ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Fixit AG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-FIX-20210051-ICD1-EN
Issue date	20.06.2022
Valid to	19.06.2027

Fixit 222 Aerogel High Performance Insulating Plaster

Fixit AG

Institut Bauen und Umwelt e.V.

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ECO PLATFORM EPD VERIFIED

1. General Information

Fixit AG

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

Declaration number
EPD-FIX-20210051-ICD1-EN

This declaration is based on the product category rules:
Mineral factory-made mortar, 11.2017
(PCR checked and approved by the SVR)

Issue date
20.06.2022

Valid to
19.06.2027

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

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

Fixit 222 Aerogel High Performance Insulating Plaster

Owner of the declaration
Fixit AG
Im Schachen 416
5113 Holderbank
Schweiz

Declared product / declared unit
1 kg Fixit 222 mineral-based, aerogel high performance insulating trade plaster/render. Product group: Thermally insulating plaster/render dry mix with a dry bulk density of ≤ 220 kg/m³.

Scope:
Product: Fixit 222 Aerogel High Performance Insulating Plaster

Manufactured at: Fixit AG, Im Schachen 416, 5113 Holderbank, Switzerland

Distributed in: Albania, Bosnia, Bulgaria, Germany, Italy, Croatia, Lithuania, Macedonia, Montenegro, Austria, Poland, Romania, Russia, Switzerland, Serbia, Slovakia, Slovenia, Czech Republic, Ukraine

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.

The EPD was created according to the specifications of *EN 15804+A2*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data according to *ISO 14025:2011*
☐ internally ☒ externally

Matthias Klingler
(Independent verifier)

2. Product

2.1 Product description/Product definition

Fixit 222 Aerogel High Performance Insulating Plaster is an innovative thermally-insulating plaster/render. As a result of the use of aerogel granulate as a thermally-insulating additive, Fixit 222 achieves a thermal conductivity many times lower than other insulating plaster/renders available on the market. It can therefore be used to perform energetically efficient renovations of old buildings, including historic structures and those under preservation orders, without the need to modify the original wall structure or appearance. Curves and recesses can be reproduced true to the original shapes and uneven surfaces can be filled-in with millimetre accuracy.
Aerogels are highly porous solids whose volume is made up of up to 99.98% air-filled hollows. It is therefore also one of the lightest of all solid materials. Air molecules are trapped in its extremely porous microstructure, reducing heat transmission to an absolute minimum. The raw material used in the manufacture of aerogels is amorphous silicon dioxide, also known in building materials science as potassium waterglass or silicate. This pure mineral-based raw material forms the basis for the high performance of the insulation.

For the placing of Fixit 222 insulating plaster/render on the market in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) 305/2011 (CPR) applies. The product has a Declaration of Performance (DOP) taking into consideration EN 998-1, and the CE-marking.
For the application and use the respective national provisions apply, in addition to the Technical Specification “Insulating Plaster” *(VDPM).*

2.2 Application

Fixit 222 is a high performance insulating plaster for both indoor and outdoor use which meets ecological and biological principles relevant to residential buildings. Suitable substrates are brickwork, sand-lime bricks, natural stone, quarry stone and raw-finish concrete. The underlying surface must be clean, dry and of adequate load-bearing capacity. Strongly or variably absorbent surfaces must be pre-treated with roughcast.

2.3 Technical Data

Constructional data

Name	Value	Unit
Dry bulk density	≤ 220	kg/m³
Thermal conductivity	0.028	W/(mK)
Fire performance class	A2	
Water vapour diffusion resistance value	≤ 5	
Capillary water absorption	W 1	kg/(m² √min)
Water vapor diffusion equivalent air layer thickness	0.12	m

The performance values of Fixit 222 are in accordance with the Performance Declaration with respect to essential characteristics as per EN 998-1. Bond strength (adhesive shear strength), tensile bond strength and flexural strength are not relevant.

2.4 Delivery status

Fixit 222 is manufactured and supplied as dry-mix trade plaster consisting of a dry mixture of all the necessary ingredients bagged at the factory and delivered to the building site. On site the necessary quantity of water is added (according to the manufacturing instructions and local conditions), and it is mixed to give ready-to-apply plaster. The delivery unit is a 50 liter sack.

2.5 Base materials/Ancillary materials

Fixit 222 is a mineral-based building material which mostly contains widely-used materials of mineral origin. There are no resource-scarcities associated with the constituent materials of the product:

Name	Value	Unit
Limestone	≤ 2.5	% w/w
Calcium hydroxide	25.0 - 50.0	% w/w
Dicalcium silicate	10.0 - 25.0	% w/w
Portland cement clinker	2.5 - 10.0	% w/w
Fired natural clay	2.5 - 10.0	% w/w
Silica, [(trimethylsilyl)oxy]-modified	25.0 - 50.0	% w/w

The permissible range of fluctuation of the constructional data is a result of the different mass fractions of the basic materials. In all cases the total content of the plaster sums to 100% w/w. The following additives may be added as necessary:

- water retention agents: < 0.30% w/w
- water repelling agent: < 0.45% w/w

Limestone: consists primarily of the minerals calcite and aragonite, therefore mostly calcium carbonate together with other natural minor and trace minerals (clay minerals, quartz etc.).

Calcium hydroxide / slaked lime: according to DIN459 (white) slaked lime serves as a binding agent and is manufactured by the calcination of natural limestone followed by slaking with water.

Dicalcium silicate / Portland cement clinker: according to DIN197-1 cement serves as a binding agent and is primarily manufactured from limestone marl or a mixture of limestone and clay. These natural raw materials are fired, then crushed and milled.

Fired natural clay: limestone marl, in general consisting mainly of the clay minerals illite and kaolinite with small quantities of montmorillonite as well as feldspar and quartz. These natural raw materials are fired, then crushed and milled.

Silica, [(trimethylsilyl)oxy]-modified: consisting of granules with a high concentration of amorphous silicon dioxide (SiO_2).

Water retention agents: cellulose ether, manufactured from cellulose pulp, prevents fresh plaster from drying too rapidly.

Water repelling agent: water soluble sodium oleate or zinc stearate to reduce the capillary water absorption of fresh plaster.

Information on substances of concern;

Does the product contain substances on the ECHA Candidate List in concentrations exceeding 0.1% w/w? No.

Does the product contain other CMR cat. 1A or 1B substances which are not on the Candidate List in concentrations exceeding 0.1% w/w in at least one sub-product? No.

Have biocides been added to the building product in question or has it been treated with biocide products (relevant in this context are treated products which fall under the EU bioproduct regulations 528/2012)? No.

2.6 Manufacture

The manufacturing process for Fixit 222 is shown in the following diagram. The thermally insulating plaster is produced in a mixing plant in the following steps:

- Filling the storage or weighing hoppers
- Conveying the feedstock/mixed material into the mixing plant
- Mixing
- Conveying the finished product out of the mixing plant
- Packing
- Loading of the finished product and delivery

The raw materials – including lime, binding agents, lightweight aggregates, auxiliary agents, additives and

basic materials (see Basic Materials) – are stored in the production plant in silos or hoppers.
The raw materials are conveyed to the mixing plant from the storage hoppers, dosed in the appropriate weights for the product to be manufactured. The materials are thoroughly mixed and are then packed and delivered as dry-mix plaster in suitable containers.

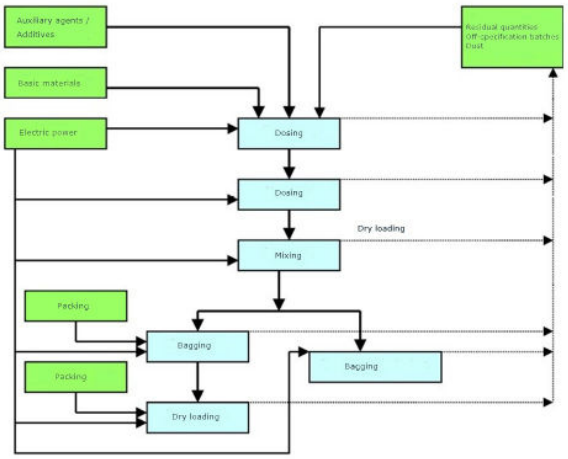

Figure 1: Manufacturing process (green: inputs; blue: unit processes)

2.7 Environment and health during manufacturing

Current state of the art includes 100% recycling of all dry waste material back to the production process. Wherever dust may be produced in the manufacturing process, it is removed by an appropriate air extraction system and fed to a centralized filter plant, while workplace exposure limits are monitored and observed. The fine dust trapped by the filter system is fed back to the production process via the returned-material silo. In the framework of the Quality Management System employed, any batches of product which might possibly not meet required specifications are immediately identified by the automatic process monitoring function and diverted to the returned-material silo. Off-specification material from this silo is then recycled by being returned to the process stream in very small quantities. The same process is used for residual quantities of product which remain in sacks returned after delivery to customers. Fine particulate matter is removed from the manufacturing process exhaust air such that its concentration is well below the legally mandated work-place exposure limit.

Noise: Noise-level measurements demonstrate that all values in all locations inside and outside the production areas lie far below those required by the technical standards. This is a result of the noise-abatement measures implemented.

2.8 Product processing/Installation

Fixit 222 is generally applied by machine, the dry plaster being automatically transported from individual storage containers via a dry conveyor unit to the plaster machine, where it is mixed and the slurry applied to the working surface. The thermally insulating plaster/render is then smoothed in place using an appropriate tool, and if necessary the surface is given the required structure. The Standard Operating Procedures (SOPs) of the professional trade associations must be observed, as must the precautions in the Material Safety Data Sheet (MSDS). Because the mineral-based plaster mixture contains cement and lime as binding agents, when it is mixed with water the fresh plaster slurry is strongly alkaline. Long exposure to the wet, alkaline material can provoke serious skin damage, therefore all contact with skin and eyes should be prevented by the use of personal protective equipment as detailed in the MSDS. No particular environmental protection measures are called for when using the product, but uncontrolled dust emission should be avoided. Mineral-based dry plaster mix must not be allowed to enter drains or sewers, or to contaminate surface or ground water.

2.9 Packaging

The product is packed in paper sacks with a plastic lining. Sacks are stacked on pallets which are then wrapped and sealed in plastic film.

Recycling/Reuse of used packing material:
Sacks: separate if possible. Unsoiled polyethylene (PE) wrapping film (not mixed with other plastic material) and multiple-use wooden pallets are recycled within the construction industry, the latter through the use of a deposit and return system. Plastic film is returned to the film manufacturer, sacks returned to the plaster manufacturer with plaster residue recycled into the production process.

2.10 Condition of use

Under normal use (i.e. the intended use of the product as described) Fixit 222 will not decay or deteriorate with age. Renders of mineral based factory produced mixtures must be protected from permanent exposure to the weather, by, for example, the use of professionally constructed interfaces to the façade base cladding. The resistance to cracking of render and plaster can be increased by the use of reinforcing techniques in areas subject to tensile stress (EN 13914-1, -2 und DIN 18550-1, -2).

2.11 Environment and health during use

As a consequence both of the stable calcium-silicate-hydrate bonds and of the solid structure created after hardening on the substrate, emissions cannot occur. When Fixit 222 is used normally as intended and described, no health hazards exist. No danger is known to exist of water, air or soil contamination when the product is used correctly. The natural ionizing radiation emitted by mineral-based trade plaster/render is extremely small and is considered a negligible health risk.

2.12 Reference service life

A reference service life (RSL) as per ISO 15686-1, -2, -7 and -8 has not been declared. When prepared and applied according to the manufacturer's instructions by professional workers, the service life of mineral-based factory-made plaster/render on walls and ceilings is 40 or more years based on experience in the field.

The following factors (among others) may influence the ageing of plaster/render: wind and weather, addition loading due to dirt and contamination, air pollution, algae and fungal attack, repetitive daily and seasonal expansion and contraction due to temperature changes, and changes in relative humidity. Additional factors, depending on local environmental

considerations and material characteristics, such as the properties of the underlying masonry or a thermal insulation layer under the plaster, weather exposure and age may affect the plaster in a variety of different ways ranging from simple contamination by dirt, to loss of binding ability (crumbling or powdering) and even cracking and detachment from the substrate.

2.13 Extraordinary effects

Fire
Fixit 222 is classified as Construction Material A2 – s1, d0 as per EN 13501-1.

Additional product-specific labelling is applied to containers of the product through the Performance Declaration / CE-mark.

Fire protection

Name	Value
Building material class	A2
Burning droplets	d0
Smoke gas development	s1

Water
Mineral-based factory-made plasters are structurally stable and do not deform as a consequence of exposure to water and subsequent drying.

Mechanical destruction
Not applicable, no data required.

2.14 Re-use phase

The service life of plastered walls and ceilings normally ends when the building containing them reaches the end of its life. Reuse or recycling of plastered or rendered masonry after a building is dismantled or demolished is not possible. Structural elements made of Fixit 222 can usually be demolished in a simple manner and are not classified as hazardous waste. However, care should be taken to ensure that material removed is not mixed with other contaminants as far as possible. Fixit 222 can also be used as conventional lime-cement mortar. The Aerogel high performance insulating plaster has a nanoporous structure and contains neither aerosols nor eluates.

2.15 Disposal

Fixit 222 Aerogel High Performance Insulating Plaster is a component of mineral-based building rubble. Fixit 222 can be disposed of to 100% in landfill sites. The compatibility with land-fill usage of hardened mineral based plaster material is guaranteed in accordance with Landfill class 1 or the German TASi Regulations. The relevant waste code as per the EU Directive on Waste is 17 01 01.

2.16 Further information

https://www.fixit.ch/
https://www.vdpm.info/

3. LCA: Calculation rules

3.1 Declared Unit

This declaration is based on a unit of 1 kilogram of Fixit 222 Aerogel High Performance Insulating Plaster.

Information on the declared unit:

Name	Value	Unit
Declared unit	1	kg
Gross density (mean)	202,5	kg/m^3
conversion factor [Mass/Declared Unit]	1	-

3.2 System boundary

The system boundaries for the Life Cycle Assessment cover the cycle from “cradle-to-grave, with options”. They encompass the processes described as follows and represented in Figure 2. (See also Section 5, Descriptions of declared modules system boundaries).

Modules A1 – A3 (Production stage) cover the supply of raw materials and additives (binders, light aggregates, ancillary agents), packaging, transport and energy consumption during manufacture.

Module A4 covers the transport of the product from manufacturer to installation site. Module A5 deals with the use and application of the insulating plaster/render and includes the disposal of packaging waste. In order to use the product, water and energy are required.

Module C2 covers the transport of the waste to the disposal site, and C4 the disposal of the end-product in a landfill.

Module D deals with the reuse, recovery and recycling of the product. There is a lack of empirical data concerning the reuse or further use of insulating plaster containing the light aggregate Aerogel, and for this reasons all indicators are given the value 0 in Module D.

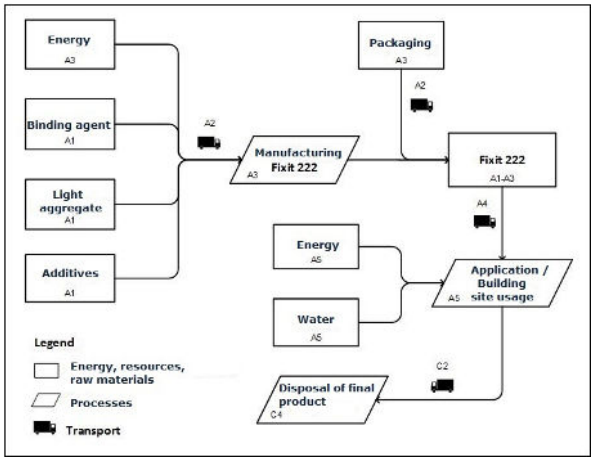

Figure 2: Content-based system boundaries for the Fixit 222 LCA

Dust emission during the manufacture and application of Fixit 222 high performance insulating plaster was not considered in the analysis since if the occupational regulations are followed then no risks to employee health exist. Furthermore, the effort needed to remove the plaster at the end of its service life is not taken into account since it is regarded as negligible. When a building is entirely dismantled or demolished the

additional effort in this regard is practically nil.

A lime-based plaster such as Fixit 222 absorbs carbon dioxide (CO_2) from the atmosphere (carbonation) during the hardening process. This reduces the carbon footprint of Fixit 222. Since the curing of hydrated lime with the absorption of CO_2 is a very slow process, the time-delayed effect of the quantity of CO_2 absorbed is not included in the analysis.

3.3 Estimates and assumptions
No significant approximations or assumptions were made during the Life Cycle Analysis.

Since Fixit 222 is a newcomer to the market, no empirical data regarding the reuse or further use of insulating plaster containing aerogel light aggregate exists. In the Life Cycle Analysis reported here, a "worst-case scenario" is assumed in which the entire quantity of insulating plaster is disposed of in an inert material landfill.

3.4 Cut-off criteria
All materials necessary for the manufacture, usage and disposal of Fixit 222 are considered in this LCA.

3.5 Background data
The LCA database ecoinvent V3.5 was used as a source of background data.

3.6 Data quality
Data specific to the product was obtained directly from the manufacturer of the insulating material (Fixit AG) and reflects the production situation in 2019. In addition, in 2013 specific data was obtained from the manufacturer of the most essential production pre-processes, and used in the LCA. The most important ecological assessment data is therefore current and fulfils the required quality criteria.

The background information database ecoinvent V3.5 became accessible in 2018.

3.7 Period under review
The analysis was carried out in 2020 using data from 2019.

3.8 Allocation
No co-product allocations were necessary for the calculation of the environmental effects of Fixit 222.

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.

The LCA database ecoinvent *V3.5* was used as a source of background data.

4. LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon
The packaging material for 1 kg of Fixit 222 consists of a paper sack weighing 0.018 kg. Assuming a carbon content of 40% for paper, this is equivalent to 0.0072 kg of biogenic carbon or 0.0264 kg CO_2. The effect of storing biogenic CO_2 was not considered in Module A3.

The following scenarios and technical information form the basis for the declared modules.

Transportation to building site (A4)
A standard transport of 120 km following the ecoinvent method was used for the transport of Fixit 222 from the factory to the building site (Frischknecht, et al., 2007).

Name	Value	Unit
Transport distance (100 km by rail, 20 km by road)	120	km

Usage in building (A5)
Energy and water are required when the product is applied at the building site.

Name	Value	Unit
Water consumption	0.00125	m^3
Electricity consumption	39	kWh

Disposal of packing material
Disposal of the packaging material is dealt with in Module A5. The method of disposal assumed is 100% incineration in a waste recycling plant.

Reference service life

A reference service life (RSL) as per ISO 15686-1, -2, -7 and -8 has not been declared.

When prepared and applied according to the manufacturer's instructions by qualified workers, the service life of mineral-based factory-made plaster/render on walls and ceilings is 40 or more years based on experience in the field.

End of service life (C4)

Name	Value	Unit
Landfilling	1.1	kg

Dry insulating plaster still contains approx. 10% w/w bound water. Due to a lack of empirical data on recycling this product, it is assumed for the purposes of the LCA that Fixit 222 will be entirely disposed of in a landfill site.

Transportation to disposal site (C2)
A standard transport of 16.5 km following the ecoinvent method was used for the transport to the landfill site (Frischknecht, et al., 2007).

5. LCA: Results

The following table shows the system boundaries and the results of the LCA. Restrictions apply when using data on the core indicators “Abiotic depletion potential for non-fossil resources” and “Abiotic depletion potential for fossil resources”. The results of these environmental impact indicators must be used with caution since either the uncertainty in both cases is high or only limited experience exists with the relevant indicator.

Important note: The EP-fresh water indicator was calculated in units of “kg P-eq” in accordance with the characterization model: EUTREND-Modell, Struijs et al., 2009b, implemented as in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml

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

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	X	ND	ND	MNR	MNR	MNR	ND	ND	ND	X	ND	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg Fixit 222 Aerogel Hochleistungsdammputz

Core Indicator	Unit	A1-A3	A4	A5	C2	C4	D
Global warming potential - total	[kg CO_2-Eq.]	4.39E+0	3.80E-3	4.20E-3	1.48E-3	4.67E-3	0.00E+0
Global warming potential - fossil fuels	[kg CO_2-Eq.]	4.36E+0	3.79E-3	4.05E-3	1.48E-3	4.67E-3	0.00E+0
Global warming potential - biogenic	[kg CO_2-Eq.]	2.08E-2	4.50E-6	1.48E-4	4.94E-7	4.03E-6	0.00E+0
GWP from land use and land use change	[kg CO_2-Eq.]	5.57E-3	3.23E-6	4.38E-6	3.75E-7	7.66E-7	0.00E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.78E-6	7.60E-10	1.82E-9	2.85E-10	1.87E-9	0.00E+0
Acidification potential, accumulated exceedance	[mol H^+-Eq.]	1.78E-2	2.64E-5	6.30E-5	6.29E-6	4.67E-5	0.00E+0
Eutrophication, fraction of nutrients reaching freshwater end compartment	[kg P_4-Eq.]	2.23E-4	1.04E-6	5.59E-8	1.17E-5	3.15E-8	0.00E+0
Eutrophication, fraction of nutrients reaching marine end compartment	[kg N-Eq.]	3.56E-3	8.69E-6	3.88E-6	1.86E-6	1.69E-5	0.00E+0
Eutrophication, accumulated exceedance	[mol N-Eq.]	4.51E-2	9.45E-5	2.39E-4	2.05E-5	1.89E-4	0.00E+0
Formation potential of tropospheric ozone photochemical oxidants	[kg NMVOC-Eq.]	9.82E-3	2.61E-5	8.20E-6	6.41E-6	5.30E-5	0.00E+0
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	3.46E-6	1.09E-8	2.39E-8	2.72E-9	4.92E-9	0.00E+0
Abiotic depletion potential for fossil resources	[MJ]	49.98	0.05	0.04	0.02	0.15	0.00
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m^3 world-Eq deprived]	2.66E+0	1.05E-3	3.95E-3	1.38E-4	6.06E-4	0.00E+0

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg Fixit 222 Aerogel Hochleistungsdammputz

Indicator	Unit	A1-A3	A4	A5	C2	C4	D
Renewable primary energy as energy carrier	[MJ]	4.98E+0	2.68E-2	9.37E-2	2.49E-4	2.05E-3	0.00E+0
Renewable primary energy resources as material utilization	[MJ]	0.34	0.00	0.00	0.00	0.00	0.00
Total use of renewable primary energy resources	[MJ]	5.31E+0	2.68E-2	9.37E-2	2.49E-4	2.05E-3	0.00E+0
Non-renewable primary energy as energy carrier	[MJ]	58.79	0.09	0.27	0.02	0.17	0.00
Non-renewable primary energy as material utilization	[MJ]	0.41	0.00	0.00	0.00	0.00	0.00
Total use of non-renewable primary energy resources	[MJ]	59.20	0.09	0.27	0.02	0.17	0.00
Use of secondary material	[kg]	0.00	0.00	0.00	0.00	0.00	0.00
Use of renewable secondary fuels	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00
Use of non-renewable secondary fuels	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00
Use of net fresh water	[m^3]	7.37E-5	1.16E-4	1.62E-3	4.70E-6	1.84E-4	0.00E+0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg Fixit 222 Aerogel Hochleistungsdammputz

Indicator	Unit	A1-A3	A4	A5	C2	C4	D
Hazardous waste disposed	[kg]	1.25E-4	8.17E-8	2.12E-7	1.37E-8	5.35E-8	0.00E+0
Non-hazardous waste disposed	[kg]	3.36E-1	3.25E-3	2.55E-3	2.02E-3	1.10E+0	0.00E+0
Radioactive waste disposed	[kg]	1.08E-4	7.74E-7	3.31E-6	1.61E-7	1.07E-6	0.00E+0
Components for re-use	[kg]	0.00	0.00	0.00	0.00	0.00	0.00
Materials for recycling	[kg]	0.00	0.00	0.00	0.00	0.00	0.00
Materials for energy recovery	[kg]	0.00	0.00	0.00	0.00	0.00	0.00
Exported electrical energy	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00
Exported thermal energy	[MJ]	0.00	0.00	0.00	0.00	0.00	0.00

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 kg Fixit 222 Aerogel Hochleistungsdammputz

Indicator	Unit	A1-A3	A4	A5	C2	C4	D
Potential incidence of disease due to PM emissions	[Disease Incidence]	ND	ND	ND	ND	ND	ND
Potential Human exposure efficiency relative to U235	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
Potential comparative toxic unit for ecosystems	[CTUe]	ND	ND	ND	ND	ND	ND
Potential comparative toxic unit for humans - cancerogenic	[CTUh]	ND	ND	ND	ND	ND	ND
Potential comparative toxic unit for humans - not cancerogenic	[CTUh]	ND	ND	ND	ND	ND	ND
Potential soil quality index	[-]	ND	ND	ND	ND	ND	ND

Optional impact categories; Not required by PCR Part A and therefore not declared.

6. LCA: Interpretation

99% of the environmental impact occurs during the manufacturing phase (Module A1.A3, see Figure 3). In comparison to this phase, the remaining modules are hardly relevant.

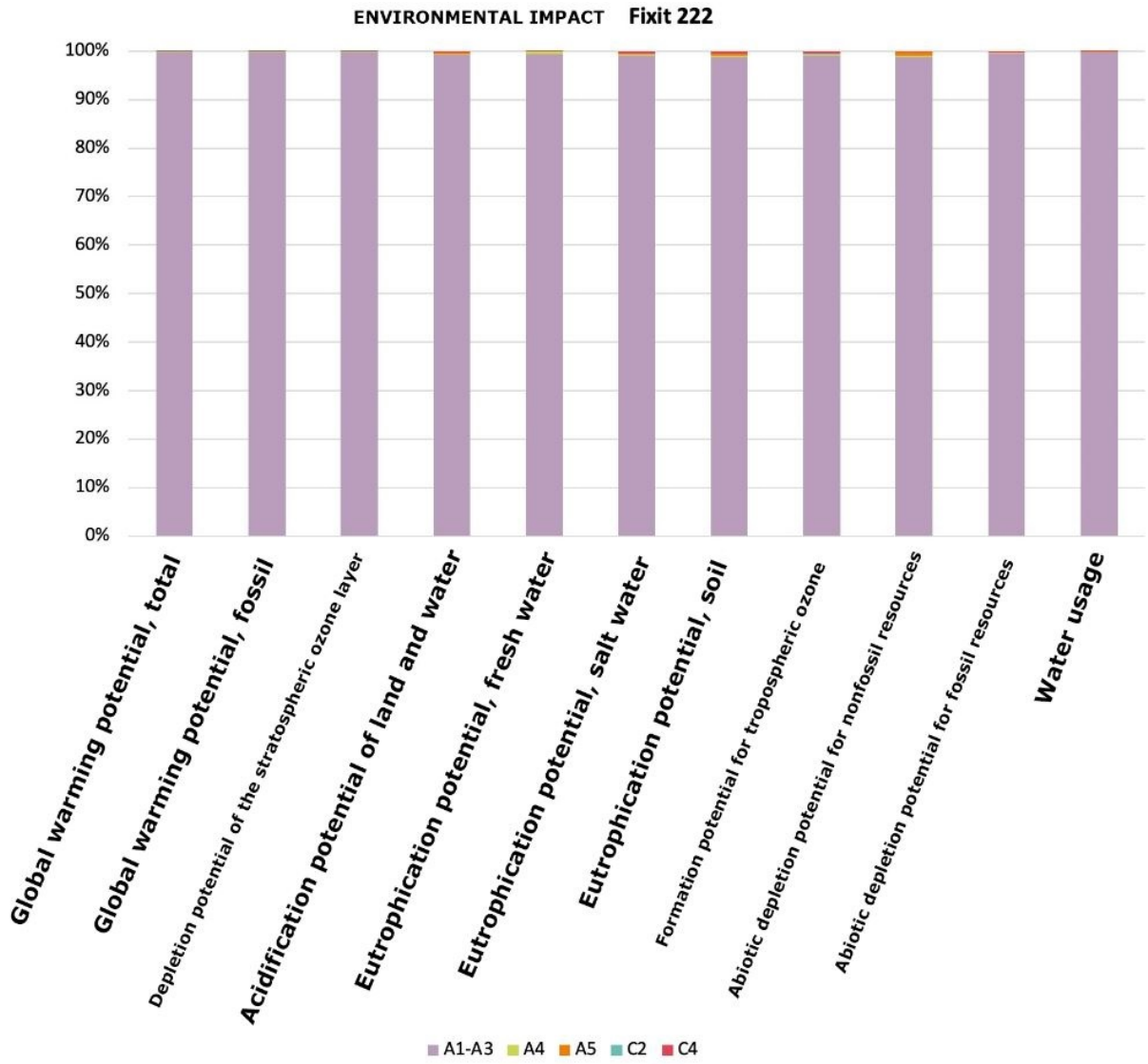

Figure 3: Environmental Impact Evaluation of Fixit 222 by module

7. Requisite evidence

The technical data given in Section 2.4 (Bulk dry density, Thermal conductivity, Fire performance class, Water vapour diffusion resistance value and Capillary water absorption) have been certified by independent, external testing authorities. Certificates will be supplied by the Declaration Owner on request.

8. References

EN 998-1
DIN EN 998-1:2017-02,
Specification for mortar for masonry - Part 1: Rendering and plastering mortar.

VDPM
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