

# ENVIRONMENTAL PRODUCT DECLARATION

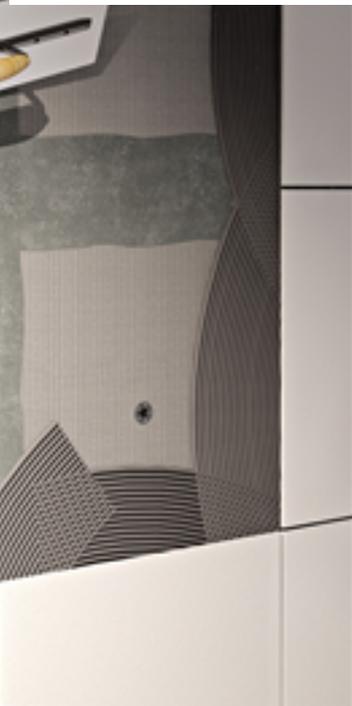
as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	<b>JACKON Insulation GmbH</b>
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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JACKOBOARD® construction board made of extruded polystyrene foam (XPS), coated on both sides with cement mortar and fibre glass weave

**JACKON Insulation GmbH**

[www.ibu-epd.com](http://www.ibu-epd.com) / <https://epd-online.com>



## 1. General Information

<p><b>JACKON Insulation GmbH</b></p> <p><b>Programme holder</b>          IBU - Institut Bauen und Umwelt e.V.          Panoramastr. 1          10178 Berlin          Germany</p> <hr/> <p><b>Declaration number</b>          EPD-JAC-20170005-IBB1-EN</p> <hr/> <p><b>This Declaration is based on the Product Category Rules:</b>          Insulating materials made of foam plastics, 07.2017          (PCR tested and approved by the SVR)</p> <hr/> <p><b>Issue date</b>          27.04.2017</p> <hr/> <p><b>Valid to</b>          26.04.2022</p> <hr/> <p></p> <hr/> <p>Prof. Dr.-Ing. Horst J. Bossenmayer          (President of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Burkhard Lehmann          (Managing Director IBU)</p>	<p><b>JACKOBOARD® Bauplatte</b></p> <p><b>Owner of the Declaration</b>          JACKON Insulation GmbH          Carl-Benz-Straße 8          33803 Steinhagen          Deutschland</p> <hr/> <p><b>Declared product / Declared unit</b>          JACKOBOARD is a polymer-modified polystyrene foam board coated in cement mortar for interior finishing use. It is manufactured by JACKON Insulation in Germany. This declaration is based on 1 square metre of JACKOBOARD board (incl. coating) that is 20 mm thick and with an average density of the XPS core of 34.84 kg/m<sup>3</sup>.</p> <hr/> <p><b>Scope:</b>          The life cycle assessment is derived from data for 2015 that was collated at JACKON's Arendsee plant in Germany.          This document is translated from the German Environmental Product Declaration into English. It is based on the German original version EPD-JAC-20170005-IBB1-DE. The verifier has no influence on the quality of the translation.          The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.</p> <hr/> <p><b>Verification</b></p> <table border="1"> <tr> <td colspan="2">The CEN Norm /EN 15804/ serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration according to /ISO 14025/</td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Prof. Dr. Birgit Grahl          (Independent verifier appointed by SVR)</p>	The CEN Norm /EN 15804/ serves as the core PCR		Independent verification of the declaration according to /ISO 14025/		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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## 2. Product

### 2.1 Product description / Product definition

JACKOBOARD® construction boards are made of extruded polystyrene foam (XPS) and coated on both sides with special mortar and fibre glass weave. XPS is a polymer foam insulating material as defined in /EN 13164/ that is made into boards with an average bulk density of 34.85 kg/m<sup>3</sup>. The imputed density of the construction board including coating is 170 kg/m<sup>3</sup>. Boards are supplied in thicknesses ranging from 4 to 100 mm and with smooth edges. (EU) Regulation 305/2011 (CPR) governs how the product is offered for sale in the EU/EFTA (excluding Switzerland). The product requires a product declaration that incorporates /EN 13164/ and the CE mark.

### 2.2 Application

Use is subject to relevant national regulations.

JACKOBOARD® construction boards can be covered with all kinds of plaster and tiles. The surfaces of the JACKOBOARD® system provide a strong primer and can be used on virtually any substrate. At the same time, they are water repellent, thermally insulating, light and compression proof.

JACKOBOARD® construction board is therefore the ideal choice for bathroom and spa areas, and particularly wet areas. It is suitable for both construction and renovation projects. It is used as a base board for tiling on walls, partition walls and floors. Further uses include as a base board for tiling and for designing spa areas, to create bathroom furniture, washstands, benches, couches, shelves and niches.

### 2.3 Technical Data

### Technical data of the XPS core\* and the construction board\*\*

Name	Value	Unit
Gross density *	>30	kg/m <sup>3</sup>
Thermal conductivity / EN 12667/ and / EN 13164/ Annex C*	0.035	W/(mK)
Deformation /EN 1605/**	≤ 5	%
Compressive stress or compressive strength when compressed 10% / EN 826/ **	200 - 300	kPa
Water vapour diffusion resistance factor /EN 12088/**	60 - 200	-
Water absorption after long-term immersion / EN 12087/*	≤ 1	Vol.-%
Dimensional stability / EN 1604/**	≤ 5	Vol.-%
Tensile strength / EN 1607/**	>200	kPa

The XPS core is manufactured in accordance with Product Standard /EN 13164/. Application as per building code test certificate

#### 2.4 Delivery status

Length: 1200 – 2600 mm/ Width: 600 and 900 mm/ Thickness: 4 – 100 mm. This declaration is based on a thickness of 20 mm.

#### 2.5 Base materials / Ancillary materials

JACKOBOARD construction board has a surface weight of 3.423 kg/m<sup>2</sup> and is comprised of the following components:

- Mortar: 2.704 kg/m<sup>2</sup>
- XPS core with 35 kg/m<sup>3</sup>: 0.630 kg/m<sup>2</sup>
- Reinforcing glass fibre weave: 0.092 kg/m<sup>2</sup>

Standard polystyrene (GPPS) [CAS 9003-53-6] with 90 – 95 mass % is the main raw material in the XPS core. A blowing agent with approx. 7 mass % is used to foam it. The blowing agent is made of carbon dioxide [CAS 124-38-9] and halogen-free co-blowing agents.

Raw materials/Auxiliary materials	Mass percentage
Polystyrene	90 – 95%
Blowing agents	5 – 8%
of which carbon dioxide	40 – 80%
of which co-blowing agents	20 – 60%
Flame retardant	0.5 – 3%
Additives (e.g. dyes)	<1%

Brominated flame retardants (CAS: 1195978-93-8, 97416-84-7, 21850-44-2) are also added. HBCD is not used in the production process. The XPS does not contain any substances of very high concern (SVHC) as defined in /REACH/. Additives comprising less than 1% (e.g. auxiliary processing agents, colourants) are also added during the extrusion process. Polystyrene and the co-blowing agents are made from crude oil and natural gas, which are piped or delivered by road to the production sites. CO<sub>2</sub> is a side product obtained from various processes and is available in unlimited quantities.

The glass fibre weave is purchased and is made of coated glass fibre.

The special mortar is made of the following base materials:

Raw materials/Auxiliary materials	Mass percentage
Cement	40%
Sand	40%
Quicklime	10%
Plaster	4%
Additives	6%

#### 2.6 Manufacture

XPS is manufactured in a continuous extrusion process that is mainly powered by electricity. Together with the auxiliary materials listed above, polystyrene granulate is melted under high pressure in the extruder. The blowing agent is added to the molten material, where it dissolves. The molten material is discharged through a wide slot die. As resistance lowers, the blowing agent foams the molten material, cooling it in the process, and the polystyrene becomes firm. The result is an endless strand of homogeneous and closed-cell rigid polystyrene foam, which cools down further, before the extrusion skin is removed. To apply the mortar coating, the mortar is mixed with water and applied to the XPS core together with the glass fibre weave. The boards are then left to dry before being cut to size. They are then packed on pallets and wrapped in polyester film.

Waste and reject XPS from the manufacturing process can be recycled straight back into XPS production. Because polystyrene is a thermoplastic, it is easy and cheap to recycle by melting it down.

#### 2.7 Environment and health during manufacturing

No further measures extending beyond national occupational safety regulations are required to protect the health of the workforce at any of the steps in the JACKOBOARD manufacturing process.

The production site is /ISO 14001/ and /ISO 9001/ certified.

#### 2.8 Product processing/Installation

Literature, installation instructions and product data sheets issued by JACKON Insulation contain installation recommendations tailored to specific products and applications. They can be obtained directly from the manufacturer or are available on the internet. There is no need to wear any specific personal protective equipment when working with JACKOBOARD. Left-over JACKOBOARD cutting waste should be collected separately and disposed of properly.

#### 2.9 Packaging

The packaging is made of polyethylene film, which should be collected separately and disposed of properly. The polyethylene can then be recycled.

#### 2.10 Condition of use

Once installed, all material components are resistant to aging and moisture, thus sustaining the insulation performance and mechanical properties unchanged

over the entire service life.

### 2.11 Environment and health during use

In most applications, JACKOBOARD does not come into direct contact with the environment nor indoor air. According to recognised measurements by /AgBB/ and others, the potential health hazard associated with using JACKOBOARD for interior insulation is negligible (see 7.1 VOC emissions).

### 2.12 Reference service life

The service life of JACKOBOARD is the same as the building component in which it has been installed, due to its outstanding mechanical strength and resistance to water.

### 2.13 Extraordinary effects

#### Fire

JACKOBOARD is classified as Euroclass E according to /EN 13501-1/.

#### Fire protection

Name	Value
Building material class nach /DIN EN 13501-1/	E
Burning droplets	-
Smoke gas development	-

#### Water

JACKOBOARD is chemically neutral, not water soluble, and if used for the intended purpose does not release any water-soluble substances that might pollute groundwater, rivers or oceans. Water or water vapour has virtually no impact on the thermal conductivity of XPS.

#### Mechanical destruction

Not relevant for JACKOBOARD with its outstanding mechanical properties.

### 2.14 Re-use phase

The manufacturer recommends thermal recycling when disposing of the product. The energy contained in the foam can be recovered thanks to its calorific value, which eliminates the need for additional auxiliary firing in waste incinerators. 1 kg of rigid XPS foam contains as much energy as about 1.1 litres of heating oil. In addition, the waste heat from the incineration process can be used to generate electricity and feed district heating systems.

### 2.15 Disposal

Waste code as per European Waste Catalogue / Ordinance on the Implementation of the European Waste Catalogue [*Abfallverzeichnis-Verordnung*; /AVV/]:  
17 06 04 Insulation materials other than those mentioned in 17 06 01 and 17 06 03.

### 2.16 Further information

More information can be found at [www.jackon-insulation.com](http://www.jackon-insulation.com)

## 3. LCA: Calculation rules

### 3.1 Declared Unit

This declaration is based on 1 m<sup>2</sup> of JACKOBOARD construction board, consisting of an 18.5 mm thick XPS board coated on both sides with reinforcing glass fibre weave and mortar, both with a thickness of 0.75 mm. The surface weight is 3.42 kg/m<sup>2</sup>.

#### Declared Unit

Name	Value	Unit
Declared unit	1	m <sup>2</sup>
Conversion factor to 1 kg	0.292	-
Gross density	170	kg/m <sup>3</sup>
Declared unit	0.02	m <sup>3</sup>

Type of declaration according to /PCR Part A/:

1a) Declaration for a specific product from a manufacturer's plant

### 3.2 System boundary

Type of EPD: Cradle to gate (A1-A3) – with options  
The life cycle assessment analyses the following sections in the life cycle:

- Raw material supply (extraction and processing) (A1)
  - Transport to manufacturer (A2)
  - Manufacture of JACKOBOARD (A3)
  - Manufacture of packaging (A3)
  - Transport to place of utilisation (A4)
  - Waste disposal (C4) with two scenarios:
1. Thermal recycling (EoL1) in a plant with efficiency

R1 of less than 0.6

2. Landfill (EoL2)

· Recovery and recycling potential (D) - outside the system boundaries

### 3.3 Estimates and assumptions

The environmental profile of the flame retardant is based on thoroughly researched estimation derived from literature, especially /Ullmanns/.

In the absence of data and in light of their immateriality for environmental performance, the processes of weighing and mixing the mortar at the supplier's plant have been ignored.

For disposal purposes, a transportation distance of 500 km to the installation site has been assumed for both EoL scenarios.

### 3.4 Cut-off criteria

All material data relating to the production of both the XPS and the subsequent coating, including raw materials, electricity consumption, waste and packaging, have been incorporated into the analysis. Individual additives (pigments) with minimal mass percentage have not been analysed separately; instead, they are included as an estimation in the polystyrene calculation. All of these additives together account for less than 1% of the XPS formula. The coating materials have been included in full.

### 3.5 Background data

Data from the GaBi ts database was used as the background data /GaBi 2016/. Documentation of the

individual background datasets is described at [www.gabi-software.com/databases](http://www.gabi-software.com/databases).

### 3.6 Data quality

The production data – such as raw material quantities and electricity consumption – is derived from measurements taken at the Arendsee site of JACKON Insulation GmbH.

The mass and energy data have been checked for plausibility. The software model built for the study was checked by the in-house quality assurance function. The data quality can be described as good. The foreground data have been carefully incorporated and all relevant energy and material flows considered. The life cycle inventories of the background processes, such as external electricity generation and base materials used in the formula, were taken from the /GaBi ts/ database, which was last revised in 2016. In the case of three data inventories with minor impact on environmental performance, datasets for similar chemicals were used for approximation purposes or existing datasets were combined for estimation purposes.

### 3.7 Period under review

The data is based on manufacturing information from 2015.

### 3.8 Allocation

#### Allocation in the foreground data

In addition to the analysed product, the overall production at JACKON includes further XPS products of different densities and shapes. When collecting the data, the figures for thermal and electrical energy and auxiliary materials were based accordingly on the subject product of this declaration. Allocation can be by mass, surface area, quantity or time spent in the machine, depending on the process step.

Expenses incurred in XPS production (uncoated JACKOBOARD) – primarily energy, raw and auxiliary materials – are distributed by mass.

The coating materials and energy used in JACKOBOARD production are allocated by surface area. Product packaging is allocated by volume.

#### Waste allocation

Relative to product output, approx. 6% inert production waste is generated, which is disposed of in a landfill. This waste is mostly mortar.

The environmental impacts associated with the incineration of the product in the EoL1 scenario are allocated to C4; the resulting benefit in terms of thermal and electrical energy is declared in D1.

This benefit is calculated on the basis of German averages for electricity and thermal energy derived from natural gas.

#### Allocation in upstream processes

Allocation for all refinery products is based on mass and lower calorific value. The environmental impacts of production are specifically calculated for each refinery product.

In the case of other materials whose inventories are used to calculate production, the most suitable allocation rules in each case are applied. Information about the individual datasets can be found at <http://www.gabi-software.com/databases>.

### 3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account. /GaBi ts/ is used as the background database.

## 4. LCA: Scenarios and additional technical information

The following technical information forms the basis for the declared modules or can be used to develop specific scenarios in a building assessment context if modules are not declared (MND).

#### Transport to the building site (A4)

Name	Value	Unit
Transport distance	500	km
Capacity utilisation (including empty runs) nach Masse	50	%
Gross density of products transported	170	kg/m <sup>3</sup>
Capacity utilisation volume factor	0.75	-

#### End of life (C1-C4)

Two EoL scenarios have been analysed: Scenario 1 analyses the environmental impact of product incineration, while Scenario 2 examines the landfill cost.

Name	Value	Unit
Collected separately	0	kg
Collected as mixed construction waste JACKOBOARD board	3.42	kg
Reuse	0	kg
Recycling	0	kg
Energy recovery To energy recovery (Scenario 1), 2.75 kg	0.67	kg

subsequently to landfill		
Landfilling (Scenario 2)	3.42	kg

#### Reuse, recovery and recycling potential (D), relevant scenario details

D/1 considers the potential benefit of incinerating the XPS boards at their end of life.

## 5. LCA: Results

The following tables list the environmental impacts and inventory parameters according to /EN 15804/ over the life cycle of 1 m<sup>2</sup> of JACKOBOARD. Two EoL scenarios are shown in modules C4 and D. C4/1 and D1 are based on thermal recycling, while C4/2 and D2 on landfill after end of life.

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE					CONSTRUCTION PROCESS STAGE	USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	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	
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	X	

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m<sup>2</sup> JACKOBOARD 20 mm thick (3,42 kg/m<sup>2</sup>)

Parameter	Unit	A1-A3	A4	C2	C4/1	C4/2	D/1	D/2
GWP	[kg CO <sub>2</sub> -Eq.]	4.77	0.16	0.04	2.15	0.06	-1.09	0.00
ODP	[kg CFC11-Eq.]	1.05E-8	1.01E-13	7.36E-14	9.55E-13	5.41E-13	-3.34E-11	0.00E+0
AP	[kg SO <sub>2</sub> -Eq.]	1.02E-2	3.54E-4	8.63E-5	3.85E-4	3.29E-4	-1.16E-3	0.00E+0
EP	[kg (PO <sub>4</sub> ) <sup>3-</sup> -Eq.]	1.17E-3	7.77E-5	2.16E-5	6.19E-5	4.48E-5	-1.80E-4	0.00E+0
POCP	[kg ethene-Eq.]	2.61E-3	-1.23E-4	-2.79E-5	4.05E-5	3.17E-5	-1.27E-4	0.00E+0
ADPE	[kg Sb-Eq.]	1.74E-5	5.60E-9	2.69E-9	3.59E-8	1.90E-8	-2.73E-7	0.00E+0
ADPF	[MJ]	88.95	2.17	0.48	0.80	0.71	-14.08	0.00

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: 1 m<sup>2</sup> JACKOBOARD 20 mm thick (3,42 kg/m<sup>2</sup>)

Parameter	Unit	A1-A3	A4	C2	C4/1	C4/2	D/1	D/2
PERE	[MJ]	7.96	0.01	0.03	0.11	0.08	-2.81	0.00
PERM	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	[MJ]	7.96	0.01	0.03	0.11	0.08	-2.81	0.00
PENRE	[MJ]	59.77	2.18	0.49	27.69	0.74	-15.78	0.00
PENRM	[MJ]	33.70	0.00	0.00	-26.84	0.00	0.00	0.00
PENRT	[MJ]	93.47	2.18	0.49	0.85	0.74	-15.78	0.00
SM	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	[MJ]	4.71E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	4.95E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m <sup>3</sup> ]	1.61E-2	9.68E-6	4.98E-5	4.12E-3	1.51E-4	-2.11E-3	0.00E+0

Caption: 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

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

1 m<sup>2</sup> JACKOBOARD 20 mm thick (3,42 kg/m<sup>2</sup>)

Parameter	Unit	A1-A3	A4	C2	C4/1	C4/2	D/1	D/2
HWD	[kg]	2.63E-4	7.68E-10	6.25E-8	7.21E-8	1.69E-8	-9.97E-9	0.00E+0
NHWD	[kg]	3.13E-1	1.62E-5	6.00E-5	2.81E+0	3.43E+0	-7.44E-3	0.00E+0
RWD	[kg]	1.81E-3	2.01E-6	6.57E-7	1.87E-5	1.02E-5	-6.76E-4	0.00E+0
CRU	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	[MJ]	0.00	0.00	0.00	3.29	0.00	0.00	0.00
EET	[MJ]	0.00	0.00	0.00	7.98	0.00	0.00	0.00

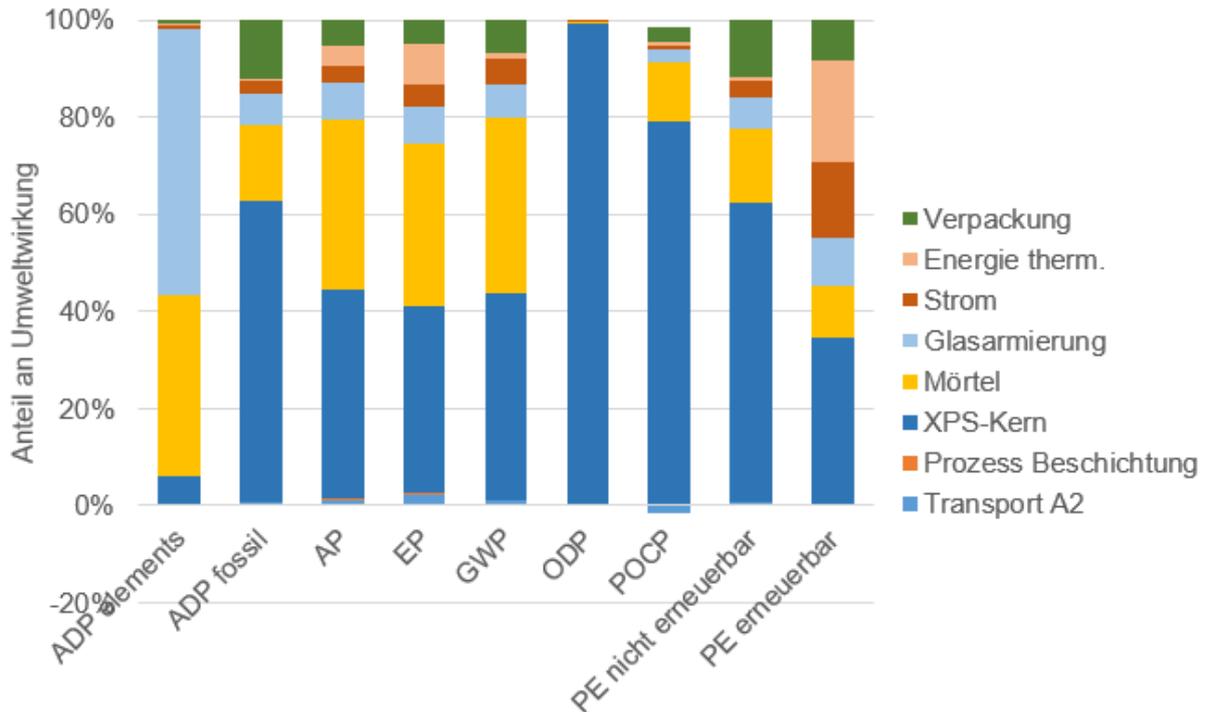
Caption: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

## 6. LCA: Interpretation

As shown in the inventory analysis, the manufacturing process mainly comprises the use of materials for the XPS core, mortar and glass fibre reinforcement, as well as energy usage, and packaging and transport

cost. The following chart shows the percentage shares of how the individual processes and materials influence the analysed environmental impacts.

## Relative Beiträge für die Herstellung von 1 m<sup>2</sup> JACKOBOARD



In most of the impact categories, the production of the XPS core is significant. The impacts are mainly caused by polystyrene, the input product. The energy used to manufacture the XPS core is also significant to a certain extent, especially in the categories of greenhouse gas (GWP) and acidification (AP) potential.

The manufacture of the raw materials for the mortar significantly impacts the categories AP, eutrophication potential (EP), abiotic element depletion potential (ADPe) and GWP. The environmental impacts are mainly caused by the cements that are used, primarily calcium-aluminium cement.

Reinforcing glass fibre weave – the third raw material – only impacts the environmental profile to a minor extent. ADPe is the only exception, where the impact comes from the use of colemanite in the manufacture of glass.

Packaging materials, transport and the energy used in coating the insulation boards are all of minor importance for the environmental profile. The impact of waste and operating materials allocated to the coating process is marginal.

### Entire life cycle

If the entire life cycle is analysed, it is, as expected, the manufacturing module A1 - A3 within the life cycle that produces the most environment impact. The impact of incinerating the insulation board is also significant, especially in respect of GWP and AP. The calorific value of the XPS core produces a negative GWP value in module D.

## 7. Requisite evidence

JACKOBOARD products are designed for interior use. Contact with indoor air is unlikely as the JACKOBOARD construction board is protected by systems.

### 7.1 VOC emissions

Volatile organic compound (VOC) emissions of JACKOBOARD were tested in accordance with the /AgBB/ scheme by Eurofins Product Testing in Denmark in January 2012. The tested product was classified compliant with the requirements of /DIBt/ and AgBB for use indoors.

### VOC Emissions

Name	Value	Unit
------	-------	------

TVOC (C6 - C16)	< 1000	µg/m <sup>3</sup>
Sum SVOC (C16 - C22)	< 100	µg/m <sup>3</sup>
R (dimensionless)	< 1	-
VOC without NIK *	< 100	µg/m <sup>3</sup>
Carcinogenic Substances	none detected	µg/m <sup>3</sup>

\*) NIK = lowest (toxicological) concentration of interest

### 7.2 Leaching

Examinations of leaching behaviour are not relevant for the JACKOBOARD construction board since the product is not designed for applications involving contact with rain or groundwater.

## 8. References

Institut Bauen und Umwelt e.V., Berlin(pub.):  
Generation of Environmental Product Declarations  
(EPDs);

**General Principles**

for the EPD range of Institut Bauen und Umwelt e.V.  
(IBU), 2013/04  
[www.ibu-epd.de](http://www.ibu-epd.de)

**/ISO 14025/**

DIN EN /ISO 14025:2011-10/, Environmental labels  
and declarations — Type III environmental  
declarations — Principles and procedures

**/EN 15804/**

/EN 15804:2012-04+A1 2013/, Sustainability of  
construction works — Environmental Product  
Declarations — Core rules for the product category of  
construction products

**AgBB**

Ausschuss zur gesundheitlichen Bewertung von  
Bauprodukten, Berlin  
(Committee for assessing the health impacts of  
construction products, Berlin)

**DIBt**

Deutsches Institut für Bautechnik, Berlin  
(German institute for construction technology, Berlin)  
[www.dibt.de](http://www.dibt.de)

**Eurofins Product Testing**

Danish laboratory Eurofins Product Testing A/S;  
Smedeskovvej 38  
8464 Galten, Denmark; <http://www.eurofins.com>

**PCR Part A**

PCR - Part A: Calculation rules for the Life Cycle  
Assessment and Requirements on the Background  
Report, Institut Bauen und Umwelt e.V., 2016  
[www.bau-umwelt.com](http://www.bau-umwelt.com)

**PCR Part B**

Product Category Rules for construction products, Part  
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Institut Bauen und Umwelt e.V.  
Panoramastr. 1  
10178 Berlin  
Germany

Tel +49 (0)30 3087748- 0  
Fax +49 (0)30 3087748- 29  
Mail [info@ibu-epd.com](mailto:info@ibu-epd.com)  
Web [www.ibu-epd.com](http://www.ibu-epd.com)

**Programme holder**

Institut Bauen und Umwelt e.V.  
Panoramastr 1  
10178 Berlin  
Germany

Tel +49 (0)30 - 3087748- 0  
Fax +49 (0)30 - 3087748 - 29  
Mail [info@ibu-epd.com](mailto:info@ibu-epd.com)  
Web [www.ibu-epd.com](http://www.ibu-epd.com)



thinkstep

**Author of the Life Cycle****Assessment**

thinkstep AG  
Hauptstraße 111  
70771 Leinfelden-Echterdingen  
Germany

Tel +49 711 341817-0  
Fax +49 711 341817-25  
Mail [info@thinkstep.com](mailto:info@thinkstep.com)  
Web [www.thinkstep.com](http://www.thinkstep.com)

**Owner of the Declaration**

JACKON Insulation GmbH  
Carl-Benz-Straße 8  
33803 Steinhagen  
Germany

Tel +49 5204 9955-0  
Fax +49 5204 9955-400  
Mail [info@jackon.com](mailto:info@jackon.com)  
Web [www.jackon-insulation.com](http://www.jackon-insulation.com)