

28. Potential benefits beyond the system boundary may occur when cement wall boards are reused or recycled and substitute virgin construction materials.
29. Reuse extends the service life of the product and avoids impacts associated with the production of new materials.
30. Recycling into secondary aggregates may result in avoided impacts related to virgin aggregate extraction and processing.
31. The realization of benefits reported in Module D is dependent on actual end-of-life practices, material quality, contamination levels, and the availability of suitable recycling infrastructure.

Packaging:

1. Continued reuse of wooden pallets within rental or pooling systems may result in avoided production of new pallets.
2. No benefits beyond the system boundary are declared for plastic packaging materials, as incineration is modeled without energy recovery.
3. Recycled cardboard or paper corner guards may be directed to recycling, potentially avoiding impacts from virgin paper/cardboard

SYSTEM DIAGRAM



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

No processes have been excluded from the declared modules in this study.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass or volume
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

The service life of 50 years is based on the data provided by the manufacturer, there are to date, no peer-to-peer studies/reviews on the service life of interior wall boards, the 50 year product life is based on the average experienced in the construction industry and is comparable to other suppliers of similar products when subject to proper installation and care. Information sources can include the following:

- <https://www.epddanmark.dk/media/c3xjwxti/md-23018-en.pdf?utm.com>
- <https://sulfycor.com/fiber-cement-board-lifespan/?utm.com>
- <https://smartcongroup.com/fiber-cement-boards-vs-traditional-building-materials-a-comparative-study/?utm.com>
- <https://smartcongroup.com/understanding-the-lifespan-of-cement-particle-boards-maintenance-and-long-term-performance/?utm.com>

No Carbon-offsetting measures have been applied to the LCA calculation process or the product manufacturing process.

A standard distance of 50km has been assumed for transportation where no specific data is available (e.g. C1-C4). The assumption of 50km is based on the factory location and primary market area.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-%

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.4. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2’.

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

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.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	1,76E+01	1,27E-01	2,41E+01	4,18E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,62E-01	5,15E-02	1,50E+01	-4,76E-02
GWP – fossil	kg CO ₂ e	2,13E+01	1,27E-01	2,40E+01	4,54E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,62E-01	1,48E-03	1,10E+01	-1,16E-02
GWP – biogenic	kg CO ₂ e	-3,89E+00	0,00E+00	3,71E-02	-3,86E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,00E-02	4,00E+00	-3,60E-02
GWP – LULUC	kg CO ₂ e	2,00E-01	3,89E-04	2,18E-02	2,22E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,25E-05	4,09E-06	3,81E-03	-1,73E-05
Ozone depletion pot.	kg CFC ₋₁₁ e	3,86E-07	2,08E-09	3,31E-07	7,19E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,40E-09	1,81E-11	5,36E-08	-1,44E-10
Acidification potential	mol H ⁺ e	1,18E-01	4,32E-04	9,00E-02	2,08E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,53E-04	7,44E-06	3,52E-02	-7,26E-05
EP-freshwater ²⁾	kg Pe	1,34E-02	9,86E-06	1,74E-02	3,08E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,26E-05	3,32E-07	5,06E-02	-7,29E-06
EP-marine	kg Ne	3,65E-02	1,45E-04	1,91E-02	5,58E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,82E-04	2,50E-06	1,07E-02	-1,11E-05
EP-terrestrial	mol Ne	3,64E-01	1,55E-03	1,70E-01	5,36E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,98E-03	2,66E-05	1,16E-01	-1,09E-04
POCP (“smog”) ³⁾	kg NMVOCe	6,27E-02	6,37E-04	5,33E-02	1,17E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,16E-04	8,60E-06	3,37E-02	-3,46E-05
ADP-minerals & metals ⁴⁾	kg Sbe	2,25E-03	3,57E-07	2,52E-05	2,28E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,53E-07	3,94E-09	4,86E-05	-1,46E-08
ADP-fossil resources	MJ	1,49E+02	1,84E+00	3,29E+02	4,80E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,36E+00	1,97E-02	6,58E+01	-1,90E-01
Water use ⁵⁾	m ³ e depr.	7,19E+00	9,35E-03	2,53E+00	9,72E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,16E-02	2,18E-04	6,75E-01	-3,76E-03

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,12E-06	1,29E-08	3,19E-07	1,45E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,62E-08	1,26E-10	3,78E-07	-6,11E-10
Ionizing radiation ⁶⁾	kBq I1235e	4,82E-01	1,61E-03	3,44E+00	3,92E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,06E-03	8,62E-05	1,04E-01	-3,69E-03
Ecotoxicity (freshwater)	CTUe	1,97E+02	5,90E-01	3,70E+02	5,68E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,33E-01	2,86E-02	4,32E+02	-3,01E-01
Human toxicity, cancer	CTUh	1,97E-08	2,15E-11	3,97E-09	2,37E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,68E-11	4,76E-13	2,70E-07	-2,05E-12
Human tox. non-cancer	CTUh	2,48E-08	1,24E-09	1,33E-07	1,59E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,52E-09	1,32E-11	2,09E-06	-7,92E-11
SQP ⁷⁾	-	7,71E+02	1,88E+00	3,72E+01	8,10E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,37E+00	1,29E-02	6,57E+01	-5,80E-02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	3,94E+00	2,62E-02	7,81E+00	1,18E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,23E-02	-2,90E-01	1,86E+00	2,53E-01
Renew. PER as material	MJ	3,91E+01	0,00E+00	1,36E+00	4,05E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-4,38E-01	-4,01E+01	3,62E-01
Total use of renew. PER	MJ	4,31E+01	2,62E-02	9,18E+00	5,23E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,23E-02	-7,27E-01	-3,82E+01	6,15E-01
Non-re. PER as energy	MJ	1,49E+02	1,84E+00	3,27E+02	4,78E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,36E+00	1,90E-02	6,58E+01	-1,90E-01
Non-re. PER as material	MJ	3,37E-01	0,00E+00	2,48E-01	5,85E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-2,88E-02	-5,56E-01	2,40E-02
Total use of non-re. PER	MJ	1,49E+02	1,84E+00	3,28E+02	4,79E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,36E+00	-9,81E-03	6,52E+01	-1,66E-01
Secondary materials	kg	9,62E-01	7,87E-04	3,78E-02	1,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,00E-03	1,18E-05	1,68E-02	-2,34E-05
Renew. secondary fuels	MJ	2,83E-03	1,00E-05	1,16E+01	1,16E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,27E-05	1,50E-07	3,82E-04	-1,64E-07
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	2,15E-01	2,89E-04	5,86E-02	2,74E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,48E-04	5,08E-06	3,10E-02	-8,68E-05

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,27E+00	3,17E-03	1,98E+00	4,25E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,99E-03	8,29E-05	6,03E+01	-7,68E-04
Non-hazardous waste	kg	1,97E+01	5,76E-02	9,09E+01	1,11E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,38E-02	2,47E-03	5,72E+00	-3,71E-02
Radioactive waste	kg	1,40E-04	3,95E-07	7,41E-04	8,81E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,03E-07	2,15E-08	2,58E-05	-9,47E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	6,67E+00	6,67E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	4,63E-07	4,63E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,90E-02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	3,17E-08	3,17E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	1,85E-05	1,85E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,43E-01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	6,00E-02	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,30E-02	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	2,14E+01	1,26E-01	2,40E+01	4,55E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,61E-01	1,48E-03	1,10E+01	-1,16E-02
Ozone depletion Pot.	kg CFC ₁₁ e	3,56E-07	1,66E-09	2,68E-07	6,26E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,92E-09	1,47E-11	4,32E-08	-1,19E-10
Acidification	kg SO ₂ e	8,44E-02	3,29E-04	7,51E-02	1,60E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,23E-04	5,68E-06	2,64E-02	-6,16E-05
Eutrophication	kg PO ₄ ³ e	5,62E-02	1,00E-04	1,37E-02	7,00E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E-04	1,37E-06	5,45E-03	-6,53E-06
POCP (“smog”)	kg C ₂ H ₄ e	4,16E-03	2,98E-05	4,22E-03	8,40E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,77E-05	4,19E-07	1,88E-03	-3,45E-06
ADP-elements	kg Sbe	2,14E-03	3,49E-07	2,30E-05	2,16E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,42E-07	3,83E-09	3,05E-05	-1,43E-08
ADP-fossil	MJ	1,43E+02	1,82E+00	2,83E+02	4,27E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,32E+00	1,83E-02	6,42E+01	-1,25E-01

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	2,15E+01	1,27E-01	2,40E+01	4,57E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,62E-01	1,48E-03	1,10E+01	-1,16E-02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Diesel production, petroleum refinery operation, World, Ecoinvent, 0.80 kgCO₂e/kg
2. Heat production, natural gas, at industrial furnace >100kW, Albania, Ecoinvent, 0.0773 kgCO₂e/MJ
3. Market for electricity, medium voltage, Taiwan, Ecoinvent, 0.78 kgCO₂e/kWh
4. Secondary Fuels: Waste wood, World, Ecoinvent

End-of-life scenario documentation - C1-C4 (Data source)

1. Treatment of residues, MSWI, municipal solid waste, residual material landfill, Ecoinvent, 30.0004 kg
2. Treatment of residues, MSWI, municipal solid waste, residual material landfill, Ecoinvent, 0.00356 kg
3. Treatment of residues, MSWI, municipal solid waste, residual material landfill, Ecoinvent, 0.00366 kg
4. Treatment of residues, MSWI, municipal solid waste, residual material landfill, Ecoinvent, 9.63E-5 kg
5. Treatment of municipal solid waste, municipal incineration, Ecoinvent, 1.3E-4 kg
6. Treatment of residues, MSWI, municipal solid waste, residual material landfill, Ecoinvent, 1.93E-5 kg
7. Treatment of waste gypsum plasterboard, sorting plant, Ecoinvent, 0.0 kg
8. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.027 kg
9. Exported Energy: Electricity, Ecoinvent, 0.06 MJ
10. Exported Energy: Thermal, Ecoinvent, 0.083 MJ
11. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.03 kg
12. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.029 kg

Scenario information	Value
Scenario assumptions:	
Transportation	50 km
Service life	50 years

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

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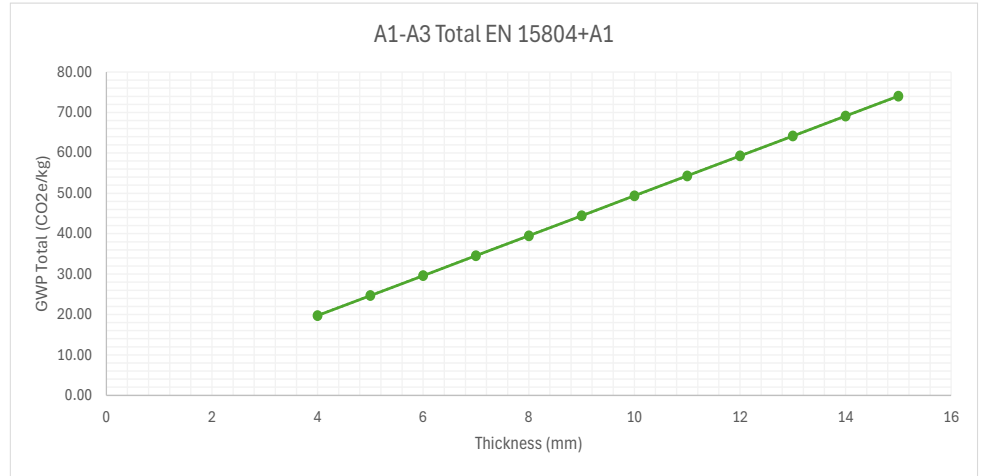
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SCALING TABLES FOR DIFFERENT PRODUCT THICKNESSES

The following linear scaling table is provided to facilitate the application of this Environmental Product Declaration (EPD) in project-specific calculations. The values presented allow the proportional adjustment of the declared environmental indicators to quantities of product other than the reference unit specified in this EPD.

The composition and percentage of production materials along with the power usage needed for production is linear scalable via the mass of the declared unit (as defined by the only changing variable-thickness). The reported A1-A3 GWP has been calculated separately from the EPD calculations.

The table is intended to support preliminary assessments and integration of EPD data into life cycle calculations. Users are advised that for detailed analyses or non-standard applications, reference shall be made to the complete EPD documentation to ensure methodological consistency.



Fiber Cement Board									
Product Data				A1-A3 GWP Total (CO ₂ e/kg)					
				EN 15804+A1				EN 15804+A2	
Thickness (mm)	Width (mm)	Length (mm)	Mass (kg) per Declared Unit	A1	A2	A3	A1-A3 Total	A1-A3 Fossil	A1-A3 Biogenic
4	1220	1830	13.3	8.29	0.11	11.35	19.75	19.79	-1.48
5	1220	1830	16.7	10.37	0.13	14.18	24.68	24.74	-1.86
6	1220	1830	20.0	12.44	0.16	17.02	29.62	29.69	-2.23
7	1220	1830	23.3	14.51	0.19	19.86	34.56	34.63	-2.60
8	1220	1830	26.7	16.59	0.21	22.69	39.49	39.58	-2.97
9	1220	1830	30.0	18.66	0.24	25.5300	44.43	44.53	-3.34
10	1220	1830	33.3	20.73	0.27	28.37	49.37	49.48	-3.71
11	1220	1830	36.7	22.81	0.29	31.20	54.30	54.43	-4.08
12	1220	1830	40.0	24.88	0.32	34.04	59.24	59.37	-4.45
13	1220	1830	43.3	26.95	0.35	36.88	64.18	64.32	-4.82
14	1220	1830	46.7	29.03	0.37	39.71	69.11	69.27	-5.20
15	1220	1830	50.0	31.10	0.40	42.55	74.05	74.22	-5.57