



# Brucha Product sustainability fact sheet

## Product information for the building certification scheme LEED v4® (Leadership in Energy and Environmental Design)

The intention of this document is to support project teams pursuing LEED v4 certification by providing an overview of how your products contribute to LEED v4 credits. Basis of this information is LEED v4 credit library (2014 -07)<sup>1</sup>

# Brucha panels for roofing – Mineral wool

## General Information

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Date:	21.08.2015

## Product information

### Product description

The sandwich panels for roofs – BRUCHAPaneel roof panels – DP-F consist of a supporting core made of mineral wool panels (MIWO) connected to colour-coated metal face sheets in a resistant manner. The metal face sheets are protected against corrosion by means of zinc plating and organic coating. The panels are pre-fabricated double skin steel faced sandwich panels with a core made of mineral wool used for load-bearing, self-supporting and non-supporting application in roof structures. The panels are manufactured with an overall width of up to 1,000 mm and a thickness of up to 242 mm. Brucha panels are self-supporting double skin metal faced insulating panels according to DIN EN 14509. The BRUCHAPaneel roof panels – DP-F are non-flammable according to fire classification A2-s1, d0. The mineral wool insulation core fulfills the fire behaviour requirements according to classification A1 as per DIN EN 13501-1.

### Application

The factory-made sandwich panels can be used for bearing, self-supporting and non-supporting applications. They provide sound, thermal and moisture protection while creating an airtight building envelope. The roof angle must be at least 5% (>3°).

### Technical data

The thickness of element can vary between 102 and 242 mm. The thickness of the steel sheets is always the same, but the thickness of the polyurethane insulation layer varies. The steel sheets can be flat or profiled. Technical specifications can be found in DIN EN 14509, DIN EN 13162 and in the general building authority approvals for sandwich panels of the respective manufacturer.

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<sup>1</sup> <http://www.usgbc.org/credits> (7/2014)

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Description	Value	Unit
Density of insulation layer	120	kg/m <sup>3</sup>
Thickness of elements	102 - 242	mm
Thickness of inner sheet cover	0.6	mm
Thickness of outer sheet cover	0.6	mm
Thermal conductivity of insulating material	0.0370	W/(mK)
Thermal transmission coefficient according to DIN EN 14509 (DP-F 102) incl. connection loss	0.60	W/(m <sup>2</sup> K)
Thermal transmission coefficient according to DIN EN 14509 (DP-F 242) incl. connection loss	0.19	W/(m <sup>2</sup> K)
Sound reduction index according to EN ISO 140-3	25	dB
Sound absorption coefficient test according to EN ISO 354 Product not perforated	0.15	%
Sound absorption coefficient test according to EN ISO 354 Product perforated	0.85 – 0.95	%

## Materials and Resources (MR)

### Summary

Materials and Resources credits encourage using sustainable building materials and reducing waste. Indoor environmental quality credits promote better indoor air quality and access to daylight and views.

### Building product disclosure and optimization - environmental product declarations

#### Intent of this credit

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts.

Product information for the declared product within this credit:

Item	Value
Critically reviewed LCA acc. to ISO 14044?	yes
Author of the LCA	thinkstep AG (formerly PE International)
Reviewer	Matthias Schulz
Download link of the document/study	<a href="http://www.brucha.at/opmodule/user/brucha-neu/dokumente/en_EPD_DPF.pdf">http://www.brucha.at/opmodule/user/brucha-neu/dokumente/en_EPD_DPF.pdf</a>
Product specific EPD (Type III, including external verification)?	yes
EPD program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin
EPD program operator country	Germany
EPD number	EPD-BRU-20130197-IBC1-DE
Declared unit	1 m <sup>2</sup>

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## Results of the LCA – ENVIRONMENTAL IMPACTS:

Declared unit: 1 m <sup>2</sup> of Brucha roof panel MW with a representative thickness of 172 mm (23.7 kg)			
Life cycle stages	PRODUCT STAGE	END OF LIFE STAGE	BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Declared life cycle stages (standard DIN EN 15804)	A1-A3	C4	D
GWP [kg CO <sub>2</sub> -eq.]	4.81E+01	8.36E-01	-1.42E+01
ODP [kg CFC11-eq.]	6.82E-07	1.56E-10	1.07E-09
AP [kg SO <sub>2</sub> -eq.]	2.20E-01	1.24E-03	-5.41E-02
EP [kg PO <sub>4</sub> <sup>3-</sup> -eq.]	2.22E-02	1.90E-04	-4.52E-03
POCP [kg ethene-eq.]	2.36E-02	3.22E-04	-8.09E-03
ADPE [kg Sb-eq.]	2.10E-03	7.29E-08	-3.83E-07
ADPF [MJ]	6.17E+02	2.72E+00	-1.33E+02

### Caption

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

## Results of the LCA – RESOURCE USE:

Declared unit: 1 m <sup>2</sup> of Brucha roof panel MW with a representative thickness of 172 mm (23.7 kg)			
Life cycle stages	PRODUCT STAGE	END OF LIFE STAGE	BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Declared life cycle stages (standard DIN EN 15804)	A1-A3	C4	D
<b>PE total [MJ]</b>	6.92E+02	3.00E+00	-1.23E+02
PERE [MJ]	3.87E+01	-	-
PERM [MJ]	0.00E+00	-	-
<b>PERT [MJ]</b>	3.87E+01	2.00E-01	2.20E+00
PENRE [MJ]	6.19E+02	-	-
PENRM [MJ]	3.39E+01	-	-
<b>PENRT [MJ]</b>	6.53E+02	2.80E+00	-1.25E+02
SM [kg]	0.00E+00	-	-
RSF [MJ]	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ]	0.00E+00	0.00E+00	0.00E+00
FW [m <sup>3</sup> ]	-	-	-

### Caption

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

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## Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

Declared unit: 1 m <sup>2</sup> of Brucha roof panel MW with a representative thickness of 172 mm (23.7 kg)			
Life cycle stages	PRODUCT STAGE	END OF LIFE STAGE	BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Declared life cycle stages (standard DIN EN 15804)	A1-A3	C4	D
HWD [kg]	-	-	-
NHWD [kg]	-	-	-
RWD [kg]	-	-	-
CRU [kg]	0	-	0
MFR [kg]	0	-	8.1
MER [kg]	0	-	14.5
EEE [MJ]	0	0	
EET [MJ]	0	0	

### Caption

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; EEE = Exported energy, electric energy, EET = Exported energy, thermal energy



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## Building product disclosure and optimization – sourcing of raw materials

### Intent of this credit

To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

Product information for the declared product within this credit:

<b>Option 1. raw material source and extraction reporting (1 point)</b>		Description / Unit
Third-party verified corporate sustainability report (CSR)?	no	
Link to download the report	-	
<b>Option 2. leadership extraction practices (1 point)</b>		Description / Unit
Participation in an extended producer responsibility program?	yes	Brucha has a corporate waste management concept, which includes a take-back system for construction waste. The document can be downloaded: <a href="http://www.brucha.at/opmodule/user/brucha-neu/dokumente/en_Abfallwirtschaftskonzept.pdf">http://www.brucha.at/opmodule/user/brucha-neu/dokumente/en_Abfallwirtschaftskonzept.pdf</a>
Bio-based products meet the Sustainable Agriculture Network's Sustainable Agriculture Standard?	No	
Wood products certified by the Forest Stewardship Council or USGBC-approved equivalent?	No	
Materials reuse	Yes	Brucha uses mineral wool and steel with a certain content of recycled material
Recycled content:	Variable	
Postconsumer recycled content of mineral wool	0.5	%
Preconsumer recycled content of mineral wool	13	%
Postconsumer recycled content of steel	100	%
Preconsumer recycled content of steel	< 10	%

## Building product disclosure and optimization – material ingredients

### Intent of this credit

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

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Product information for the declared product within this credit:

Type of reporting	Certification program (e.g. Green screen, cradle to cradle version/level, REACH)	Value/Comment
Option 1: material ingredient reporting	Health Product Declaration	Food grade certificate (Fraunhofer Institut; Report No. BR 0605-350)
	Manufacturer Inventory	no
	GreenScreen v1.2 Benchmark	no
	Cradle to Cradle Certified	no
Option 2: Material ingredient optimization	International Alternative Compliance Path – REACH Optimization	The formulation is checked according to the current REACH candidate list. The formulation does not contain any substances of very high concern. Certificates are available on request.
	USGBC approved program	no

## Indoor Environmental Quality (IEQ)

### Summary

Indoor environmental quality credits promote better indoor air quality and thermal, visual, and acoustic comfort.

### Acoustic performance

#### Intent of this credit

To provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.

Product information for the declared product within this credit:

HVAC Product	Sound reduction index Rw(C;Ctr)	Test Standard
BRUCHAPaneel MW roof DP-F	25 dB	EN ISO 140-3

Product	Sound absorption rate (100 - 5000Hz)	Test Standard
BRUCHAPaneel MW roof DP-F	0,15 %	EN ISO 354

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