ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804 and ISO 14025

GYPROC GN 13
STANDARD BOARD

Date de réalisation :31.1.2014
Version : v1

EPD VERIFIED

The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.

N° DE VERIFICATION

EPD №: ENV537

Gyproc
SAINT-GOBAIN

General information

Manufacturer: Saint-Gobain Rakennustuotteet Oy, Gyproc
Ojangontie 23, PL 44, 02401 Kirkkonummi
Y-tunnus 0951555-3, www.gyproc.fi

LCA and EPD made by: Engineering Office ECOBIO Oy, Runeberginkatu 4c B 21, FIN-00100 Helsinki, +358 (0)20 756 9450, www.ecobio.fi by Thomas Andersson.

Programme used: SigmaPro7, PRé Consultants by, Printerweg 18, 3821 AD Amersfoort, Hollanti www.pre-sustainability.com

PCR identification: EN 15804 as the core PCR + + Product Category Rules CPC Division Construction Products and Construction Services Version 1.0,dated 9.1.2012

Product / product family name and manufacturer represented:
Gyproc GN 13 Standard Board / Gyproc GN 13 Normaali
Saint-Gobain Rakennustuotteet Oy, Gyproc, Kirkkonummi

Declaration issued: 31.1.2014, **valid until:** 31.1.2019

Demonstration of verification: an independent verification of the declaration was made, according to EN 15804:2012. This verification was external and conducted by the following third party: Vahanen Environment Oy (Tampellan esplanadi 2, FI-33100 Tampere, +358 20 769 8698, www.vahanen.com), M.Sc. Hannu Karppi and M.Sc. Antti Tiri, based on the PCR mentioned above.

Product description

Product description and description of use: Description of the product and its use
Construction material for the walls, floors and ceilings of buildings, made from gypsum, water and paperboard.

Main components

Gypsum	25%
Industrial gypsum	30–35%
Recycled gypsum	5–10%
Paperboard	3%
Additives	< 1%
Water	30%

LCA calculation information

FUNCTIONAL UNIT / DECLARED UNIT	1 m2
SYSTEM BOUNDARIES	Cradle to grave
REFERENCE SERVICE LIFE (RSL)	50
CUT-OFF RULES	1%
ALLOCATIONS	No allocations
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Europe 2003-2013

According to EN 15804, EPD of construction products may not be comparable if they do not comply with this standard. According to ISO 21930, EPD might not be comparable if they are from different programmes.

Life cycle stages

Flow diagram of the Life Cycle

Product stage, A1–A3

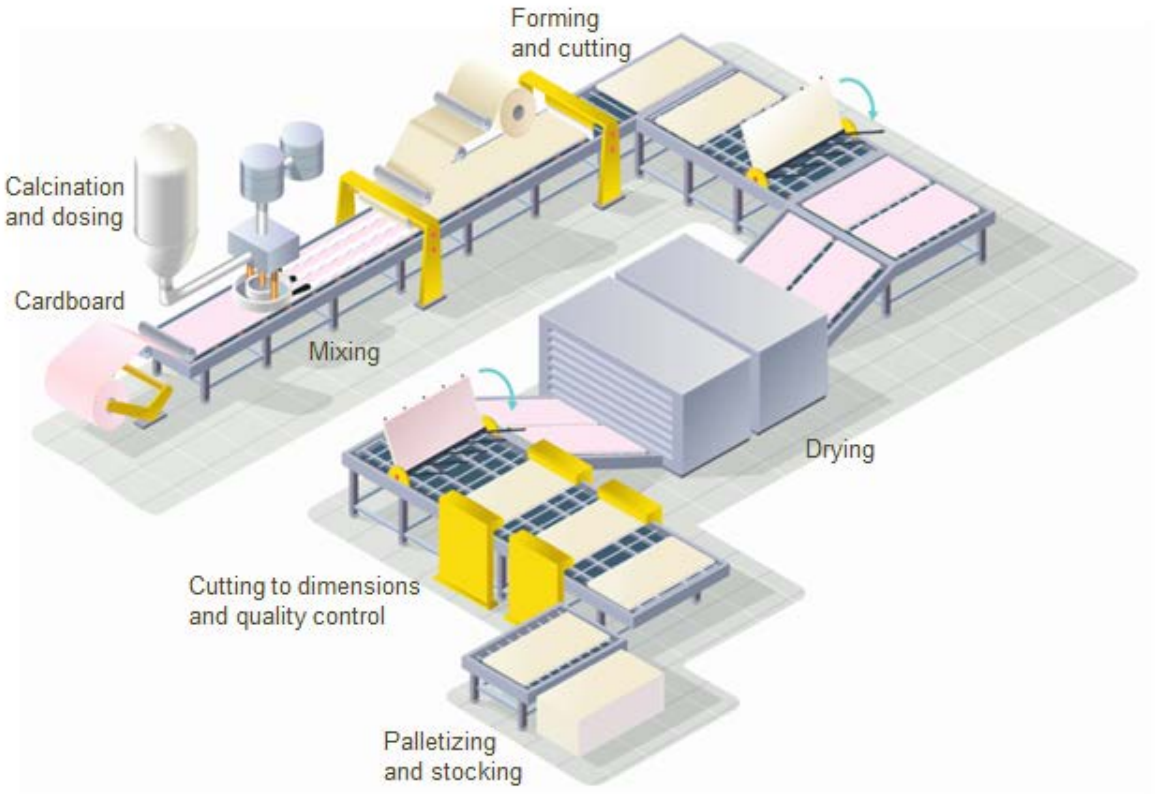
A1; Raw materials
The procurement of raw materials includes that of the manufacturing ingredients (>99.5%), fuels and energy. Stage A1 also includes packaging materials. The profile of electricity used in Finland is adjusted according the guidelines by Finland's Building Information Foundation RTS. The system boundary for secondary materials and fuels is set at the end of the previous, primary stage of the lifecycle.

A2; Transport
The transport distances, modes of transport and internal transport of all raw materials and fuels are taken into account.

A3; Manufacturing
The manufacturing stage includes the following stages: calcination of the gypsum mixture, production of wet gypsum, board pressing, drying, sawing, packaging and storage.

The manufacturing stage takes into account the emissions to the air during the processes, and waste treatment. No emissions to water or soil occur during the manufacturing stage.

Manufacturing process flow diagram



Construction process stage, A4–A5

The distance used is the estimated average distance from factory to construction site: 200 km.
Mode of transport: road transport.

Auxiliary materials for installation and wastage:
Joint filler: 0.33 kg
Joint tape: 16 g
Fixing screws: 10 g
Wastage: 5%

Use stage (excluding potential savings), B1–B7

No significant input or output flows are assumed during the use stage of plasterboard. The product does not require maintenance, repair, replacement or refurbishment during its lifecycle. The product does not consume energy or water during its use stage.

End-of-life stage, C1–C4

No significant input or output flows are assumed during the end-of-life stage (dismantling) of plasterboard.

The distance used is the estimated average distance from site to waste disposal: 50 km.
Mode of transport: road transport.

Dismantled plasterboard is disposed of at a landfill.

LCA results

Resume of the LCA results detailed on the following tables.

ENVIRONMENTAL IMPACTS

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Global Warming Potential (GWP) - *kg CO_2 equiv/FU*	2.49	2.2E-01	9.0E-02	0.0	-	-	-	-	-	-	-	6.0E-02	-	1.1E-01	-
	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 (ODP) *kg CFC 11 equiv/FU*	4.6E-07	4.0E-08	1.0E-08	0.0	-	-	-	-	-	-	-	1.0E-08	-	3.0E-08	-
	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 (AP) *kg SO_2 equiv/FU*	1.1E-02	1.0E-03	1.0E-03	0.0	-	-	-	-	-	-	-	-	-	1.0E-03	-
	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 (EP) *kg $(PO_4)^{3-}$ equiv/FU*	2.5E-03	3.0E-04	1.0E-04	0.0	-	-	-	-	-	-	-	1.0E-04	-	2.0E-04	-
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.														
Photochemical ozone creation (POPC) *kg Ethene equiv/FU*	4.6E-04	4.0E-05	2.0E-05	0.0	-	-	-	-	-	-	-	1.0E-05	-	2.0E-05	-
	Chemical reactions brought about by the light energy of the sun. 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 (ADP-elements) - *kg Sb equiv/FU*	1.1E-06	7.0E-07	2.0E-07	0.0	-	-	-	-	-	-	-	2.0E-07	-	1.0E-07	-
Abiotic depletion potential for fossil ressources (ADP-fossil fuels) - *MJ/FU*	42.9	3.8	8.0E-01	0.0	-	-	-	-	-	-	-	9.0E-01	-	2.5	-
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

RESOURCE USE

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - *MJ/FU*	3.3	0.0	4.0E-01	0.0	-	-	-	-	-	-	-	0.0	-	0.0	-
Use of renewable primary energy used as raw materials *MJ/FU*	10.1	0.0	0,0	0.0	-	-	-	-	-	-	-	0.0	-	0.0	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) *MJ/FU*		13.5	0.0	4.0E-01	0.0	-	-	-	-	-	-	-	0.0	-	0.0
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - *MJ/FU*	42.7	3.8	8.0E-01	0.0	-	-	-	-	-	-	-	9.0E-01	-	2.5	-
Use of non-renewable primary energy used as raw materials *MJ/FU*	2.0E-01	0.0	0,0	0.0	-	-	-	-	-	-	-	0.0	-	0.0	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/FU*		42.9	3.8	8.0E-01	0.0	-	-	-	-	-	-	-	9.0E-01	-	2.5
Use of secondary material *kg/FU*	2.7	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-
Use of renewable secondary fuels- *MJ/FU*	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels - *MJ/FU*	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water - *m^3/FU*	1.0E-02	0.0	0.0	0.0	-	-	-	-	-	-	-	0.0	-	0.0	-

WASTE CATEGORIES

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Hazardous waste disposed *kg/FU*	**1.0E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-hazardous(excluding inert) waste disposed *kg/FU*	**1.0E-02**	-	**1.3E-01**	-	-	-	-	-	-	-	-	-	**-**	**8.4**	-
Inert waste disposed *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radioactive waste disposed *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

OUTPUT FLOWS

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Components for re-use *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials for recycling *kg/FU*	**6.0E-03**	**-**	**2.9E-01**	-	-	-	-	-	-	-	-	-	-	-	-
Materials for energy recovery *kg/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exported energy, detailed by energy carrier *MJ/FU*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LCA results interpretation

The most significant environmental impact occurs during stage A1, procurement of raw materials and energy, with the exception of the parameters Acidification Potential and Global Warming Potential.

Acidification Potential is affected by the sulphur and nitrogen oxide emissions during sea transport in particular. The most significant factor during transport (stage A2) is the transport of gypsum from Spain to Finland.

Global Warming Potential is affected by factory emissions to the air (stage A3), as well as the production of natural gas and electricity (stage A1).

The most important factor for Ozone Depletion is the procurement chain of natural gas.

The most important factors affecting Eutrophication Potential are electricity generation, the consumption of paperboard and starch, as well as the production of natural gas (stage A1). Sea transport (stage A2) has a contributory effect on eutrophication.

Significant factors in Photochemical Ozone Creation are the production of natural gas (stage A1) and sea transport (stage A2).

Abiotic Depletion Potential for Fossil and Non-fossil Resources are caused by the procurement chain of paperboard and starch, as well as the production of natural gas and electricity (stage A1).

Based on the Lifecycle Analysis, the largest environmental effects of plasterboard are caused by factory emissions to the air, the procurement of natural gas and electricity, and the sea transport of gypsum. Paperboard and starch are important raw material factors.

Health characteristics

All Gyproc indoor drywall boards have the M1 classification.

The classification scale of Finland's Building Information Foundation RTS includes three classes, of which M1 is the best. The M1 classification denotes that the product has been tested in an impartial third-party laboratory and meets the M1 classification requirements over a four-week period in a standardised testing environment. Therefore, the M1 classification denotes low emissions.

Environmental positive contribution

Waste plasterboard strips left over from installation can be delivered to Gyproc's Kirkkonummi, Finland, plant. Recycled plasterboard may be reused in the manufacture of new Gyproc boards. The addition of a clean recycled gypsum component does not deteriorate the properties of the newly manufactured board, but the use of recycled gypsum in manufacture saves natural resources and promotes the end-to-end management of the product lifecycle.

Used and maintained correctly, plasterboard is a long-life construction material. Plasterboard can be washed and painted, and it lends itself to resurfacing and or wallpapering. In addition, surface damage and holes can easily be repaired using Gyproc products and instructions.

Contact

Technical support

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