

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the declaration	fischerwerke GmbH & Co. KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-FIW-20230532-CBA1-DE
Issue date	23/05/2024
Valid until	22/05/2029

FFB-VS

fischerwerke GmbH & CO. KG

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General information

fischerwerke GmbH & CO. KG

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
D-10117 Berlin
Germany

Declaration number

EPD-FIW-20230532-CBA1-DE

This declaration is based on the following product category rules:

Preformed fire protection systems for cable and pipe sealing,
01/08/2021
(PCR tested and approved by the independent advisory board (SVR))

Issue date

23/05/2024

Valid until

22/05/2029



Dipl.-Ing. Hans Peters
(President of Institut Bauen und Umwelt e.V.)



Florian Pronold
(Managing Director of Institut Bauen und Umwelt e.V.)

FFB-VS

Owner of the declaration

fischerwerke GmbH & Co. KG
Klaus-Fischer-Strasse 1
72178 Waldachtal
Germany

Declared product/declared unit

1 m³ mineral wool fire protection barrier with product designation FFB-VS

Scope of application:

The building product to be declared is a mineral wool fire protection barrier built horizontally into the building cladding with the product designation FFB-VS. The product is manufactured in several steps which are performed in sequence in the following production facilities:

1. Site in Finland

Paroc Group Oy, Energiakuja 3,
P.O. Box 240, FI-00181 Helsinki, Finland.

2. Site in Poland

KORFF ISOLMATIC Sp. z o.o., ul. Lotnicza
12, Wojnarowice, PL 55-050 Sobótka

3. Site in Germany

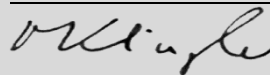
fischerwerke GmbH & Co. KG
Klaus-Fischer-Strasse 1,
72178 Waldachtal, Germany

The owner of the declaration is liable for the basic information and supporting evidence; any liability of the IBU in relation to manufacturer's information, LCA data and supporting evidence is excluded.

This EPD was compiled in accordance with the requirements of EN 15804+A2 This standard is described in simplified form as EN 15804 in the following.

Verification

The European standard EN 15804 serves as the core PCR	
Independent verification of the declaration and statements in accordance with ISO 14025:2011	
<input type="checkbox"/>	internal
<input checked="" type="checkbox"/>	external



Matthias Klingler,
Independent Verifier

Product

Product description/Product definition

The declared product is a mineral wool panel made of artificial mineral fibres running parallel to the surface which is manufactured in a procedure using heat and held together by added adhesive once cooled. The panels are clad on both sides with plastic fibre-reinforced aluminium foil which is applied whilst the panel is hot and fixed with the adhesive which holds the mineral fibres together. An expandable graphite strip (RSI strip) with a printed PVC adhesive foil is fixed to one longitudinal side.

The respective national regulations apply to the use of the product at the location of use, for example the building regulations of the federal states in Germany and the technical regulations based on these regulations.

Application

The building product to be declared is a horizontally installed fire protection barrier built in building cladding. FFB-VS was developed to provide a 25 or 50 mm ventilation gap which lets through the airflow and moisture on the back of the building cladding (ventilated rainscreen façade) and closes under fire conditions. In case of fire the intumescent agent along the front edge expands horizontally to close the gap and prevent the passage of fire. This prevents the chimney effect and the vertical spread of fire into the floors above.

Technical data

The constructional data of the average product examined as part of the LCA study is shown in table form below.

Constructional data

Name	Value	Unit
Thermal conductivity	0.035	W/(mK)
Bulk density	108.31	kg/m ³
Width:	25 - 425	mm
Height	80	mm
Length:	1000	mm

This product is not subject to EU harmonisation legislation: Performance data for the product in relation to its features in accordance with the respective relevant technical provision (no CE labelling).

Base materials/Ancillary materials

The LCA refers to the product system of 1 m³ of FFB-VS fire protection barrier. The product to be declared is an average product compiled from different size variants. The fire protection barrier to be examined consists of the following components:

- Mineral wool / Rock wool
- RSI strips (expandable graphite strip)
- AluCoat (glass fibre-reinforced aluminium foil with a polyethylene layer)

The product contains no materials included in the *ECHA list* of materials which are especially problematic for approval (substances of very high concern – SVHC) in doses above 0.1% of mass.

—The product contains no Category 1A or 1B CMR materials which are not on the candidate list (*ECHA list*) in doses above 0.1% of mass.

No biocidal products have been added to this building product or it has not been treated with biocidal products (treated goods in terms of the EU Biocide Product Directive (*EU Directive No. 528/2012*)).

Reference period of use

No modules from the use phase are declared. No reference period of use is specified for this reason.

LCA: Calculation rules

Declared unit

The declared unit is 1 m³ of mineral wool fire protection barrier with a glass fibre-reinforced aluminium foil and an expandable graphite strip.

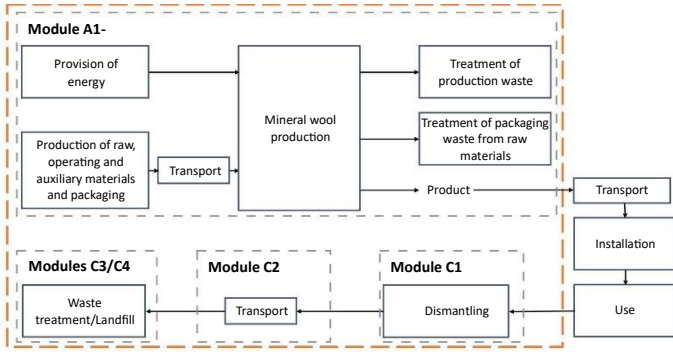
Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m ³
Conversion factor [mass/declared unit]	0.00923	-
Bulk density	108.31	kg/m ³

The balanced production volume is based on the manufacturer's data for the reference year. The data was averaged across the produced volume of the different product variants and then converted to the declared unit. Overall, it is assumed that the data is robust and representative.

System boundary

The "cradle to factory gate - with options" system boundary was selected. The lifecycle is modular in accordance with EN15804. The LCA on which this EPD is based includes the product stage (A1-A3), the disposal state (C1-C4) and benefits and impacts beyond the system boundary (Module D). Modules A1 (raw material provision), A2 (Transport) and A3 (manufacture) are shown aggregated in the assessment as Module A1-A3. The modules include the individual processes shown in the diagram.



(orange frame = system boundary, grey frame = module boundaries)

Geographical representativeness

Country or region where the declared product system is fabricated, used (where appropriate) and treated at the end of its lifecycle: Europe

Comparability

A comparison or the evaluation of EPD data is principally only possible if all data sets to be compared were compiled in accordance with EN 15804 and the building context or product-specific performance characteristics are included. The background data was taken from the "Managed LCAContent" database (formerly "GaBi Professional") which is implemented in the LCA for Experts software (Sphera, 2024).

LCA: Scenarios and further technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content quantifies the amount of biogenic carbon in a building product when it leaves the factory gate. No biogenic carbon is bound up in the product itself. The wood or paper used for product and raw material packaging contain approximately 47.7% biogenic carbon per kg wood and approximately 43% per kg paper. Please note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Information to describe the biogenic carbon content at the factory gate

Name	Value	Unit
Biogenic carbon in the related packaging	5.12	kg C

End of life (C1-C4)

Fire protection barriers are dismantled manually in accordance with EPD-FMI-20210016-IBG1-EN. The materials used and energy consumption are accordingly not included in the fire protection barrier's LCA and are disregarded. The 100% waste incineration (EoL scenario 1) and 100% disposal in landfill (EoL scenario 2) scenarios were contrasted (EoL: End of Life).

Name	Value	Unit
Collected as mixed building waste	108.31	kg
For reuse	-	kg
To recycling	-	kg
For energy recovery	-	kg
For incineration scenario 1	108.31	kg
For disposal in landfill scenario 2	108.31	kg

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Production stage			Construction process stage		Use stage							End of life stage				Credits and impacts beyond the system boundary
Raw material supply	Transport	Manufacture	Transport from the gate to the site	Assembly	Use/Application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ Demolition	Transport	Waste treatment	Disposal	Reuse, recovery or 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	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULT OF THE LCA – ENVIRONMENTAL IMPACT in accordance with EN 15804+A2: 1 m³ FFB-VS fire protection barrier

Indicator	Unit	A1-A3	C1	C2	C3	C4/1	C4/2	D
GWP total	kg CO ₂ eq.	1.45E+02	0	4.74E-01	0	1.57E+01	1.61E+00	0
GWP fossil	kg CO ₂ eq.	1.45E+02	0	4.7E-01	0	1.57E+01	1.6E+00	0
GWP biogenic	kg CO ₂ eq.	3.18E-02	0	0	0	5.98E-02	0	0
GWP luluc	kg CO ₂ eq.	2.52E-01	0	4.33E-03	0	7.89E-03	5.05E-03	0
ODP	kg CFC11 eq.	3.55E-10	0	6.09E-14	0	1.03E-10	4.14E-12	0
AP	mol H ⁺ eq.	1.04E+00	0	7.88E-04	0	2.76E-02	1.15E-02	0
EP-freshwater	kg P eq.	3.2E-04	0	1.71E-06	0	4.84E-05	3.28E-06	0
EP-marine	kg N eq.	1.24E-01	0	3.09E-04	0	1.09E-02	2.98E-03	0
EP-terrestrial	mol N eq.	3.16E+00	0	3.55E-03	0	1.19E-01	3.28E-02	0
POCP	kg NMVOC eq.	3.89E-01	0	7.03E-04	0	2.92E-02	9E-03	0
ADPE	kg Sb eq.	7.67E-06	0	3.1E-08	0	9.02E-07	7.52E-08	0
ADPF	MJ	1.94E+03	0	6.37E+00	0	1.63E+02	2.17E+01	0
WDP	m ³ world eq. deprived	1.07E+01	0	5.65E-03	0	1.48E+01	1.79E-01	0

GWP = Global warming potential; ODP = Depletion potential for the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential for tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources (ADP – materials); ADPF = Abiotic depletion potential for fossil resources (ADP – fossil energy carriers); WDP = water deprivation potential (user)

RESULTS OF THE LCA – INDICATORS TO DESCRIBE THE USE OF RESOURCES in accordance with EN 15804+A2: 1 m³ FFB-VS fire protection barrier

Indicator	Unit	A1-A3	C1	C2	C3	C4/1	C4/2	D
PERE	MJ	7.78E+02	0	4.64E-01	0	6.16E+01	3.53E+00	0
PERM	MJ	1.88E+02	0	0	0	-9.92E-01	0	0
PERT	MJ	9.66E+02	0	4.64E-01	0	6.06E+01	3.53E+00	0
PENRE	MJ	1.96E+03	0	6.4E+00	0	1.95E+02	2.17E+01	0
PENRM	MJ	3.68E+01	0	0	0	-3.13E+01	0	0
PENRT	MJ	2E+03	0	6.4E+00	0	1.63E+02	2.17E+01	0
SM	kg	4.36E+01	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m ³	5.26E-01	0	5.08E-04	0	3.3E-01	5.47E-03	0

PERE = Renewable primary energy as energy carrier; PERM = Renewable primary energy as material utilisation; PERT = Total use of renewable primary energy resources; PENRE = Non-renewable primary energy as energy carrier; PENRM = Non-renewable primary energy as material utilisation; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS in accordance with EN 15804+A2:
1 m³ FFB-VS fire protection barrier

Indicator	Unit	A1-A3	C1	C2	C3	C4/1	C4/2	D
HWD	kg	1.96E-06	0	1.98E-11	0	0	4.72E-10	0
NHWD	kg	4.39E+01	0	9.75E-04	0	1.5E+01	1.08E+02	0
RWD	kg	7.25E-02	0	1.2E-05	0	1.15E-02	2.47E-04	0
CRU	kg	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	8.88E+00	0	0	0	0	0	0
EET	MJ	4.51E+00	0	0	0	0	0	0

HWD = Hazardous waste disposal; NHWD = Non-hazardous waste disposal; RWD = Radioactive waste disposal; CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – Additional impact categories in accordance with EN 15804+A2:
1 m³ FFB-VS fire protection barrier

Indicator	Unit	A1-A3	C1	C2	C3	C4/1	C4/2	D
PM	Cases of illness	8.4E-06	0	5.24E-09	0	7.59E-07	1.42E-07	0
IR	kBq U235 eq.	1.24E+01	0	1.79E-03	0	1.75E+00	2.86E-02	0
ETP-fw	CTUe	7.86E+02	0	4.56E+00	0	7.56E+01	1.17E+01	0
HTP-c	CTUh	1.96E-07	0	9.27E-11	0	2.71E-09	1.82E-09	0
HTP-nc	CTUh	3.3E-06	0	4.12E-09	0	7.29E-08	1.92E-07	0
SQP	SQP	6.49E+03	0	2.66E+00	0	5.13E+01	5.26E+00	0

PM = Potential Occurrence of Diseases due to Particle Emissions; IR = Potential Effects through Human Exposure to U235; ETP- fw = Potential Toxicity Comparison Unit for Ecosystems; HTP-c = Potential Toxicity Comparison Unit for Humans (carcinogenic effect); HTP-nc = Potential Toxicity Comparison Unit for Humans (non-carcinogenic effect); SQP = Potential Soil Quality Index

Restriction notice 1 – applies to the “Potential effects through exposure of humans to U235” indicator.

This effect category mainly deals with the possible effect of low-dose ionising radiation on human health in the nuclear cycle. It does not take into account effects which are attributable to possible nuclear accidents and occupational exposure or to the disposal of radioactive waste in underground facilities. The potential ionising radiation emanating from the soil, from radon and from some building materials is also not measured by this indicator.

Restriction notice 2 – applies to the indicators: “Abiotic depletion potential for non-fossil resources”, “Abiotic depletion potential for fossil resources”, “Water withdrawal potential (user)”, “Potential toxicity comparison unit for ecosystems”, “Potential toxicity comparison unit for humans – carcinogenic effect”, “Potential toxicity comparison unit for humans – non-carcinogenic effect”, “Potential soil quality index”.

The results of this environmental impact category must be applied with care, as uncertainties with these results are high or because there is a lack of experience with the indicator.

References

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Publisher

Institut Bauen und Umwelt e.V.
Hegelplatz 1
D-10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com



Programme holder

Institut Bauen und Umwelt e.V.
Hegelplatz 1
D-10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com



Author of the lifecycle assessment

SKZ - Das Kunststoff-Zentrum
Friedrich-Bergius-Ring 22
97076 Würzburg
Germany

+49 931 4104-433
kfe@skz.de
www.skz.de



Owner of the declaration

fischerwerke GmbH & Co. KG
Klaus-Fischer-Strasse 1
72178 Waldachtal
Germany

+49 (0)7443 12 -0
info@fischer.de
www.fischer-international.de