ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	**STEICO SE**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-STE-20150327-IBD1-EN
Issue date	05.02.2016
Valid to	04.02.2021

Wood fibre insulation materials

STEICO SE

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com

1. General Information

STEICO SE

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-STE-20150327-IBD1-EN

This Declaration is based on the Product Category Rules:
Wood based panels, 07.2014
(PCR tested and approved by the SVR)

Issue date
05.02.2016

Valid to
04.02.2021

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Burkhart Lehmann
(Managing Director IBU)

Wood Fibre Insulation Materials

Owner of the Declaration
STEICO SE
Otto-Lilienthal-Ring 30
D-85622 Feldkirchen

Declared product / Declared unit
1 m³ wood fibre insulation material

Scope:
This Declaration is an EPD which reflects an average product of different product ranges which are produced in the following factory:

STEICO SE, Route de Cocumont, 47700 Casteljaloux, France

The following products were included in the calculation of the average:

- STEICOflex
- STEICOtherm
- STEICOtherm internal
- STEICOthermSD
- STEICOunderfloor
- STEICOfloor
- STEICOisorel
- STEICOroof
- STEICOprotect M
- STEICOprotect H
- STEICOuniversal
- STEICOspecial

This document is translated from the German Environmental Product Declaration into English. It is based on the German original version EPD-STE-20150327-IBD1-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.

Verification

The CEN Norm /EN 15804/ serves as the core PCR

Independent verification of the declaration according to /ISO 14025/

☐ internally ☒ externally

Prof. Dr. Birgit Grahl
(Independent verifier appointed by SVR)

2. Product

2.1 Product description

This Declaration describes a production volume-weighted average of the wood fibre insulation materials STEICOflex, STEICOtherm, STEICOtherm internal, STEICOtherm SD, STEICOfloor, STEICOisorel, STEICOroof, STEICOunderfloor, STEICOprotect M/H, STEICOuniversal and STEICOspecial, which are produced in both wet and dry processes.

The wood fibre insulation materials specified in the Declaration are used uniformly in accordance with DIN EN 13171 as insulating boards and as insulating mats for buildings.

2.2 Application

The products specified under 2.1 are not only pressure-resistant wood fibre insulation boards produced using the wet process, but also mat-shaped

wood fibre insulation mats produced using the dry process.
STEICO wood fibre insulation is highly versatile and can be used for wall, roof and floor systems. It can be used as an acoustic base insulation against impact and airborne sound below parquet or laminate floors, as an insulation element that can be directly plastered for composite thermal insulation systems, and as flexible cavity insulation.

2.3 Technical Data

The following information refers to the STEICOtherm product range. Information about further products specified within the scope of this EPD can be viewed at www.steico.net.

Technical construction data

Name	Value	Unit
Gross density in acc. with /DIN EN 1602/	50-265	kg/m³
Material dampness at delivery in acc. with /DIN EN 13171/	6	%
Tensile strength rectangular in acc. with /DIN EN 13171/	0.025	N/mm²
Thermal conductivity declared value acc. to /DIN EN 13171/	0.038	W/(mK)
Water vapour diffusion resistance factor in acc. with /DIN EN 13171/	5	-
Specific thermal capacity	2100	J/(kgK)
Reaction to fire class in acc. with /DIN EN 13501-1/	E	
Compressive stress at 10% deformation in acc. with /DIN EN 13171/	50	kPa

2.4 Placing on the market / Application rules

Directive (EU) No. 305/2011 applies for placing the product on the market in the EU/EFTA (except Switzerland). STEICO wood fibre insulation materials require a Declaration of Performance taking consideration of the harmonised product standard

EN 13171:2012 thermal insulation materials for buildings - Factory-made wood fibre (WF) products - Specification (STEICOflex, STEICOtherm, STEICOtherm internal, STEICOthermSD, STEICOisorel, STEICOroof, STEICOprotect M, STEICOprotect H, STEICOuniversal and STEICOspecial)

and

EN 13986:2015, Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking (STEICOisorel, STEICOunderfloor) and CE marking.

The relevant national provisions apply for the use of the products, the General building inspection approval (abZ) No. Z-23.15-1452 of the German Institute for Building Technology (DIBt), Berlin apply in Germany for STEICO wood fibre insulation materials in acc. with EN 13171.

Further application standards:

- DIN 4108-10:2008-06, Thermal insulation and energy economy in building
- DIN EN 622-4:2009, Fibre boards
- DIN EN 14964:2006, Rigid underlays for discontinuous roofing
- Information sheet SIA 2001:2013, Thermal insulation materials
- ACERMI: Association pour la certification des matériaux isolants
- ÖNORM B 6000:2010, Factory made materials for thermal and/or acoustic insulation in building construction
- BBA: British Board of Agrément, technical approvals for construction

2.5 Delivery status

The following dimensions refer to the STEICOtherm product. Information about further products specified within the scope of this EPD can be viewed at www.steico.net.
Board thickness: 10 - 200 mm
Length x Width [mm] 1350 x 600
Board thickness: 100 - 160 mm
Length x Width [mm] 1880 x 600

2.6 Base materials / Ancillary materials

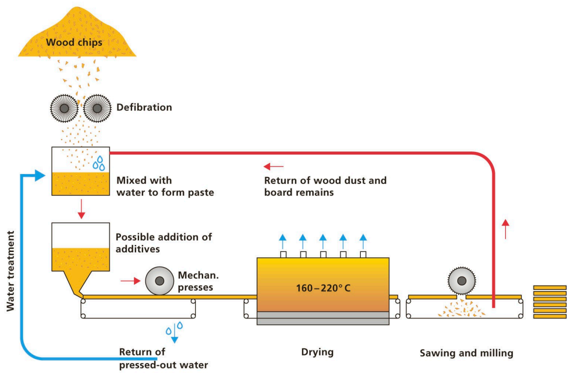
Apart from wood fibres, wood fibre insulation materials consist of binding agents and other additives. The proportions averaged from the various products for the Environmental Product Declaration are:

- wood, primarily coniferous wood: 82.8 %
- water: 6.0 %
- adhesives 1.2 %
- bi-component fibres 1.3 %
- recycled paper 6.3 %
- flame retardants 2.4 %
- miscellaneous 0.1 %

Polyurethane, phenolic resin, sodium silicate and paraffin are used as adhesives and for hydrophobic treatment. The bi-component fibres consist of polyethylene and polypropylene. Aluminium sulphate is used as a flame retardant. The apparent density of the declared average wood fibre insulation material is 157.49 kg.

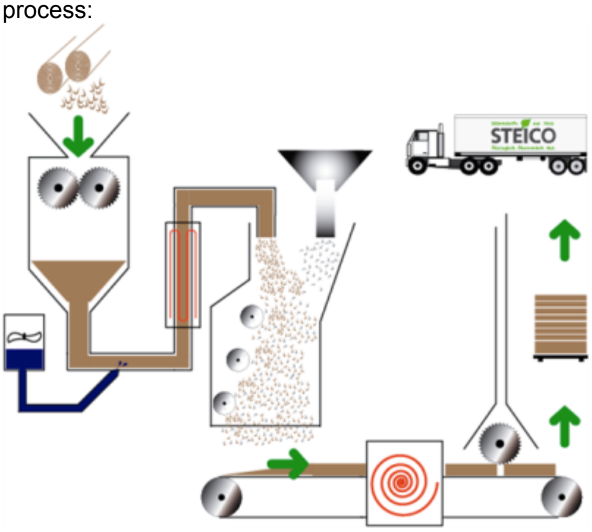
2.7 Manufacture

Explanation of the production sequence using the wet process:



- processing of the raw timber to form wood chips
- heating of the wood chips under steam pressure
- defibration of the wood chips through a defibration process
- mixing of the fibres with water to form a fibre paste (if required with the addition of the necessary additives)
- formation of the board through pressing
- cutting the board longitudinally
- drying the boards (160°C – 200°C)
- gluing, cutting and profile creation (product-dependent)
- stacking, packaging

Explanation of the production sequence using the dry process:



- processing of the raw timber to form wood chips
- heating of the wood chips under steam pressure
- defibration of the wood chips through a defibration process
- drying of the fibres in the cyclone dryer
- addition of the bi-component fibres
- submitting the mixture to the production line
- heating and tracing the mixture to form an insulating mat
- cutting the wood fibre insulation to size
- stacking, packaging

All of the residual products accumulated during production are either redirected into the production process or are directed to an internal energy recovery process.

Quality assurance systems:

- CE marking in acc. with DIN EN 13171, MPA North Rhine-Westphalia, Germany
- FSC - SGSCH-COC-050039
- DIN EN ISO 9001:2008 - 1210019741

2.8 Environment and health during manufacturing

Health protection
Owing to the manufacturing conditions, no other health protection measures are required beyond the statutory and other regulations.

Environmental protection
Air: Waste air generated during production is cleaned in accordance with statutory specifications.

Water/Soil: No direct pollution of water or soil is caused by the production process. Production-related waste water is treated internally and redirected to production.

2.9 Product processing/Installation

Depending on the board type, STEICO wood fibre insulation materials can be processed using standard woodworking tools (handsaw, insulation knife, circular saw, band saw etc.). Insofar as processing is effected without dust extraction, the use of breathing protection measures is recommended.
Neither the processing nor the installation of STEICO wood fibre insulation materials leads to environmental pollution. As far as environmental protection is concerned, no additional measures are required.

2.10 Packaging

For the packaging of STEICO wood fibre insulation materials, foils made of polyethylene, stickers and wood are used. All packing materials are recyclable if unmixed, and/or can be recovered as energy.

2.11 Condition of use

The ingredients listed under 2.6 apply for the average product under review. The proportions of the ingredients vary depending on the product range.

During use, approx. 65 kg of carbon is bound in the product. This corresponds to 239 kg of CO_2 for full oxidation.

2.12 Environment and health during use

Environment: When STEICO wood fibre insulation materials are used correctly, there is no hazard potential for water, air or soil according to the current state of knowledge (Test report by the Institut für Baubiologie (Institute for Building Biology), Rosenheim, D) (see verification in Chapter 7).

Health: When STEICO wood fibre insulation materials are installed correctly, no health risks or impairments are to be expected. It is possible that small quantities of product substances may escape. Moreover, no health-relevant emissions were detected (Test report by the Institut für Baubiologie (Institute for Building Biology), Rosenheim, D) (see verification in Chapter 7).

To guarantee overfulfilment of the statutory limit values for emissions, radioactivity, VOCs etc., STEICO wood fibre insulation materials are externally tested for these (Test report by the Institut für Baubiologie (Institute for Building Biology), Rosenheim, D) (see verification in Chapter 7).

2.13 Reference service life

On account of the many different possible applications for STEICO wood fibre insulation, no reference service life is declared.
Strength in condition of use for STEICO wood fibre insulation is defined through the application classes in acc. with DIN EN 13171 and DIN EN 622-4. The average service life is in the order of that of the building.
Influences on ageing when the recognised rules of technology are applied.

2.14 Extraordinary effects

Fire
Information in acc. with /DIN EN 13501-1/
Brandschutz

Name	Value
Building material class in acc. with /DIN EN 13501-1/	E

Water
STEICO wood fibre insulation materials have no soluble ingredients that are hazardous to water. Wood fibre insulation materials are not permanently resistant to standing water. Depending on the damage symptoms, damaged areas must be replaced, either partially or extensively.

Mechanical destruction
The product is mechanically resistant (pressure, tensile load) depending on the insulation material used. In the event of damage, uneven soft breakage occurs.

2.15 Re-use phase

When dismantled without damage, STEICO wood fibre insulation materials may be re-used for the same application after the end of utilisation, or may be re-used in the same application spectrum in an alternative location. Insofar as the wood fibre insulation materials are not contaminated, the raw material can easily be materially recycled and recovered (e.g. re-admission to the production process).

2.16 Disposal

Per kg of wood fibre insulation, STEICO wood fibre insulation materials can be used as renewable energy sources with a calorific value of approx. 19.3 MJ/kg (u = 35%), e.g. for burning in waste incineration plants. Process energy as well as electricity can be generated.

European Waste Catalogue (EWC) 030105

2.17 Further information

Detailed information about the products of STEICO SE (processing, parameters, approvals) can be found at www.steico.net.

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1m³ wood fibre insulation material with an average apparent density of 157.49 kg.

The calculation of the apparent density and of the proportions of the product substances in the declared unit was effected by means of the production volume-weighted calculation of the average of the products manufactured in the plant.

Details on declared unit

Name	Value	Unit
Declared unit	1	m^3
Conversion factor to 1 kg	0.00635	-
Mass reference	157.49	kg/m^3

3.2 System boundary

The declaration type corresponds to an EPD "from cradle to gate, with options". It includes the production stage, i.e. from provision of the raw materials through to the works gate of the door factory (cradle to gate, Modules A1 to A3), and parts of the end-of-life stage (Modules C2 to C4). It also contains an analysis of the potentials and debits over and beyond the product's entire life cycle (Module D).
The information module A1 comprises the provision of all semi-finished goods that can be found in the declared unit as material. Transportation of these substances is considered in Module A2. Module A3 contains all work and expenditures of the manufacture of the product and its packaging from the cradle to the gate, except the aspects already considered in modules A1 and A2. Module C2 describes the transportation as far as the disposal or recycling point, Module C3 the preparation work which makes thermal recycling possible. Furthermore, the CO2 equivalents of the carbon inherent in the wood in the product, as well as the renewable and non-renewable primary energy sources in the product (PERM and PENRM), are booked as outflows in Module C3, in accordance with EN 16485. The debits and potentials resulting from the end-of-life thermal utilisation of the product and its packaging are analysed in Module D.

3.3 Estimates and assumptions

As a general rule, all of the material and energy flows for the processes required for production are established on site. Nitrogen and carbon monoxide emissions are also established site-specifically. All other emissions were calculated on the basis of published studies - as described in Rüter & Diederichs 2012.

STEICO
natürlich besser dämmen

3.4 Cut-off criteria
No known material or energy flows were ignored, not even those below the 1 % limit. The total amount of ignored input flows is thus definitely below 5 % of the energy and mass applied.

3.5 Background data
All background data come from the database /GaBi Professional 6 Version 6.4120/ and /ecoinvent 2.2/.

3.6 Data quality
The data were collected at the production location in the period 2013/14. The data obtained were validated on a mass basis and according to plausibility criteria. With the exception of 2 data sets, all background data were taken from the database GaBi Professional (6.108), which was last updated in 2013 The provision of forest wood was taken from a 2008 publication which is essentially based on information from 1994 to 1997.

3.7 Period under review
The data were recorded for the period 01.07.2013 to 30.06.2014. All production data collected thus refer to a production duration of 12 months.

3.8 Allocation
No co-product allocations occur in the entire modelling process.
Credits from the thermal utilisation of production waste are taken into account in Module A3.

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.

4. LCA: Scenarios and additional technical information

End of Life (C2-C4)
After demolition of the building, it is assumed for waste wood removed from it that it is initially transported across a distance of 20 km to the next user (C2) where it is crushed and sorted (C3). Waste wood is recycled (D) and not disposed of. No expenses are therefore incurred in Module C4.

Name	Value	Unit
Energy recovery	157.4	kg

Re-use, recovery and recycling potential (D), relevant scenario information

The product is recycled in the form of waste wood in the same composition as the declared unit at the end-of-life stage. Thermal recovery in a bio-mass power station with an overall degree of efficiency of 35% and electrical efficiency of 23% is assumed, whereby incineration of 1 tonne wood (atro) (at 18% wood moisture content) generates approx. 1231 kWh electricity and 2313 MJ useful heat. The exported energy substitutes fuels from fossil sources, whereby it is alleged that the thermal energy is generated from natural gas and the substituted electricity complies with the German power mix for 2009.

5. LCA: Results

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m³ wood fibre insulation

Parameter	Unit	A1	A2	A3	C2	C3	D
Global warming potential	[kg CO_2-Eq.]	-2.21E+2	3.67E-1	4.75E+1	1.58E-1	2.40E+2	-3.03E+1
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6.00E-7	7.33E-10	1.85E-7	3.16E-10	1.21E-8	-2.41E-7
Acidification potential of land and water	[kg SO_2-Eq.]	5.20E-2	1.58E-3	2.52E-1	6.79E-4	2.21E-3	-1.27E-2
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	9.36E-3	3.65E-4	6.01E-2	1.57E-4	2.36E-4	6.33E-3
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	9.42E-3	1.73E-4	5.81E-2	7.45E-5	1.76E-4	-1.71E-3
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	1.76E-5	7.81E-9	1.93E-5	3.36E-9	4.81E-7	-9.69E-6
Abiotic depletion potential for fossil resources	[MJ]	2.85E+2	5.16E+0	6.18E+2	2.22E+0	8.96E+0	-4.24E+2

RESULTS OF THE LCA - RESOURCE USE: 1 m³ wood fibre insulation

Parameter	Unit	A1	A2	A3	C2	C3	D
Renewable primary energy as energy carrier	[MJ]	8.74E+0	6.86E-3	1.18E+3	2.95E-3	6.32E+0	2.36E+3
Renewable primary energy resources as material utilization	[MJ]	2.51E+3	0.00E+0	1.49E+1	0.00E+0	-2.53E+3	0.00E+0
Total use of renewable primary energy resources	[MJ]	2.52E+3	6.86E-3	1.19E+3	2.95E-3	-2.52E+3	2.36E+3
Non-renewable primary energy as energy carrier	[MJ]	1.22E+2	5.20E+0	1.52E+3	2.24E+0	7.34E+1	-2.06E+3
Non-renewable primary energy as material utilization	[MJ]	1.77E+2	0.00E+0	0.00E+0	0.00E+0	-1.77E+2	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	2.99E+2	5.20E+0	1.52E+3	2.24E+0	-1.03E+2	-2.06E+3
Use of secondary material	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	-	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-
Use of non-renewable secondary fuels	[MJ]	-	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-
Use of net fresh water	[m³]	4.58E+0	9.75E-5	2.10E+2	4.20E-5	1.48E+1	-3.17E-1

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m³ wood fibre insulation

Parameter	Unit	A1	A2	A3	C2	C3	D
Hazardous waste disposed	[kg]	1.68E-3	0.00E+0	1.13E-5	0.00E+0	0.00E+0	-3.82E-4
Non-hazardous waste disposed	[kg]	8.84E-4	0.00E+0	3.40E-2	0.00E+0	0.00E+0	6.85E-8
Radioactive waste disposed	[kg]	4.35E-3	9.16E-6	3.57E-1	3.95E-6	2.55E-2	-5.55E-1
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.57E+2	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	7.76E-1	0.00E+0	1.57E+2	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

6. LCA: Interpretation

The LCA results of Modules A1-A3 are interpreted in the following.

After standardisation to overall German emissions, the most relevant environmental impacts of the production of wood fibre insulation materials (Modules A1-A3) are the Global Warming Potential (**GWP**), the Acidification Potential (**AP**) as well as the Photochemical Ozone Creation Potential (**POCP**).

Global Warming Potential

72 % of the global warming-relevant gases can be attributed to the production of the wood fibre insulation materials on site (Module A3). With a share of 27 % of total emissions, the provision of the raw materials and preliminary products is also significant (Module A1). Transportation to the factory location (Module A2) contributes only 1 % to the global warming potential. In the factory, the greenhouse gas balance is dominated by the drying of the fibres and of the product (30 % of total emissions in Modules A1-A3), the use of resources (16 %) as well as electricity requirements for fibre production (8.2 %).

Acidification Potential

82 % of the acidification potential (**AP**) results from the production of the wood fibre insulation materials (Module A3). 17 % is caused by the provision of the raw materials and preliminary products (Module A1). Transportation (Module A2) contributes only 1 % to the AP. With 52 % of total emissions in the production phase (Modules A1-3), the drying of the fibres and of the pressed insulation material and with 7 % the

provision of heat to boil the fibres are the main contributors to the acidification potential.

Photochemical Ozone Creation Potential
Production at the location (Module A1) is responsible for 86 % of ozone creation-relevant emissions, 0.3 % is caused by transportation (A2), and a further 14 % by the production of the raw materials and semi-finished goods (A3). At the factory location, the ozone creation analysis is dominated by the setting of the adhesives and of the additives (52 % of total emissions in Modules A1-A3) as well as the provision of heat for the drying processes (22 %).

Use of primary energy for energy utilisation
Renewable energy (**PERE**) is primarily used in the form of wood for generating process heat. 99 % of the renewable energy is used for the manufacture (Module A3). The provision of the raw materials and semi-finished goods requires only 1 %.
92 % of the non-renewable primary energy (**PENRE**) used in the product system as an energy source is consumed in the manufacture (Module A3). Transportation requires 0.3 %. The provision of raw materials / preliminary products accounts for the remaining 8 % (Module A1). At 30 %, the production of the fibres has the highest demand for non-renewable energy sources during the production phase (Modules A1-A3). Moreover, the drying of the fibres and of the product consumes 16.4 % and the provision of electricity for the infrastructure at the factory location consumes 12 % of the non-renewable energy sources.

Range of results
The results for individual products listed under 2.1 differ from the average results in the Environmental Product Declaration. The following table contains the maximum deviations from the results from Chapter 5 for environmental impacts, energy consumption and fresh water requirements:

Parameter	Max. deviation
GWP	118/-55
ODP	244/-95
AP	217/-76
EP	187/-78
POCP	134/-70
ADPE	814/-78
ADPF	162/-49
PERE	466/-84
PERM	57/-69
PERT	186/-74
PENRE	140/-59
PENRM	247/-63
PENRT	151/-59
FW	140/-76

The deviations can primarily be attributed to the differences in density of the products as well as the differences between the wet and dry processes.

7. Requisite evidence

7.1 Formaldehyde
STEICO wood fibre insulation materials are produced without adhesives containing formaldehyde, whether in the wet process or in the dry process.
Test verification for STEICO*therm*: Concentration of formaldehyde in accordance with DIN EN 717-1 after 28 days: 0.02 mg/m³. Created by EPH GmbH, Zellerscher Weg 24, 01217 Dresden, Test Report No. Ha/Br-50, created on 21.05.2105

7.1 MDI
No binding agents containing isocyanate are used in the production of STEICO wood fibre insulation materials made using the wet process, or in the production of STEICOflex.

7.3 Testing for pretreatment of substances used
No waste wood is used in the production of STEICO wood fibre insulation materials. The wood used is untreated freshly cut wood (coniferous wood).

7.4 VOC
Test verification for STEICOunderfloor, Test Report No. 32708-002, 22.11.2011, eco-Institut, Sachsenring 69, D-50677 Cologne, D
also
Test verification IBR GmbH, Münchener Strasse 18, 83022 Rosenheim, Test Report No.: 3013-632, created on 21.01.2014

AgBB overview of results (28 days)

Name	Value	Unit
TVOC (C6 - C16)	80	µg/m³
Sum SVOC (C16 - C22)	0	µg/m³
R (dimensionless)	0.17	-
VOC without NIK	1	µg/m³
Carcinogenic Substances	0	µg/m³

Quotation from IBR Test Report, Page 10:

"The test was terminated after 7 days, since the […] termination criteria were fulfilled.[…] Pollution caused by the tested substances is not to be expected.

All of the tested material thus meets the requirements of the AgBB scheme and of the DIBt approval guidelines.

8. References

DIN EN 13171: 2012+A1:2015, Thermal insulating products for buildings – Fabricated wood fibre (WF) products; German version

DIN EN 1602: 2013, Thermal insulation materials for the construction sector - Determination of the apparent density; German version

DIN EN 197-1: 2011, "Cement" - Part 1: Composition, specifications and conformity criteria for common cement; German version

DIN EN 13501-1: 2010-01, Classification of construction products and methods by fire performance – Part 1: Classification with the results of tests on reaction to fire of construction products; German version

DIN EN 14964: 2007-01, Rigid Underlays for Discontinuous Roofing – Definitions and Characteristics; German version

DIN 4108-10: 2008-06, Thermal insulation and energy economy in buildings – Part 10: Application-related requirements for thermal insulation materials - Factory-made products

DIN EN 622-4: 2010-03, Fibreboards - Specifications - Part 4: Requirements for softboards; German version

DIN EN ISO 9001: 2008-12, Quality Management Systems – Requirements (ISO 9001:2008); trilingual version

DIN EN 717-1: 2004-10 Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method

EWC 2001: European Waste Catalogue in accordance with AVV of 10.12.2001

FSC: **http://www.fsc-deutschland.de/de-de/zertifizierung/standards**

Information sheet SIA 2001: 2013, Thermal insulation materials - Declared thermal conductivity values and other information for physical calculations in the construction sector

ÖNORM B 6000: 2010, Factory made materials for thermal and/or acoustic insulation in building construction - Types and application

AGGB (2012): Evaluation scheme for VOC emissions from building products, Committee for Health-Related Evaluation of Building Products.

ACERMI: Association pour la certification des matériaux isolants. www.acermi.com

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