

SUSTAINABILITY CONTRIBUTION DECLARATION

Contribution to BREEAM® (Building Research Establishment Environmental Assessment Method, BREEAM International New Construction 2016)



Fermacell Gypsum fibreboards

Green Building Certification schemes operate at the scale of the construction project, and so these products will, inevitably, only contribute towards a proportion of the total score achieved under any particular sustainability aspect considered by these schemes.

Product description

FERMACELL gypsum fibreboards (coated) are special structural panels made of plaster and cellulose fibres.

Directive (EU) No. 305/2011 (CPR) applies for placing the product on the market in the EU/EFTA (except Switzerland). The product requires a Declaration of Performance taking consideration of the European Technical Approval /ETA-03/0050/ and CE marking.

Application

FERMACELL gypsum fibreboards are used for cladding and lining components. Use is governed by the respective national regulations.

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Management

Man 02: Life cycle cost and service life planning

→ To deliver whole life value from investment and promote economic sustainability by recognising and encouraging the use and sharing of life cycle costing and service life planning.

Product information

Specific information	Evidence (quality)
Construction process stage	-
Use stage	Reference service life (RSL): is depending on the specific construction, use in the building and maintenance of the building. Maintenance: not required.
End of life stage	100 % recyclable if logistic structures exist

Man 03: Responsible construction practices

→ To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner.

Monitoring of site impacts

Second monitoring credit - Transport of construction materials and waste

The construction project can earn a BREEAM credit by demonstrating that transport relating to delivery of a majority of construction materials to site and construction waste from site is monitored and recorded.

Specific information	Evidence (quality)
Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution	The transport distance can be calculated when knowing the location of the construction site.

Man 04: Commissioning and handover

→ To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.

Product information

Product specific information for the Building User Guide (BUG) (installation, maintenance)	Evidence
Installation and maintenance instructions are provided in a technical manual.	Link to the relevant documentation: www.fermacell.com/downloads



Health and Wellbeing

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Not relevant for this product (The eco- INSTITUT- Label criteria were successfully fulfilled.)



Energy

Not relevant for this product (only for products that use energy).



Water

Not relevant for this product (only for products that use water).



Materials

Mat 01: Life cycle impacts

→ To recognise and encourage the use of construction materials with a low environmental impact (including embodied carbon) over the full life cycle of the building.

Where an independently verified third-party Environmental Product Declaration (EPD), covering part of, or the whole life cycle, is available for a material/product that forms part of an assessed building element, this can be used to obtain a “credit uplift” for that element to the building’s Mat 01 performance. The amount of uplift will be dependent on the impact of the material with the EPD within the element, the Green Guide rating of the element and the nature of the EPD (cradle to grave or otherwise).

Product information

Description	Value	Link / Comment
“Product specific” environmental product declaration available?	yes	See below
Independently verified by third-party	yes	According to ISO 14025 & ISO 21930 (concerning environmental labels and declarations) and ISO 14040 and 14044 (concerning life cycle assessment).
EPD Program Operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany	http://ibu-epd.com/en/
Author of the LCA	thinkstep AG, Leinfelden-Echterdingen, Germany	https://www.thinkstep.com/
EPD Number	EPD-FER-20160218-CAD1-EN	https://epd-online.com/EmbeddedEpdList/Download/9697



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System boundaries	Cradle to gate	-
Declared unit	1 m ² gypsum fibreboard	Average weight 14.75 kg/m ² , average density 1.18 t/m ³ .
PCR	Gypsum fibreboards, 07.2014	-
Green guide rating	See generic Green guide ratings at www.bre.co.uk/greenguide	

Results of the LCA – ENVIRONMENTAL IMPACTS of 1 m² Gypsum fibreboard

	Product stage
Declared life cycle stages (DIN EN 15978)	A1-A3 (Manufacturing)
GWP [kg CO ₂ -eq.]	1.14E+0
ODP [kg CFC11-eq.]	2.95E-11
AP [kg SO ₂ -eq.]	1.74E-03
EP [kg PO ₄ ³⁻ -eq.]	2.99E-04
POCP [kg Ethen eq.]	6.75E-05
ADPE [kg Sb eq.]	1.11E-04
ADPF [MJ]	1.64E+01

Note: Detailed names of the given abbreviations can be found in the glossary.

Results of the LCA – RESOURCE USE

	Product stage
Declared life cycle stages (DIN EN 15978)	A1-A3 (Manufacturing)
PE total (= PERT + PENRT) [MJ]	2.10E+01
PERE [MJ]	3.57E+00
PERM [MJ]	8.62E-03
PERT [MJ]	3.58E+00
PENRE [MJ]	1.74E+01
PENRM [MJ]	1.29E-03
PENRT [MJ]	1.74E+01
SM [kg]	3.64E+00
RSF [MJ]	0
NRSF [MJ]	0
FW [m ³]	6.97E-03

Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES

	Product stage
Declared life cycle stages (DIN EN 15978)	A1-A3 (Manufacturing)
HWD [kg]	1.47E-07
NHWD [kg]	2.35E-02
RWD [kg]	4.18E-04
CRU [kg]	0
MFR [kg]	0
MER [kg]	0
EEE [MJ]	0
EET [MJ]	0

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Materials

Mat 03: Responsible sourcing of materials

→ To recognise and encourage the specification and procurement of responsibly sourced materials for key building elements.

To achieve points for any given building element, at least 80% of the materials that make-up that element must be responsibly sourced. The calculation is relatively complicated, but a worked example is given in the BREEAM Technical Manual.

Product information

Responsible Sourcing Certification Scheme	Certification level / scope
EN ISO 14001	www.fermacell.com/downloads

Recycled gypsum production from flue gas desulphurisation is considered responsibly sourced by default.

Responsible sourcing certification scheme point scores:

A graded scale, to reflect the rigour of the certification scheme used to demonstrate responsible sourcing, forms the basis for awarding credits in the BREEAM issue Mat 03. Refer to BREEAM Guidance Note GN18 available in the Resources section of the BREEAM website for an up-to-date table of responsible sourcing certification schemes recognised by BRE Global Ltd for the purposes of a BREEAM assessment.

Mat 05: Designing for durability and resilience

→ To recognise and encourage adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials.

Product information

Item	Description
Durability improvement	No maintenance; very durable product. Reference service life is equal to service life of the building or 50 years according approval document ETA-03/0050.

Mat 06: Material efficiency

→ To recognise and encourage measures to optimise material efficiency in order to minimise environmental impact of material use and waste-optimisation.

Product information

Specific information	Evidence (quality)
Using fewer materials, reusing existing demolition/strip-out materials and, where appropriate, procuring materials with higher levels of recycled content:	Regarding user instructions at www.fermacell.com/downloads
Adoption of alternative means of design/construction that result in lower materials usage and lower wastage levels including off-site:	-



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Waste

Wst 01: Construction waste management

→ To promote resource efficiency via the effective management and reduction of construction waste.

The credit considers firstly the amount of waste generated per 100 m² gross internal floor area, and secondly the amount of waste diverted from landfill.

Product information

Specific information	Evidence (quality)
Reduction of construction waste	Construction waste is reduced due to use of BIM and ordering of specific formats and materials
Recycling rate of construction waste	Waste from construction site can be recycled if collected separately (appr. 3% of used gypsum)

Wst 02: Recycled aggregates

→ To recognise and encourage the use of recycled and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction.

Product information

Specific information	Application, recycled content and evidence (quality)
Preconsumer recycled content (flue gas gypsum)*	28 % (Orejo) / 57 % (Münchehof, Siglingen, Wijchen)
Postconsumer recycled content*	100 % of paper fibres from waste paper in all plants corresponds to 20% over all material in final product

* **Pre-consumer material** is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. Pre-consumer waste has 50% of the weighting of post-consumer waste.

Post-consumer material is defined as waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose.

Wst 06: Functional adaptability

→ To recognise and encourage measures taken to accommodate future changes of use of the building over its lifespan.

For a future change of use, the gypsum fibreboards can be removed without affecting the structure of building.



Pollution

Not relevant for this product, because the tiles are not emitting any substances.

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General Information

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Email:	fermacell@jameshardie.de
Homepage:	www.fermacell.com
Date:	29.10.2018

Technical data

Following technical data at delivery state are relevant for the declared product:

Gypsum fibreboard	
Area weight [kg/m ²]	14.75
Density [kg/m ³]	1180
Thermal conductivity (dry)	0.32
Water vapour diffusion resistance factor	13
Moisture content at 20 °C, 65% humidity (M.-%)	1.3

Average mass shares of components:

Component	Mass share
Details see in EPD "Gypsum Fibreboard"	

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Glossary

GWP	Global warming potential
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential of land and water
EP	Eutrophication potential
POCP	Formation potential of tropospheric ozone photochemical oxidants
ADPE	Abiotic depletion potential for non-fossil resources
ADPF	Abiotic depletion potential for fossil resources
PE total	Total use of primary energy resources (=PERT+PENRT)
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	Use of net fresh water
HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for re-use
MFR	Materials for recycling
MER	Materials for energy recovery
EE	Exported energy per energy carrier
BUG	<p>Building User Guide: Dedicated building/site specific guidance for the non-technical building user. The purpose of the guide is to help building users access, understand and operate the building efficiently and in a manner in keeping with the original design intent. A Building User Guide will provide easily accessible and understandable information relevant to the following stakeholders:</p> <ul style="list-style-type: none">- The building's staff (or where relevant residents)- The non-technical facilities management team/building manager- Other building users, e.g. visitors/community users

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