ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and ISO 21930

Glasroc H Ocean™ – Wetroom Board

Verification Date : 2 July 2013

Version : 1.0

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.

REGISTRATION N°

EPD №: S-P-00393

Gyproc SAINT-GOBAIN

Environmental Product Declaration

ISO 14025 & ISO 21930 | Approved according to ISO 14025: §8.1.4 | EPD® PCR: 01 Construction Products |
EPD Type: Cradle to grave | Year of study: 2012 – Valid until: 2018-06-30 |

Glasroc H Ocean™ – Wetroom Board

EPD №: S-P-00393 | Market area: Sweden, Denmark, Norway, Finland |

Glasroc H Ocean is Gyproc's recommended solution for internal wet area applications where normal water exposure is expected (e.g. private homes, hotels, etc.). The highly inorganic composition of this board allows it to be more resistant to moisture and mould, providing a safer solution than conventional plasterboards. The gypsum core is impregnated with additives that significantly reduce the rate of water absorption. The glass fibre mat on the surfaces has a water-repellent light blue coating that provides an excellent adhesion base for waterproofing treatments.

Glasroc H Ocean is designated GM-H1 according to EN 15283-1:2008. This designation applies for boards suitable for applications in which very low water absorption rate is required. It is 12.5 mm thick, available in 900 mm (GHOE 13) and 1200 mm width (GHO 13).

Product information:

Functional unit (FU): m² installed plasterboard with expected service life of 50 years

Expected service life of building:	50 years
Service life of product:	50 years
Thickness:	12.5 mm
Place of manufacture:	Kalmarleden 50, 746 37 Bålsta, Sweden

The attached EPD models a service life of 50 years. In reality, the product and building service life may exceed the timescale modelled, in which case the impacts would be spread over an extended period, but 50 years was used here to conform to the requirements set out in the Saint-Gobain Methodological Guide and ensure transparency.

Product specification:

Material	Part %	Quantity kg/FU
Gypsum	90.2	9.02
Surfacing	7.0	0.70
Additives	2.8	0.28
SUM	100	10.00

Environmental Indicators per FU:		
Climate Change – Global Warming	5.41	kg CO_2 equivalents
Water consumption	28.1	litres
Energy use	101.6	MJ
Recycled materials use	35.2	%

Declaration compiled by:
Vikki Holme, Rosie Ryan and Ivan Mårtensson
Contact person: Ivan Mårtensson
Telephone: +46171415452
Email: ivan.martensson@gyproc.com

Verification of data:
Independent verification of data and other environmental information has been carried out by Elin Eriksson at IVL Swedish Environmental Research Institute in accordance with ISO14025, §8.1.3

About The International EPD® System: EPDs within the same product category but from different programmes may not be comparable. For more information — www.environdec.com
A critical review has been carried out by Michaël Medard (Saint-Gobain) in accordance with ISO 14044 clause 6.

1. Product characterisation

1.1.Definition of the functional unit (FU)

1 m² of installed building board with a specified function and an expected average service life of 50 years (packaging included).

Note: Glasroc H Ocean - Wetroom Board is installed with the use of screws, jointing compound and jointing tape; these are therefore included in the assessment.

1.2.Data type and quantity for the calculation of the functional unit (FU)

Quantity of product contained in the functional unit on the basis of a reference service life		
Average thickness:	12.5 mm	
Total weight:	10.00 kg/m²	
Amount of gypsum used:	9.02 kg/m²	(90.2 %)
Surfacing:	0.70 kg/m²	(7.0 %) Water repellent Glass fibre Mat
Various additives used:	0.28 kg/m²	(2.8 %)
Distribution packaging		
Polyethylene:	0.002 kg/m²	
Recycled Gypsum Dunnage:	0.18 kg/m²	
Additional product		
Complementary products (type and quantity) to 1 m² for installation are:		
Screws:	8 pc/m²	(each 1.25 g/pc) Steel screws
Jointing Compound:	0.33 kg/m²	Commonly plaster compound
Jointing Tape:	1.23 m/m²	Commonly paper based tape

Justification of quantities supplied

The rate of scrap during the installation of the board and additional products is estimated to be 1.3 % per FU.

Maintenance (including partial replacement if necessary): No maintenance or replacement is expected during the life time and this is therefore not modelled.

Allocation rules

Gyproc AB produces Glasroc H Ocean along with other products. In order to calculate the LCA, a proportion of the consumption of production inputs (energy, raw materials etc.) and the production of outputs (emissions, waste etc.) have been allocated to Glasroc H Ocean.

The allocation has been made relative to the mass of the product.

Consumption of chemicals on the Swedish observation list

None

1.3. Technical characteristics and useful information not included in the functional unit

Glasroc H Ocean contains 90.2 % gypsum in a blend of Flue Gas Desulphurised Gypsum (DSG) and natural gypsum. Recycled gypsum (DSG) makes up 39 % of the gypsum blend.
The life cycle inventory data set out below has been calculated for the functional unit defined in The International EPD® System PCR 01.

1.4. System boundary

Building life cycle information													
A 1 – 3			**A 4 – 5**		**B 1 – 7**					**C 1 – 4**			
Product stage			**Construction Process stage**		**Use stage**					**End of Life stage**			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4
Raw material supply	Transport	Manufacturing	Transport	Construction installation process	Use	Maintenance (Incl. transport)	Repair (Incl. transport)	Replacement (Incl. transport)	Refurbishment (Incl. transport)	Deconstruction	Transport	Waste processing	Disposal
			Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario
					B6 Operational energy use								
					Scenario								
					B7 Operational water use								
					Scenario								

Included Excluded

2. Contribution of the product to environmental impacts in accordance with EPD® PCR 01 §11.2.4

All these impacts are reported or calculated in accordance with §11.2.4 of The International EPD® System PCR 01 and §9.4 of the Saint-Gobain Methodological Guide and the data below are derived from the process of life cycle analysis.
The units of reference are defined by The International EPD® System PCR 01 §5 and the totals per functional unit (FU) are related to the Typical Life Time (TLT) of the product i.e. 50 years.

№	Flow		Environmental Impact per FU						
			Unit	Production stage	Construction stage		Use stage	End of Life stage	Reference service life
					Transport	Installation			
1	Total primary energy		MJ	96.80	1.73	2.98	0.0	0.1144	101.6
	Renewable energy		MJ	3.93	0.0023	0.4651	0.0	0.0002	4.39
	Non-renewable energy		MJ	92.86	1.73	2.49	0.0	0.1142	97.2
2	Abiotic resource depletion (ADP) in (Sb) antimony equivalents		kg	0.0358	0.0008	0.0009	0.0	0.0001	0.0376
	Non-renewable material		kg	Natural gypsum: This is an infinitely recyclable mineral					5.5
3	Water consumption		litre	26.38	0.1600	1.9037	0.0	0.0109	28.5
4	Recovered waste (total)		kg	0.0072	5.879E-07	0.1802	0.0	5.200	5.387
	Disposed of waste	Hazardous waste	kg	0.0103	4.058E-05	0.0004	0.0	2.745E-06	0.0108
		Non-hazardous waste	kg	0.1176	2.789E-05	0.0733	0.0	4.80	5.0
		Inert waste	kg	1.7114	7.046E-05	0.0403	0.0	4.777E-06	1.752
		Radioactive waste	kg	1.019E-03	2.700E-05	2.856E-06	0.0	1.831E-06	0.001051
5	Climate change in CO_2 equivalents		kg	5.11	0.14	0.15	0.0	0.01	5.41
6	Acidification potential in SO_2 equivalents		kg	0.0760	0.0011	0.0006	0.0	0.0001	0.0777
7	Ozone depletion potential (ODP)		No emission of CFCs or HFCs						N/A
8	Photochemical ozone creation potentials (POCP) in ethene equivalents		kg	0.0046	0.0002	2.594E-05	0.0	1.190E-05	0.00480
9	Eutrophication potential in PO_4^{3-} equivalents		kg	0.68	0.0020	0.0174	0.0	0.3132	1.01224

Electricity model: Production of electricity in Sweden (2004), predefined in TEAM (CO_2 factor: 1.03954 g/MJ).
See reading guide, page 5.

For more information

The information provided for the purpose of producing this EPD was supplied by Gyproc AB.

Traceability

The manufacturer which has participated in this study is: Gyproc AB

Contact: Ivan Martensson
Tel: +46171415452
Email: ivan.martensson@gyproc.com

Contact for the primary data (headquarters): epd.gypsum@saint-gobain.com

Life Cycle Inventories were made in 2012 and aggregation/calculation of data is done by TEAM™ software version 4.0.

Reading Guide

Reading example: -9.0E-03 = -9.0×10^{-3}