ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	BASF SE
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BAS-20250501-IBC1-EN
Issue date	21.07.2026
Valid to	20.07.2031

Basotect® B

BASF SE

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1. General Information

BASF SE

Programme holder

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

Declaration number

EPD-BAS-20250501-IBC1-EN

This declaration is based on the product category rules:

Sound absorption materials, 01.02.2025
(PCR checked and approved by the SVR)

Issue date

21.07.2026

Valid to

20.07.2031

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

Dr. Martina Bender
(Managing Director Institut Bauen und Umwelt e.V.)

Basotect® B

Owner of the declaration

BASF SE
Carl-Bosch-Straße 38
67056 Ludwigshafen
Germany

Declared product / declared unit

1 m^3 of Basotect® B

Scope:

This Environmental Product Declaration applies to Basotect® B, a flexible, open-cell foam made from melamine resin, a thermoset polymer. Basotect® B is manufactured in the form of untrimmed blocks by BASF in Ludwigshafen and Schwarzheide in Germany. The Life Cycle Assessment of Basotect® B is based on weighted average data of both manufacturing sites.
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

Dr. Jan Werner,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Basotect® B is a white, open-cell foam made from melamine resin, a thermoset polymer. Basotect® B is manufactured in the form of untrimmed blocks with a thin outer skin. The blocks are delivered in film packaging. For the use and application of the product the respective national provisions at the place of use apply. Basotect® B is certified by the General Building Authority, corresponding to No. 3.4. of Model Administrative Provisions - Technical Building Rules Rheinland-Pfalz., Edition May 8th 2022, building materials on which only requirements for reaction to fire are placed and which are flame retardant (*DIN 4102-B1*).

2.2 Application

Basotect® B is a semi-finished product in the form of untrimmed blocks that must be further processed for proper use in selected applications. Therefore, the foam blocks of Basotect® B are supplied to foam converters for further processing. This is where the product is cut into multidimensional shapes by slitting, milling, sawing and stamping to form the required contour. Depending on the field of application, material combinations are also possible (e.g. felt, textile). These components can be used for sound absorption purposes for wall and ceiling applications inside buildings to improve the acoustics of rooms.

2.3 Technical Data

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking). The technical data are specified in the table below.

Constructional data

Name	Value	Unit
Colour	white	
Density (acc. to EN ISO 845)	8,5 ± 1,5	kg/m^3
Fire behavior (DIN 4102-1)	B1	-
Sound absorption (ISO 10534-2, @50 mm thickness, @2000 Hz frequency)	≥90	%
Thermal conductivity (DIN EN 12667, @50 mm thickness, @10°C)	≤0,04	W/(mK)
Average compression hardness (EN ISO 3386-1)	>5	kPa

The open-cell foam structure of Basotect® B contributes to its low density of 8.5 kg/m^3. Due to its low density, Basotect® B can contribute to a reduction of the weight of insulation components.
The white color provides high light reflection and makes Basotect® B suitable for visible applications to improve the acoustical comfort in buildings.
Basotect® B is designed to comply with relevant international fire safety standards. Basotect® is rated in the highest classification category for organic materials according to DIN 4102. Further information about the fire performance can be found in Section 2.13.
Basotect® B offers good thermal insulation with a low thermal conductivity of less than 0.04 W/(m·K) according to *DIN EN 12667.*
The open-cell surface allows that sound waves are not reflected but penetrate the cell structure unhindered. The sound energy is reduced in the cell structure, giving Basotect® B high sound absorption capacity in the medium and high frequencies (see technical data). At low frequencies, technical acoustic improvements can be achieved, for example, by means of additional heavy layers.

2.4 Delivery status

Basotect® B is manufactured in the form of untrimmed blocks with a thin outer skin. The standard dimensions of the blocks are 2500 x 1250 x 500 mm. The blocks are delivered in PE film packaging.

2.5 Base materials/Ancillary materials

Composition of Basotect® B

Name	Value	Unit
Melamine resin	≥ 95	%
Additives	< 5	%

Basotect® B consists mainly of cured melamine resin, a thermoset which is three-dimensionally cross-linked. The remaining ingredients are additives used for the foaming process (e.g. surfactants).
Basotect® B is compliant with the *RoHS directive* and is not subject to labeling requirements under the German hazardous material regulations. Basotect® B is produced without the use of halogenated hydrocarbons and it is supplied without blowing agents.
The product is delivered without any substances of very high concern (SVHC) above a limit of 0.1 % w/w according to the candidate list, article 59 (1, 10) European *REACH* regulation (EC) No. 1907/2006. This statement refers to the following candidate list version: Candidate list, last updated: 04 February 2026. Although melamine is listed as an SVHC, Basotect® does not contain measurable free melamine, as the substance is fully reacted during production. Therefore, Basotect® articles are considered melamine-free and are not subject to additional SVHC obligations.
To the best of our knowledge Basotect® B does not contain carcinogenic, mutagenic, reprotoxic (CMR) substances (substances classified carcinogenic, mutagenic or toxic for reproduction under *Regulation (EC) No 1272/2008* [CLP]) equal or above 0.1% w/w. In the manufacture of Basotect® B biocides are not used as raw material and are also not present in the product. No post reaction auxiliaries or additives are introduced to the fully polymerized product following completion of the manufacturing process.

2.6 Manufacture

Basotect® B is manufactured in a continuous process in Ludwigshafen and Schwarzheide in Germany. The manufacturing process consists of the following steps:
a) mixing of melamine resin and foaming additives in water to gain an aqueous mixture
b) heating and foaming of the mixture using microwave radiation
c) crosslinking and hardening the foam that has been formed
d) drying the foam using microwave radiation
e) tempering the dried foam using hot air
The requirements concerning quality management, environmental management and energy management are fulfilled (*ISO 9001, ISO 14001, ISO 50001*).

2.7 Environment and health during manufacturing

During all manufacturing steps and at both production sites of Basotect®, the production follows the national guidelines and regulations. Certification of the environmental management system is in accordance with *ISO 14001*.

2.8 Product processing/Installation

Basotect® B is supplied in the form of blocks to foam converters for further processing. The product can be cut into multidimensional shapes by slitting, milling, sawing and stamping to form the required contour using standard foam processing machines. The processing of Basotect® B can lead to dust formation. Any dust that might be produced during certain processing steps should be removed by vacuum directly at the cutting site. Wearing a dust mask during these tasks is recommended. Unlike products based on fibres, Basotect® B is an open-cellular foam. Basotect® B is therefore not associated with any irritating effects caused by the release of fibers.
Acoustic absorbers made of Basotect® B can be used on ceilings and walls in a variety of ways. The range of application spans from classic closed ceiling grid systems for offices to modern, light and suspended ceiling planes in call centers to flexible and adjustable baffle designs for industry and sporting facilities.
There are as many different ways of mounting as there are varieties of acoustic elements. Most acoustic paneling or elements are designed for efficient installation and can be unmounted as needed to be used again later. Basically, the following horizontal and vertical methods for mounting Basotect acoustic absorbers are used:
- Horizontal/vertical wire systems
- Rail systems
- Ceiling grids systems
- Adhesive systems

Due to the low density of Basotect® B of only 8.5 kg/m³ and the choice of standardized, functional construction materials, the weight of the whole system is low. As a rule, extensive structural calculations of ceiling loads are not necessary. Wire and rail systems in particular can be mounted efficiently without any interruption to room use. This enables the use of preassembled acoustic parts.
The contractor is responsible for proving out the surface's loadbearing capacity, and the manufacturer's specifications on the static and dynamic maximal loads of the ceiling system are to be noted. To avoid getting the acoustic elements dirty while mounting, it is recommended that gloves are worn.

2.9 Packaging

The packaging is made of polyethylene (PE) film, which should be collected separately and disposed properly. Polyethylene can be recycled.

2.10 Condition of use

If used as intended, no changes in the composition are to be expected during the use phase. Possible effects caused by extraordinary impacts are described in 2.13.

2.11 Environment and health during use

Basotect® B is not hazardous to water. The requirements of the General Committee for the health evaluation of building materials (*AgBB*) are fulfilled. Basotect® B meets the requirement for class A according to the French VOC regulation (*ISO 16000*).

2.12 Reference service life

No reference service life (RSL) for Basotect® B according to *ISO 15686* was determined. According to the table of service life of building components provided by the Federal Ministry for Housing, Urban Development and Building special constructions for ceiling claddings (acoustic ceilings, acoustic elements, acoustic foam and sound absorbers) including fastenings have a service life of ≥50 years. The performance of the insulation can be impaired by extraordinary effects (see 2.13).

2.13 Extraordinary effects

Fire

Basotect® B is designed to comply with relevant international fire safety standards. Its long-term resistance to high temperatures and fire characteristics are based on the melamine resin used. The high nitrogen content of the resin is responsible for the flame-resistant property of the foam without the need to use flame retardants. Basotect® B is a thermoset, and thus, in the event of a fire, the material does not melt or produce burning droplets when it comes into contact with flames. The foam simply chars and produces a small amount of smoke, and there is no afterglow, making Basotect® B suitable for applications with high fire safety.
In tests on the fire characteristics required to meet national and international standards, Basotect® B is rated as B1, the highest classification possible for organic materials according to the German classification *DIN 4102*. The fire performance of Basotect® B according to the European standard *EN 13501* depends on the material thickness. For lower material thicknesses (≤15 mm) the classification B, s1, d0 is achieved. Insulation components for acoustic and thermal insulation purposes with material thicknesses of >15 to 80 mm have the classification C, s2, d0. The class C, s3, d0 applies for thicknesses >80 mm.

Fire protection

Name	Value
Building material class	B/C
Burning droplets	d0
Smoke gas development	s1/s2/s3

Water

Due to the absorption behavior of melamine resin and the open-cell structure of the foam, the moisture content of the material changes with the ambient conditions. This is associated with changes in dimensions.
Exposure to moisture impairs the insulation properties. Basotect® B is vapour permeable and dries out on its own when exposed to low levels of moisture. After longer lasting exposure to water (e.g. in the event of flooding), the insulation material should be replaced.
The water resistance of Basotect® B at 23°C was tested according to *DIN 53428*. The compressive strength according to *ISO 3386-1* (40 % compression, 4th load cycle) and the change in sample geometry serve as evaluation criteria. Based on these test methods Basotect® B is resistant to water.

Mechanical destruction

Basotect® B is a light weight, flexible open-celled foam material. In the unlikely event of severe mechanical damage to the foam, its acoustic properties may be impaired and it could be advisable to replace it. In order to avoid potential performance deficits, protective layers can be used to laminate the foam surface (e.g. textile covering). If the product is mechanically destroyed, no additional environmental impacts are identified beyond those covered in the life cycle assessment. Waste disposal guidance: mechanically cut or broken pieces of Basotect® should be disposed of, primarily via incineration facilities.

2.14 Re-use phase

Mechanically fastened or loosely laid components of Basotect® can be easily dismantled. When bonding to adjacent components, mechanical separation is required. Undamaged, clean, and sorted components of Basotect® can be reused directly. Otherwise, the products can be sent for recycling. The commonly used process is thermal recycling, allowing the recovery of the energy content of the product. Alternatively,

mechanical recycling is also an option. In this case, cutting and assembly waste as well as production waste are mechanically shredded and subsequently pressed into flake composite foams with the addition of binding agents. These composite foams are sound absorbers with densities ranging from 25 to 100 kg/m^3.

2.15 Disposal

Dispose of the materials according to local regulations. Waste of Basotect® B can be incinerated in suitable incineration plant. The *European waste code* is 07 02 13 (waste plastic). During thermal treatment, the energy content of the insulating material can be recovered.

2.16 Further information

Further information about Basotect® can be found at https://plastics-rubber.basf.com/emea/en/performance_polymers/products/basotect

3. LCA: Calculation rules

3.1 Declared Unit

This EPD refers to a declared unit of 1 m³ of Basotect® B with a density of 8.5 kg/m³.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m^3
Density	8.5	kg/m^3
Conversion factor	0.12	m³/kg

The LCA values are based on a German site average where production data is available.

3.2 System boundary

The data collection refers to a three-year average (2021-2023). The following life cycle modules are considered:

Type of EPD: Cradle-to-Gate with modules C1–C4 and module D (A1-A3 + C + D). The EPD is an average EPD with a geographical scope of Europe.

Product (A1-A3)
The product stage covers the production of the raw materials (A1), transport to the Basotect® manufacturing sites in Germany (A2) and the mixing of raw materials and the foaming and drying process in Ludwigshafen and Schwarzheide in Germany (A3), including the use of packaging material. The packing material consists of polyethylene film, and about 0,65 kg is required to pack 1m³ of Basotect® B. A BASF specific on-site averaged electricity generation mix was used to reflect BASFs as is situation best with an emission factor of 0,38 kg CO2 eq./kWh.

End of life (C1-C4)
Modules C1 to C4 are included in the assessment. For C1 (deconstruction), Basotect® B is manually dismantled which results in a value of zero. For C2 (transport to the disposal site), the distance was estimated by an expert from the operating division within BASF. For C3 (waste processing) no specific treatment is required which results in a value of zero. Basotect® B is then sent directly to thermal processing after dismantling. The C4 module is included with thermal waste processing within a waste incineration plant.

Benefits and loads beyond the system boundaries (D)
In module D the recovery potential expressed as net impacts and benefits are covered. It details the benefits in form of steam and electricity generated from thermal utilization resulting from waste incineration in module C4.

3.3 Estimates and assumptions

For modules A1-A3, it is assumed that only 85 % of the cooling water input undergoes wastewater treatment due to leakages and evaporation.

Pentane is utilised as the foaming agent within modules A1–A3 during the manufacturing process and is subsequently combusted. In the absence of an appropriate dataset for pentane combustion in the Sphera database, a natural gas combustion dataset was selected and incorporated into the LCA model, with adjustments made according to the calorific value of pentane to ensure methodological consistency.

Furthermore, during both the transportation of raw materials in modules A1–A3 and the transport of waste in module C, trucks operate at a utilisation rate of 55 % due to the used dataset.

For module C2, a distance of 75 km was referenced from the literature due to the unavailability of primary data from BASF.

3.4 Cut-off criteria

Cut-off for all input materials is 0,01 mass%, except for precious metal-containing catalysts with a cut-off of 0,0001 mass% in the background datasets. For background system cut-off criteria, refer to the *Sphera* database documentation. No known flows are deliberately excluded from this EPD. Heat recovery in Modules A1-A3 are treated via cut-off as well.

3.5 Background data

The LCA model was set up using the *LCA for Experts Software* and background data was taken from the Database for Life Cycle Engineering from *Sphera* (Software Version 10.9.0.31 MLC 2025.1). This database provides several operating processes and raw materials.

3.6 Data quality

Overall, the data quality of the study appears to be high across the dimensions considered. Precision is considered excellent, as the majority of foreground data have been obtained through direct measurement or calculation from primary sources, with seasonal and site differences accounted for by applying weighted averages across a three-year period. Background data from *Sphera* MLC databases also have documented precision, and production efficiency variations were averaged across sites. Completeness is ensured through the use of primary data based foreground processes, guaranteeing full mass balance and emission inventory, with no data knowingly omitted. Background data from *Sphera* MLC databases also meet documented completeness standards.
Consistency is very good, as all primary data were collected with the same level of detail from a BASF internal reporting tool, and all background data came from the Sphera MLC 2025.1 databases. Reproducibility is supported through disclosure of input-output data, dataset choices, and modelling approaches, enabling third parties to approximate results using the same methods.
Regarding representativeness, temporal coverage is good, with primary data averaged for 2021–2023 and secondary data mainly from 2024, aligned with the reference year 2023. Geographical representativeness is very good, as data were specific to the studied regions. Technological representativeness is good, with data tailored to relevant technologies or mixes, and proxies applied where technology-

specific data were unavailable.

3.7 Period under review

Reference year of this EPD is 2023 as primary production data is taken from a 2021-2023 average.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

3.9 Allocation

During Basotect® B production, no co-products are produced, so no allocation is applied here. If pre-steps in the value chain of BASF production require allocation, it will follow an existing PCR or mass allocation method. Enthalpy allocation is applied within the BASF site-specific electricity consumption mix. There might be an allocation applied within the used background Sphera datasets. This can always be checked online in the documentation of the datasets. Additionally, generic Sphera datasets were used for a multi-input process like waste treatment in A and C modules. Hence, the documentation on its allocation can be found online. Full benefits from recovery outside the BASF gate are assigned to module D.

3.10 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. Database for Life Cycle Engineering from *Sphera* (Software Version 10.9.0.31 MLC 2025.1) was used.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content of Basotect® B and PE film as packaging is 0.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	-	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

As A5 is not declared within this EPD, some additional information on the packing material is provided. The amount of packing needed is 650 g of PE film per declared unit. Additional technical details are supplied for modules C and D. Modules A4, A5, and B are not included in this study; consequently, no information pertaining to these modules will be presented herein.

No reference service life (RSL) for Basotect® B according to *ISO 15686* was determined. According to the table of service life of building components provided by the Federal Ministry for Housing, Urban Development and Building special constructions for ceiling claddings (acoustic ceilings, acoustic elements, acoustic foam and sound absorbers), including fastenings, have a service life of ≥50 years.

End of life (C1-C4)

The waste being disposed of is Basotect® B, classified as non-hazardous and suitable for incineration at municipal waste facilities. Module C2 accounts for the transport of this waste from the point of use to the incineration plant; an average transport distance was assumed for this calculation. In Module C4, Basotect® B is incinerated with recovery of electricity and steam. Additionally, packaging PE film requires disposal, but this is outside the scope of the current EPD. All values presented refer to the declared unit.

Name	Value	Unit
Collected separately waste type PE film	0.65	kg
Collected as mixed construction waste Basotect® B	8.5	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

The values for recovery in module D are generated from thermal utilization resulting from waste incineration in module C.

Name	Value	Unit
Steam Recovery	23.6	MJ
Electricity Recovery	10.5	MJ

5. LCA: Results

Environmental impacts are presented using LCIA impact category parameters and characterisation factors that comply with EN 15804 requirements.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = 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	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m³ Basotect® B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	1.09E+02	0	7.32E-02	0	1.32E+01	-2.57E+00
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	1.09E+02	0	7.25E-02	0	1.32E+01	-2.56E+00
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	4.07E-01	0	0	0	0	-1.17E-02
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	1.92E-02	0	7.67E-04	0	6.68E-04	-2.96E-03
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	9.97E-08	0	8.78E-15	0	1.5E-14	-2.01E-11
Acidification potential of land and water (AP)	mol H^+ eq	9.3E-02	0	4.57E-04	0	4.47E-03	-2.72E-03
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	9.63E-04	0	2.01E-07	0	5.26E-07	-1.99E-06
Eutrophication potential aquatic marine (EP-marine)	kg N eq	6.12E-02	0	2.27E-04	0	1.74E-03	-8.19E-04
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	3.79E-01	0	2.47E-03	0	2.18E-02	-9.14E-03
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	1.36E-01	0	4.2E-04	0	4.5E-03	-2.26E-03
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	5.24E-06	0	4.94E-09	0	5.68E-09	-2.21E-07
Abiotic depletion potential for fossil resources (ADPF)	MJ	1.89E+03	0	9.48E-01	0	4.54E+00	-4.43E+01
Water use (WDP)	m^3 world eq deprived	2.26E+00	0	2.98E-04	0	1.33E+00	-2.19E-01

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m³ Basotect® B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	5.69E+01	0	6.98E-02	0	1.03E+00	-1.23E+01
Renewable primary energy resources as material utilization (PERM)	MJ	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	5.69E+01	0	6.98E-02	0	1.03E+00	-1.23E+01
Non renewable primary energy as energy carrier (PENRE)	MJ	1.75E+03	0	9.48E-01	0	1.45E+02	-4.43E+01
Non renewable primary energy as material utilization (PENRM)	MJ	1.4E+02	0	0	0	-1.4E+02	0
Total use of non renewable primary energy resources (PENRT)	MJ	1.89E+03	0	9.48E-01	0	4.54E+00	-4.43E+01
Use of secondary material (SM)	kg	0	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	9.67E-23	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	1.14E-21	0	0	0	0	0
Use of net fresh water (FW)	m^3	-9.3E-01	0	3.36E-05	0	3.12E-02	-9.56E-03

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m³ Basotect® B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1.61E-07	0	3.43E-11	0	2.12E-09	-2.39E-08
Non hazardous waste disposed (NHWD)	kg	2.2E+00	0	1.25E-04	0	9.82E-01	-2.05E-02
Radioactive waste disposed (RWD)	kg	7.04E-03	0	1.25E-06	0	1.97E-04	-2.83E-03
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	1.04E+01	0	0	0	1.05E+01	0
Exported thermal energy (EET)	MJ	2.46E+01	0	0	0	2.36E+01	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m³ Basotect® B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease incidence	8.8E-07	0	2.91E-09	0	3.1E-08	-2.21E-08
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	8.76E-01	0	1.73E-04	0	3.06E-02	-4.67E-01
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	4.97E+02	0	1.23E+00	0	2.15E+00	-3.44E+00

Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	1.56E-08	0	1.66E-11	0	1.77E-10	-4.19E-10
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	8.23E-07	0	9.34E-10	0	2.42E-08	-6.51E-09
Soil quality index (SQP)	SQP	4.57E+01	0	4.21E-01	0	1.16E+00	-7.26E+00

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

A comprehensive understanding of the environmental impacts of industrial processes is essential for developing effective strategies to mitigate ecological effects. This detailed analysis focuses on Basotect® B production, which offers valuable insights into optimizing each phase to enhance sustainability. The production of Basotect® B causes about 91 % of the total GWP and other environmental impacts during phases A1-A3. This is mainly due to the raw material melamine resin, which dominates almost all categories. Electricity has a moderate impact due to the microwave radiation used in the production process, while other utilities show minimal effects. Transport, waste treatment, and other raw materials have low contributions, indicating supply chain efficiency and focus on primary raw materials. Transport affects climate change, land use, and land-use change, as evidenced by the *Sphera* transport dataset. Additionally, the way raw materials are sourced and processed plays a crucial role. The use of melamine resin requires specific production processes that also contribute to the ecological burden.
Another important factor is energy efficiency during manufacturing. Despite the moderate impact of electricity due to microwave radiation, optimizations in this area could help further reduce environmental impact. Moreover, emissions and energy consumption in the raw material extraction phase are critical to the overall picture. Measures to minimize these impacts and improve sustainability in raw material procurement would be particularly beneficial. The greatest environmental impacts observed in module C are primarily associated with waste treatment activities. This phase was analysed using a generic dataset tailored for waste management processes, ensuring consistency with established assessment methodologies. Furthermore, the benefits accounted for in module D are directly linked to the waste treatment procedures, highlighting their contribution to the overall environmental profile. Regarding data quality, most datasets demonstrate very good temporal and geographical representativeness, which suggests that any potential effect on the final EPD results is likely to be minimal. Furthermore, the technical representativeness of these datasets is generally assessed as good. However, it should be noted that some datasets are rated as fair, e.g. regarding waste treatment. In these cases, the heating value used does not exactly match that of Basotect® B, though it remains close, which may affect the degree to which the data reflects actual conditions in module C.

7. Requisite evidence

VOC emissions were measured on Basotect® B (500 mm) according to the French VOC regulation (*ISO 16000*), meeting the requirements for class A. The measurements were carried out at Eurofins, Denmark. In addition, VOC emission measurements on panels of Basotect® B (50 mm) made of block foam showed that the VOC values were well below the limit values of the AgBB scheme. The measurements were carried out at Eurofins, Denmark. VOC emission values according to AgBB after 3 and 28 days are listed below.

AgBB overview of results (28 days [µg/m³])

Name	Value	Unit
TVOC (C6 - C16)	< 5	µg/m³
Sum SVOC (C16 - C22)	< 5	µg/m³
R (dimensionless)	0.15	-
VOC without NIK	< 5	µg/m³
Carcinogenic Substances	< 1	µg/m³

AgBB overview of results (3 days [µg/m³])

Name	Value	Unit
TVOC (C6 - C16)	< 5	µg/m³
Sum SVOC (C16 - C22)	< 5	µg/m³
R (dimensionless)	0.19	-
VOC without NIK	< 5	µg/m³
Carcinogenic Substances	< 1	µg/m³

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