ENVIRONMENTAL PRODUCT DECLARATION

BLGV Gypsum board, water resistant

Declared unit or functional unit
1 m^2 of Gypsum board, water resistant, 12,5 mm

Issued 23.06.2020
Valid until 23.06.2025

Third party verified
Conform to EN 15804+A1 and NBN/DTD B08-001

Cradle to gate with options

[B-EPD n° {contact FOD for number}]

OWNER OF THIS ENVIRONMENTAL PRODUCT DECLARATION
Belgisch Luxemburgse Gips Vereniging

EPD PROGRAM OPERATOR
Federale Overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu
www.b-epd.be

The intended use of this EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

PRODUCT DESCRIPTION

PRODUCT NAME
Gypsum board, water resistant

REFERENCE FLOW / DECLARED UNIT
1m^2 of Gypsum board, water resistant, 12,5 mm thickness

Packaging is included.
Installation is not included.
Ancillary materials for installation are not included.
Following materials are needed for mounting and/or installing the product:

- Mounting structure;
- Fasteners.

The weight per reference flow is 9,7 kg.

The declared unit in this EPD represents the weighted average of the BLGV members. The weighted average is calculated and based on the annual production volume intended for the Belgian and Luxemburg market of each individual member.

PRODUCT DESCRIPTION
A gypsum board is used as a (sound-insulating or fire-resistant) ceiling or as part of light non-load-bearing partition structures. The boards consist of a core of plaster on which a layer of paper / cardboard is applied on both sides. Gypsum board are usually applied against a skeleton of metal profiles. The water resistant gypsum boards, are composed with specific additives to introduce the water resistant properties.

The gypsum boards are produced in a variety of sizes (width and length) and are produced in compliance with the EN 520:2004+A1:2009 "Gypsum plasterboards - Definitions, requirements and test methods".

IMAGES OF THE PRODUCT AND ITS INSTALLATION

COMPOSITION AND CONTENT
The main components of the product are

Material/chemical input	kg / 1 m^2	%
Gypsum	8,0	82,0%
Recycled gypsum	0,5	4,9%
Mineral additives	0,8	8,5%
Additives	0,1	1,2%
Paper	0,3	3,3%
Total	**9,7**	**100%**

The gypsum boards are stacked and strapped on wooden pallets.

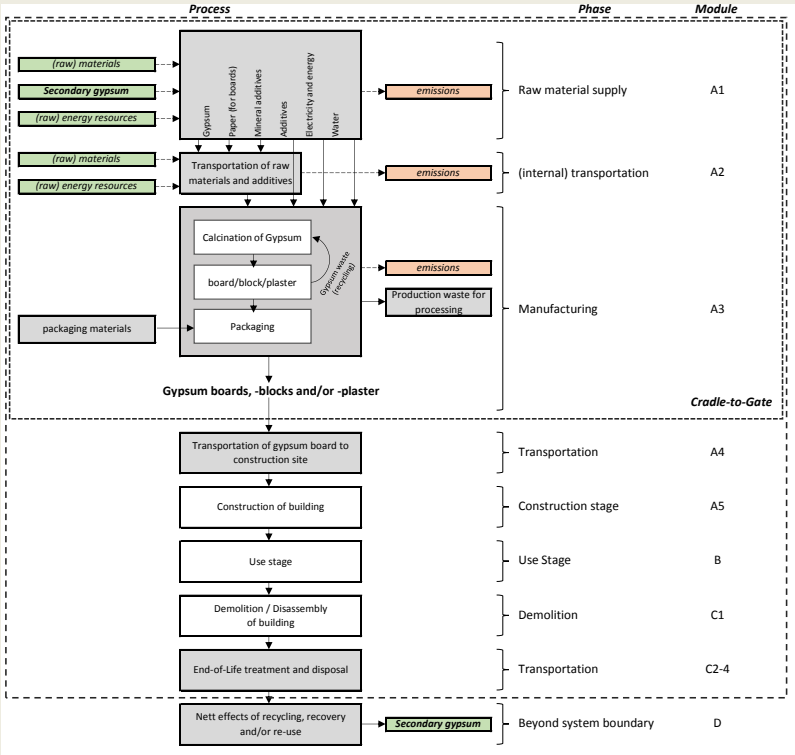
The product does not contain materials listed in the "Candidate list of Substances of Very High Concern for authorization".

REFERENCE SERVICE LIFE
When applied in non-load bearing inner walls and installed according to the manufacturer's processing instructions and excluding user induced damages of the product, the declared products can fulfill their declared technical and functional performances for a RSL of 75 years. This RSL is based on the manufacturers experience.

DESCRIPTION OF THE PRODUCTION PROCESS AND TECHNOLOGY

BLGV companies apply three types of gypsum for their products: natural gypsum (as mined), phosphogypsum (a by-product from the production of fertilizers) and flue gas desulphurization gypsum (FGD). Depending on the application, the gypsum is subjected to several pre-treatment processes, of which the calcination process is the most important step. In this process the water is removed from the gypsum (dehydrated). Not all manufacturing facilities can calcinate the gypsum themselves. Some already purchase their gypsum in a calcinated state.

Following the calcination of the gypsum and depending on the specific product (and manufacturer) different (mineral) additives are added to form a mixture. In the gypsum board production, water is added to the specific mixture in order to create a gypsum mortar. Using a conveyor belt, the gypsum mortar is spread on, and covered by, a layer of paper/cardboard, through a continuous process. Once the gypsum core has sufficiently set, the boards are cut to standardized dimensions and are ready for packaging and further distribution



LCA STUDY

DATE OF LCA STUDY
March 11th, 2020

SOFTWARE
For the calculation of the LCA results, the software program Simapro 9 has been used.

INFORMATION ON ALLOCATION
For this study, for a few production sites, there is a multi-output process (several products originate from a single production line). In these situations the production sites calculated the relative contribution of the different products (based on mass -balance, residence time, etc.) in the way they reflect the underlying physical relationship.

INFORMATION ON CUT OFF
The following processes are considered below cut-off:
- Packaging for input materials, and
- Infrastructures.

INFORMATION ON EXCLUDED PROCESSES
Following processes were excluded for the inventory:
- Overhead processes, e.g. office departments, employee transportation, etc.
- Energy use, infrastructure and consumables from administrative departments (e.g. head offices and sales offices)
- Production, maintenance and disposal of capital goods, e.g. buildings, machinery, etc..
- Production of packaging for paper and additives.
- Treatment of packaging for additives.

INFORMATION ON BIOGENIC CARBON MODELLING
No 'biogenic carbon flows' or 'carbon emissions from land use change' are related to the product or the manufacturing processes.

INFORMATION ON CARBON OFFSETTING
No carbon offsetting is applied in this study

ADDITIONAL OR DEVIATING CHARACTERISATION FACTORS
For the CEN indicators all CF are conform to EN 15804+A1. For toxicity, ionizing radiation and particulate matter the CF of JRC 2018 were used. For the additional parameters and the adjusted CF for ADP that are required by the NBN-DTD B 08-001:2017 the MMG LCIA Method (Sep. 2017) is used in Simapro 9.

DATA

SPECIFICITY
The data used for the LCA are for a group of products manufactured in multiple production sites (not brand specific)

GEOGRAPHICAL REPRESENTATIVITY
The EPD is representative for the Belgian market.

PERIOD OF DATA COLLECTION
Manufacturer specific data have been collected for the year 2017.

INFORMATION ON DATA COLLECTION
Specific data is used for the manufacturing processes that occur at the BLGV members. The following BLGV members have provided specific inventory data for this EPD:
- Etex;
- Gyproc;
- Knauf.

Generic data has been utilized to model background data or processes in which the manufacturer has no influence or when specific information was not available. As such generic data was used to model: materials and resources that are purchased, electricity from the grid, etc. Generic data is also used to model the scenario's in the downstream life cycle stages.

A representativity check was done to justify the generic data that is used.

The specific inventory data which is used in the calculation of the weighted average including the weighted average inventory data is confidential. As such no information concerning this aspect is made public.

DATABASE USED FOR BACKGROUND DATA
Ecoinvent 3.4 database (2017) has been used for background data

ENERGY MIX
Electricity consumption is modelled using the country specific energy mix that is representative for the specific manufacturing location.

PRODUCTION SITES

The BLGV calculated weighted averaged life cycle inventory is based on the input- and output data of the following production locations:

- Knauf (Wielsbeke – Belgium);
- Saint-Gobain Gyproc (Kallo – Belgium);
- Etex (Delfzijl – The Netherlands);

SYSTEM BOUNDARIES

Product stage			Construction installation stage		Use stage							End of life stage					Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal		Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
☒	☒	☒	☒	MND	MND	MND	MND	MND	MND	MND	MND	MND	☒	☒	☒		☒

X = included in the EPD
MND = module not declared

In this EPD the environmental information for modules A1, A2 and A3 are declared as one aggregated module A1-3.

POTENTIAL ENVIRONMENTAL IMPACTS PER REFERENCE FLOW

	Production			Construction process stage		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	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 (kg CO2 equiv/FU)	2,371E+00			1,528E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,133E-01	1,125E-02	4,125E-02	-2,084E-05
ODP (kg CFC 11 equiv/FU)	2,677E-05			2,817E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,061E-08	2,794E-09	1,376E-08	-2,580E-12
AP (kg SO2 equiv/FU)	7,379E-03			5,007E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,690E-04	5,910E-05	3,072E-04	-2,788E-07
EP (kg (PO4)3- equiv/FU)	1,308E-03			8,127E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,985E-05	1,216E-05	5,275E-05	-6,175E-08
POCP (kg Ethene equiv/FU)	5,297E-04			4,349E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,082E-05	3,720E-06	2,431E-05	-1,377E-08
ADP Elements (kg Sb equiv/FU)	2,856E-06			4,047E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,382E-07	1,622E-08	4,748E-08	-2,898E-11
ADP fossil fuels (MJ/FU)	3,831E+01			2,338E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,715E+00	1,739E-01	1,177E+00	-2,800E-04

GWP = Global Warming Potential (Climate Change); ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels;

RESOURCE USE

	Production			Construction process		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	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
PERE (MJ/FU, net calorific value)	3,380E+00			3,144E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,189E-02	1,926E-02	3,037E-02	-1,067E-05
PERM (MJ/FU, net calorific value)	5,929E+00			0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
PERT (MJ/FU, net calorific value)	9,309E+00			3,144E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,189E-02	1,926E-02	3,037E-02	-1,067E-05
PENRE (MJ/FU, net calorific value)	4,163E+01			2,500E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,831E+00	3,382E-01	1,260E+00	-2,851E-04
PENRM (MJ/FU, net calorific value)	0,000E+00			0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
PENRT (MJ/FU, net calorific value)	4,163E+01			2,500E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,831E+00	3,382E-01	1,260E+00	-2,851E-04
SM (kg/FU)	5,351E-01			0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
RSF (MJ/FU, net calorific value)	0,000E+00			0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
NRSF (MJ/FU, net calorific value)	0,000E+00			0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
FW (m^3 water eq/FU)	2,214E-02			4,440E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,965E-04	6,465E-05	1,273E-03	-4,966E-08

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

WASTE CATEGORIES & OUTPUT FLOWS

	Production			Construction process stage		Use stage							End-of-life stage				
	A1 Raw material	A2 Transport	A3 manufacturing	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 (kg/FU)		9,584E-02		1,503E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,125E-03	1,412E-04	6,407E-04	-5,286E-07
Non-hazardous waste disposed (kg/FU)		1,079E-01		1,409E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,023E-02	3,718E-04	7,777E+00	-4,594E-07
Radioactive waste disposed (kg/FU)		9,417E-05		1,308E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,548E-06	2,450E-06	6,362E-06	-1,243E-09
Components for re-use (kg/FU)		0,000E+00		0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
Materials for recycling (kg/FU)		6,337E-02		0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	1,944E+00	0,000E+00	0,000E+00
Materials for energy recovery (kg/FU)		0,000E+00		0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00
Exported energy (MJ/FU)		0,000E+00		0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00

IMPACT CATEGORIES ADDITIONAL TO EN 15804

		Production			Construction process		Use stage							End-of-life stage				
		A1 Raw material	A2 Transport	A3 manufacturing	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
	*PM (kg PM2.5 eq/FU)*	9,100E-04			7,751E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,428E-05	8,971E-06	4,544E-05	-2,342E-07
	*IRHH (kg U235 eq/FU)*	1,032E-01			1,011E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,358E-03	2,876E-03	4,852E-03	-1,087E-06
	*ETF (CTUe/FU)*	1,778E+00			4,192E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,776E-01	4,421E-03	2,286E-02	-6,591E-06
	*HTCE (CTUh/FU)*	1,582E-08			1,124E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,563E-10	2,641E-10	3,973E-10	-2,388E-13
	*HTnCE (CTUh/FU)*	2,904E-07			2,432E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,672E-08	6,759E-10	2,569E-09	-1,234E-12
	*WRD (m³ water eq/FU)*	4,567E-03			2,088E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,378E-05	3,512E-06	1,945E-04	9,883E-09
	*LUO – SOM (kg C deficit/FU)*	3,502E+00			1,570E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,083E-02	1,393E-02	1,277E-01	-2,261E-05
	*LUO – B, all (PDF*m²a/ FU)*	1,576E-01			9,092E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,259E-03	7,867E-04	7,266E-03	-1,264E-06
	*LUT – SOM (kg C deficit/FU)*	2,008E+00			4,641E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,260E-01	9,929E-02	1,301E+00	1,929E-04
	*LUT – B, all (PDF*m²/F U)*	-1,970E-01			4,676E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,481E-04	-9,210E-06	-1,038E-02	3,337E-06

	*LUO – B, u (m²a/FU)*u	2,982E-02	1,059E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	6,096E-03	7,749E-04	7,972E-03	-1,457E-06
	LUO – B, a (m²a/FU)	1,707E-02	1,564E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,279E-05	4,124E-07	6,460E-06	-6,806E-10
	LUO – B, f (m²a/FU)	1,026E+00	1,633E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,121E-03	1,231E-03	5,108E-03	-3,521E-07
	LUT – B, tr r (m²/FU)	0,000E+00	0,000E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,000E+00	0,000E+00	0,000E+00	0,000E+00

HTCE = Human Toxicity – cancer effects; HTnCE = Human Toxicity – non cancer effects; ETF = Ecotoxicity – freshwater; PM = Particulate Matter; IRHH = Ionizing Radiation – human health effects; WRD = Water Resource Depletion: LUO – SOM = Land Use Occupation – SOM; LUO – B, all: Land Use Occupation – biodiversity ALL; LUO – B, u: Land Use Occupation – biodiversity Urban; LUO – B, a: Land Use Occupation – biodiversity agricultural; LUO – B, f: Land Use Occupation – biodiversity forest; LUT – SOM = Land Use Transformation – SOM; LUT – B all = Land Use Transformation – Biodiversity ALL; LUT – B, u = Land Use Transformation – Biodiversity Urban; LUT – B, a = Land Use Transformation – Biodiversity agricultural; LUT – B, f = Land Use Transformation – Biodiversity forest; LUT – B, tr r = Land Use Transformation – Biodiversity transition rainforest

	Global Warming Potential	kg CO_2 equiv/FU	GWP	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.
	Ozone Depletion	kg CFC 11 equiv/FU	ODP	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbonsor halons), Which break down when they reach the stratosphere and then catalytically destroy ozone molecules.
	Acidification potential	kg SO_2 equiv/FU	AP	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.
	Eutrophication potential	kg $(PO4)^{3-}$ equiv/FU	EP	The potential to cause over-fertilization of water and soil, which can result in increased growth of biomass and following adverse effects.
	Photochemical ozone creation	kg Ethene equiv/FU	POCP	Chemical reactions brought about by the light energy of the sun creating photochemical smog. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.
	Abiotic depletion potential for non-fossil ressources	kg Sb equiv/FU	ADP elements	Consumption of non-renewable resources, thereby lowering their availability for future generations. Expressed in comparison to Antimonium (Sb).
	Abiotic depletion potential for fossil ressources	MJ/FU	ADP fossil fuels	Measure for the depletion of fossil fuels such as oil, natural gas, and coal. The stock of the fossil fuels is formed by the total amount of fossil fuels, expressed in Megajoules (MJ).
	Ecotoxicity for aquatic fresh water	CTUe/FU	ETF	The impacts of chemical substances on ecosystems (freshwater).
	Human toxicity (carcinogenic effects)	CTUh/FU	HTCE	The impacts of chemical substances on human health via three parts of the environment: air, soil and water.
	Human toxicity (non-carcinogenic effects)	CTUh/FU	HTnCE	
	Particulate matter	kg $PM_{2.5}$ eq/FU	PM	Accounts for the adverse health effects on human health caused by emissions of Particulate Matter (PM) and its precursors (NOx, SOx, NH3)
	Resource depletion (water)	m^3 water eq/FU	WRD	Accounts for water use related to local scarcity of water as freshwater is a scarce resourcein some regions, while in others it is not.
	Ionizing radiation - human health effects	kg U235 eq/FU	IRHH	This impact category deals mainly with the eventual impact on human health of low dose ionizing radiation 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.
	Land use: transformation - SOM	kg C deficit/FU	LUO – SOM	Changes due to land transformation in Soil Organic Matter (SOM): the organic matter component of soil, consisting of plant and animal detritus at various stages of decomposition, cells and tissues of soil microbes, and substances that soil microbes synthesize.
	Land use: occupation - biodiversity, ALL	PDF*m^2a/FU	LUO – B, all	Land occupation refers to a continuous use of land area for a certain human-controlled purpose, e.g. agriculture, forestry or buildings. This occupation avoids the land to go back to its original natural state. E.g. open mines.
	Land use: occupation - SOM	kg C deficit/FU	LUT – SOM	Changes due to land occupation in Soil Organic Matter (SOM): the organic matter component of soil, consisting of plant and animal detritus at various stages of decomposition, cells and tissues of soil microbes, and substances that soil microbes synthesize.
	Land use: transform. - biodiversity, ALL	PDF*m^2/FU	LUT – B, all	Land transformation refers to the change from one land use category to another; for example plantation of forest on land previously used for agriculture. Land transformation can be caused both by human activities and by natural processes.
	Land use: occupation – biodiversity / urban, industry	m^2a/FU	LUO – B, u	This indicator includes only the flows of the indicator 'Land use: occupation - biodiversity, ALL' that relate to urban/industry land occupation (applied as an inventory method with characterisation factors set to (-)1 needed for the external environmental costing).

	Land use: occupation – biodiversity / agriculture	*m²a/FU*	*LUO – B, a*	*This indicator includes only the flows of the indicator 'Land use: occupation - biodiversity, ALL' that relate to agricultural land occupation (applied as an inventory method with characterisation factors set to (-)1 needed for the external environmental costing).*
	Land use: occupation – biodiversity / forest	*m²a/FU*	*LUO – B, f*	*This indicator includes only the flows of the indicator 'Land use: occupation - biodiversity, ALL' that relate to forest land occupation (applied as an inventory method with characterisation factors set to (-)1 needed for the external environmental costing).*
	Land use: transfomration – biodiversity / tropical forrest	*m²/FU*	*LUT – B, tr r*	*This indicator includes only the flows of the indicator 'Land use: transform. - biodiversity, ALL' that relate to land transformation to/from tropical forest (applied as an inventory method with characterisation factors set to (-)1 needed for the external environmental costing).*

UPTAKE AND EMISSIONS ASSOCIATED WITH BIOGENIC CARBON CONTENT

Not applicable

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1 – RAW MATERIAL SUPPLY

This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process.

A2 – TRANSPORT TO THE MANUFACTURER

The raw materials are transported to the manufacturing site. All transport distances and methods gave specifically been inventoried.

A3 – MANUFACTURING

This module takes into account the production process. The processes occurring at the manufacturing sites have specifically been inventoried.

- Flue gas desulphurization gypsum (FGD) is one of the most used form of gypsum. This type of gypsum is a by-product of energy production and is created during the desulphurization of the flue gases from coal-fired power plants (for the purpose of preventing, for example, acid rain). The environmental impact of FGD is set to 0 (i.e. it is regarded as a co-product with limited economic value. As such all environmental impact is attributed to the power plant. This method is in line with the guidance for the application of economic allocation that is mentioned in EN 16908, for fly-ash as co-product in coal fired electricity production.
- Not all manufacturing facilities calcinate the gypsum themselves. If this is the case the gypsum, as input material is modelled with generic data for the calcination.
- Gypsum waste that is generated during the manufacturing process is directly reused within the manufacturing process (closed-loop recycling).

A4 – TRANSPORT TO THE BUILDING SITE

The B-PCR provides default transport scenarios for the transport to the building site for cases where specific data on transport are missing. The B-PCR provides scenario's for this life cycle stage. Gypsum board is categorized as 'Loose products' in table 5 of the B-PCR. The following transport steps apply:

- 40% directly to the construction site over 100 km.
  - 100% of this 40% is transported with a 16-32 ton lorry (EURO 5)
- 60% to a supplier over 100 km with a 16 -32 ton lorry.
  - 85% of these 60% is additionally transported over 35 km from supplier to construction site with a 16-32 ton lorry (EURO 5).
  - 15% of these 60% is additionally transported over 35 km from supplier to construction site with a 7.5-16 ton lorry (EURO 5).

A5 – INSTALLATION IN THE BUILDING

Module not declared

B – USE STAGE (EXCLUDING POTENTIAL SAVINGS)

Module not declared

C: END OF LIFE

The B-PCR provides default scenarios for the EOL stage. Gypsum boards and blocks are categorized as 'Gypsum elements' in table 6 of the B-PCR.

Module C2 – Transport to waste processing					
Type of vehicle (truck/boat/etc.)	Fuel consumption (litres/km)	Distance (km)	Capacity utilisation (%)	Density of products (kg/m^3)	Assumptions
16-32 ton lorry (EURO 5)	0,261	70	37	900	

End-of-life modules – C3 and C4		
Parameter	Unit	Value
Wastes collected separately	kg	0,00
Wastes collected as mixed construction waste	kg	9,72
Waste for re-use	kg	0,00
Waste for recycling	kg	1,94
Waste for energy recovery	kg	0,00
Waste for final disposal	kg	7,77

ADDITIONAL INFORMATION ON RELEASE OF DANGEROUS SUBSTANCES TO INDOOR AIR, SOIL AND WATER DURING THE USE STAGE

INDOOR AIR

No additional information on indoor air is declared in the EPD

SOIL AND WATER

No additional information on emissions to soil and water is declared in the EPD

DEMONSTRATION OF VERIFICATION

EN 15804+A1 serves as the core PCR
Independent verification of the environmental declaration and data according to standard EN ISO 14025:2010 Internal ☐ External ☒
Third party verifier: Evert Vermaut Vinçotte Jan Olieslagerslaan 35, 1800 Vilvoorde, Belgium evermaut@vincotte.be

BIBLIOGRAPHY

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General information

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PCR review conducted by	Federal Public Service of Health and Environment & PCR Review committee
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	www.environmentalproductdeclarations.eu

Comparing EPDs is not possible unless they are conform to the same PCR and taking into account the building context.
The program operator cannot be held responsible for the information supplied by the owner of the EPD nor LCA practitioner.

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