Certified Environmental Product Declaration

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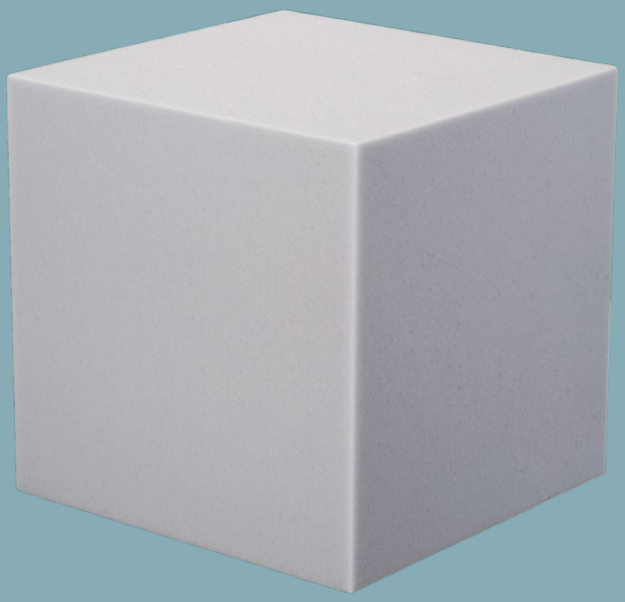
ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14040:2006/AMD 1:2020, ISO 14044:2006+A1+A2:2020, and PCR UL 10010 Version 4 for

Basotect® G+ EcoBalanced

1 m³ of Basotect® G+ EcoBalanced and a density of 9 kg/m³.

BASF
We create chemistry



Owner of the Declaration	**BASF SE (www.basf.com)**
EPD Program Operator	NSF Certification, LLC (www.nsf.org)
PCR Program Operator	UL Environment
Declaration number	EPD11127
Issue date	2025-10-31
Validity date	2030-10-31

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at http://info.nsf.org/Certified/Sustain/epd_search.asp

Certified Environmental Product Declaration

www.nsf.org

1.0 Program Information

EPD PROGRAM OPERATOR

NSF Certification LLC
789 N. Dixboro,
Ann Arbor, MI 48105

www.nsf.org

PCR PROGRAM OPERATOR

UL Environment, Underwriters Laboratories Inc. (UL)

https://www.ul.com/resources/environmental-product-declarations-program

EPD DECLARATION HOLDER

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The EPD owner, BASF SE, has the sole ownership, liability, and responsibility for the EPD.

LCA Practitioner

BASF Services Europe GmbH
Storkower Strasse 146
10407 Berlin, Germany

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2.0 General Information

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	NSF Certification LLC, 789 N. Dixboro Road. Ann Arbor Michigan 48105, USA www.nsf.org
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	Part A: Life Cycle Assessment Calculations and Report Requirements, Version 4
MANUFACTURER NAME AND ADDRESS	BASF SE Carl-Bosch-Strasse 38 67056 Ludwigshafen am Rhein, Germany www.basf.com
DECLARATION NUMBER	EPD11127
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	1 m^3 of Basotect® G+ EcoBalanced and a density of 9 kg/m^3 (packaging included).
REFERENCE PCR AND VERSION NUMBER	PCR Part A: Life Cycle Assessment Calculations and Report Requirements, Version 4. Per the ISO 14025 requirements, this Part A was reviewed by the following critical review panel: • Lindita Bushi (Chair), Athena Sustainable Materials Institute, lindita.bushi@athenasmi.org • Hugues Imbeault-Tétreault, Groupe AGÉCO, hugues.i-tetreault@groupeageco.ca • Jack Geibig, Ecoform, jgeibig@ecoform.com Sub-category Part B: Mechanical, Specialty, Thermal, and Acoustic Insulation Product EPD Requirements (2019). Environmental declarations from different programs based upon differing PCRs may not be comparable.
DESCRIPTION OF PRODUCT'S INTENDED APPLICATION AND USE (AS IDENTIFIED WHEN DETERMINING PRODUCT RSL)	Basotect® G+ EcoBalanced 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® G+ EcoBalanced 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, aluminum foil). These components can be used for sound absorption purposes for wall and ceiling applications inside buildings to improve the acoustics of rooms. Additionally, Basotect® G+ EcoBalanced can be used for thermal and acoustic insulation for technical building equipment (HVAC: heating, ventilation, air conditioning).
PRODUCT RSL DESCRIPTION (IF APPL.)	No reference service life (RSL) according to ISO 15686 was determined.
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	2025-10-31
PERIOD OF VALIDITY	2030-10-31
EPD TYPE	Product Specific
EPD SCOPE	Cradle to installation with end of life.
YEAR(S) OF REPORTED MANUFACTURER PRIMARY DATA	Average of 2021-2023
LCA SOFTWARE & VERSION NUMBER	LCA for Experts, Sphera, Software Version 10.9.0.31
LCI DATABASE(S) & VERSION NUMBER	Sphera database MLC 2025.1

LCIA METHODOLOGY & VERSION NUMBER	IPCC 2021 (AR6) TRACI v2.2 (July 2022) CML-baseline, v4.7 August 2016 EN 15804 + A2 (based on EF 3.1)
The sub-category PCR review was conducted by	The Part B was reviewed by the following panel: • Hugues Imbeault-Tétreault (Chair), Group AGECO hugues.i-tetreault@groupeageco.ca • Thomas Gloria (chair), Industrial Ecology Consultants t.gloria@industrial-ecology.com • Andre Omer Desjarlais, Oak Ridge National Laboratory desjarlaisa@ornl.go
This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," V4.0 (March 2022), based on ISO 21930:2017, serves as the core PCR, with additional considerations from the USGBC/UL Environment Part A Enhancement (2017) ☐ INTERNAL ☒ EXTERNAL	 Jack Geibig, Ecoform, jgeibig@ecoform.com
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	BASF Services Europe GmbH Storkower Strasse 146 10407 Berlin, Germany
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	 Jack Geibig, Ecoform, jgeibig@ecoform.com

LIMITATIONS:

Environmental declarations from different programs (ISO 14025) may not be comparable.

Comparison of the environmental performance of Building Envelope Thermal Insulation using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR.

Full conformance with the PCR for Building Envelope Thermal Insulation allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

This EPD is not intended to make any comparative assertions.

3.0 Company Information

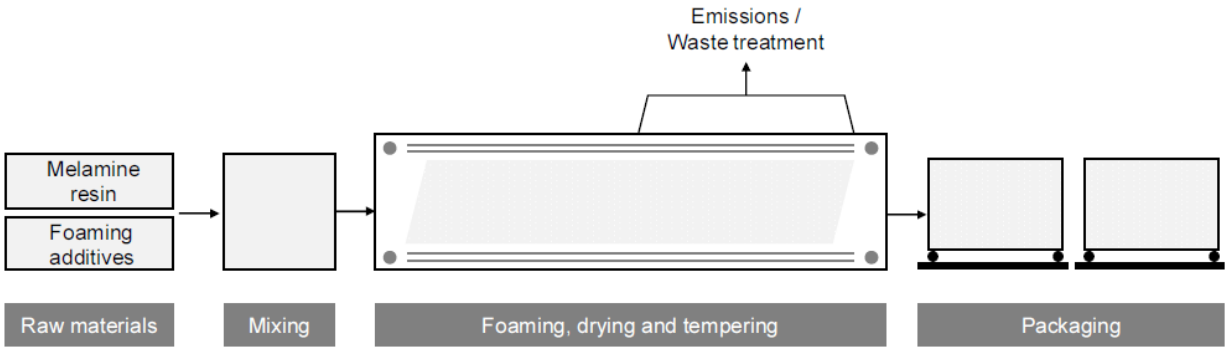
BASF is a leading chemical company, with presence in more than 90 countries. BASF operates around 240 production sites worldwide – including Ludwigshafen, Germany, the world's largest integrated chemical complex owned by a single company. BASF Verbund plants create efficient value chains – from basic chemicals to high value-added solutions such as coatings or crop protection products.

Basotect® G+ EcoBalanced is produced by BASF in Ludwigshafen and Schwarzheide, Germany. The BMB (**B**io**m**ass **B**alance) method uses renewable raw materials such as bio-naphtha or biogas in the manufacture of chemical base products by the production network of BASF along with fossil raw materials. The organic content is then allocated in accordance with a certified method. BMB products display the same quality as non-BMB products as the product formulation is identical to that of its fossil equivalent. Basotect® G+ EcoBalanced is manufactured from biogas extracted from kitchen waste. The biogas used is certified in accordance with the REDcert2 system.

4.0 Product Information

4.1 Product Identification

Basotect® G+ EcoBalanced is a light-grey, open-cell foam made from melamine resin, a thermoset polymer. Basotect® G+ EcoBalanced is manufactured in the form of untrimmed blocks with a thin outer skin. The blocks are delivered in film packaging. Basotect® G+ EcoBalanced 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).
Basotect® G+ EcoBalanced is produced by BASF at their Verbund site in Ludwigshafen and the site in Schwarzheide, Germany.



4.2 Manufacturing Process

Basotect® G+ EcoBalanced 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).

4.3 Product Average

The data from the different manufacturing sites was horizontally averaged out to represent the average manufacturing of Basotect® G+ EcoBalanced. The average unit process data were calculated by taking a horizontal weighted average across facilities based on % of total production.

There are several Certification schemes (e.g. REDcert2, ISCC+ or RSB Advanced Materials), which cover the verification of the substitution of a quantity of fossil feedstocks with renewable feedstocks, where the renewable feedstocks are mixed or co-processed with fossil feedstocks applying to the biomass balance chain-of-custody model following elements of ISO 22095 and ISO/FDIS 13662.

The Biomass Balance (BMB) method accounts for the use of renewable feedstock that replaces fossil feedstock, and the resulting impacts are measured using standard LCA methodology in accordance with ISO 14040/44, ISO 14067, Together for Sustainability (TfS) Product Carbon Footprint Guideline, ISO 21930, ISO 14025 and EN 15804. Biomass Balanced products are manufactured using the same production processes as the conventional fossil-based products, with a notable difference being the usage of renewable feedstock (i.e. renewable natural gas) in place of fossil-based natural gas.

BASF sources REDcert^2 certified renewable natural gas (RNG) that is produced from a landfill. Organic matter decomposes in a landfill, generating methane, which is then processed and injected into the natural gas pipeline. RNG is delivered to BASF with an accompanying Sustainability Declaration, which ensures that every point in the value chain has been certified according to REDcert^2 requirements. The RNG is fed directly into the BASF site. The biogenic carbon content of the RNG is verified by a third-party using a mass balance approach.

BASF's Biomass Balance methodology has been certified by TÜV Rheinland. TÜV Rheinland concluded that BASF's SCOTT digital solution tool which is the single point of truth for the conventional fossil-based system is scientifically based, reflects the state of the art and the principles and methodologies are in accordance with ISO 14067 and the Together for Sustainability (TfS) PCF Guideline v 3.0. Furthermore, they confirmed that the BMB calculations follow conventional LCA procedures as defined by the ISO standards. Data collection was performed according to the guidelines provided in ISO 14044:2006, 4.3.2. (EN 15804, section 6.4.1).

4.4 Application

Basotect® G+ EcoBalanced 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® G+ EcoBalanced 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, aluminum foil). These components can be used for sound absorption purposes for wall and ceiling applications inside buildings to improve the acoustics of rooms. Additionally, Basotect® G+ EcoBalanced can be used for thermal and acoustic insulation for technical building equipment (HVAC: heating, ventilation, air conditioning).

4.5 Technical Requirements

The technical data are specified in the table below.

Name	Value	Unit
Colour	grey	
Density acc. to ISO 845	9 ± 1.5	kg/m^3
Fire behavior, DIN 4102-1 (P-HFM 024200)	B1	-
Sound absorption, ISO 10534-2 (@50 mm thickness, @2000 Hz frequency)	≥ 90	%
Thermal conductivity, DIN EN 12667 (@50 mm thickness, 10°C)	λ ≤ 0.035	W/(mK)
Average compression hardness, EN ISO 3386-1 (average value)	> 9	kPa

The open-cell foam structure of Basotect® G+ EcoBalanced contributes to its low density of 9 kg/m^3. Due to its low density, Basotect® G+ EcoBalanced can contribute to a reduction of the weight of insulation components.

Its coloration makes it less sensitive to soiling, which also makes Basotect® G+ EcoBalanced especially suitable for many construction and industrial applications.

Basotect® G+ EcoBalanced meets the most important international fire safety standards. Basotect® G+ EcoBalanced achieves the highest classification possible for organic materials (DIN 4102-B1).

Basotect® G+ EcoBalanced offers good thermal insulation that is reliable even at high temperatures over a prolonged period. It provides low thermal conductivity of less than 0.035 W/(m·K) at 10°C (50°F) according to DIN EN 12667, so energy losses can be reduced.

The open-cell surface guarantees that sound waves are not reflected but penetrate the cell structure unhindered. The sound energy is reduced in the cell structure, giving Basotect® G+ EcoBalanced an excellent sound absorption capacity in the medium and high frequencies. At low frequencies, technical acoustic improvements can be achieved, for example, by means of additional heavy layers.

4.6 Material Composition

Basotect® G+ EcoBalanced blocks are made from >95% of melamine resin. The remaining ingredients (0-5%) are additives used for the foaming process (e.g. surfactants) as well as a dye for coloration purposes and cannot be disclosed due to confidentiality.

Basotect® G+ EcoBalanced is compliant with the RoHS directive and is not subject to labeling requirements under the German hazardous material regulations. Basotect® G+ EcoBalanced is produced without the use of halogenated hydrocarbons, the product is not hazardous to water, and it is delivered free of blowing agents. Basotect® G+ EcoBalanced does not contain any of the 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: 21 January 2025.

4.7 Environment and Health during Manufacturing

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

4.8 Packaging

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

4.9 Transportation

For domestic transportation purposes, this product is not regulated as a hazardous material by the US Department of Transportation (DOT) under Title 49 of the Code of Federal Regulations.

Module A4 encompasses the shipping logistics from Germany to the BASF customer site in the US, utilizing various modes of transportation This process is divided into three distinct phases, each outlined with all necessary details in the following table.

A4-Transport to Building site	Phase-1 (Truck EU)	Phase-2 (Ship)	Phase-3 (Truck US)	Unit
Fuel type	Diesel	HFO	Diesel	
Liters of fuel	n/a	n/a	n/a	l/100km
Vehicle type	Truck	Ship	Truck	
Transport distance	638.0	6210.0	2295.0	kms
Capacity utilized	85%	150 kdwt	n/a	% or dwt
Gross density of products transported	944.0	944.0	944.0	kg/m³
Weight of products transported	9.65	9.65	9.65	kg
Volume of products transported	1.02E-02	1.02E-02	1.02E-02	m³
Capacity utilization volume factor	n/a	n/a	n/a	

Module A5 details the transportation of plastic waste from the location of assembly in the US to a plastic waste incineration plant within the country. For module C2, the transportation of Basotect G+ EcoBalanced waste from location of usage to landfill was covered.

A5- Installation Phase	Value	Unit
Fuel type	Diesel	
Liters of fuel	n/a	l/100km
Vehicle type	Truck	
Transport distance	75.0	kms
Capacity utilized	n/a	
Gross density of products transported	935.0	kg/m^3
Weight of products transported	0.65	kg
Volume of products transported	6.95E-04	m^3
Capacity utilization volume factor	n/a	

C2- Transport to EoL	Value	Unit
Fuel type	Diesel	
Liters of fuel	n/a	l/100km
Vehicle type	Truck	
Transport distance	75.0	kms
Capacity utilized	n/a	%
Gross density of products transported	9.0	kg/m^3
Weight of products transported	9.0	kg
Volume of products transported	1.0	m^3
Capacity utilization volume factor	n/a	

4.10 Product Processing/Installation

Basotect® G+ EcoBalanced 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® G+ EcoBalanced 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 fibers, Basotect® G+ EcoBalanced is an open-cellular foam. Basotect® G+ EcoBalanced is therefore not associated with any irritating effects caused by the release of fibers, and so there is no need for additional safety measures during handling and transportation.

Acoustic absorbers made of Basotect® G+ EcoBalanced 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 highly effective suspended ceiling planes in call centers to highly flexible and adjustable baffle designs for industry and sporting facilities. In industrial applications, Basotect® G+ EcoBalanced can serve as thermal and acoustic insulation, e.g. in HVAC applications.

There are as many different ways of mounting as there are varieties of acoustic elements. Most acoustic paneling or elements are relatively easy and quick to mount and can be unmounted as needed to be used again later. Basically, the following horizontal and vertical methods for mounting Basotect® G+ EcoBalanced acoustic absorbers are used:

- Horizontal/vertical wire systems
- Rail systems
- Ceiling grids systems
- Adhesive systems

Due to the low density of Basotect® G+ EcoBalanced of only 9 kg/m³ and the choice of standardized, functional construction materials, the weight of the whole system is very light. As a rule, costly static calculations of ceiling loads are not necessary. Wire and rail systems in particular can be mounted simply and quickly 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.

The environmental impacts of the assembly are neglected within this EPD in module A5. There is no primary data available as BASF is only the manufacturer. The impact reported in module A5 results from disposal of packaging.

A5 – Installation into Building	Comment
Ancillary materials	N/A
Net freshwater consumption	N/A
Other resources	N/A
Electricity consumption	N/A
Other energy carriers	N/A
Production loss per functional unit	N/A
Waste materials at construction site	Plastic Packaging.
Output materials resulting from on-site waste processing	N/A
Biogenic carbon contained in pkg	0
Direct emission to ambient air, soil, and water	N/A
VOC content	N/A

4.11 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 4.14.

4.12 Environment and Health during Use

Basotect® G+ EcoBalanced is compliant with the RoHS directive. Basotect® G+ EcoBalanced is produced without the use of halogenated hydrocarbons. The product is not hazardous to water. Basotect® G+ EcoBalanced is delivered free of blowing agents and is not subject to labelling requirements under the German Hazardous Material Regulations. The requirements of the California Department of Public Health regarding the testing and evaluation of volatile organic chemical emissions from indoor sources (California Specification 01350) are fulfilled. Basotect® G+ EcoBalanced meets the requirement for class A according to the French VOC regulation (ISO 16000).

4.13 Reference Service Life

No reference service life (RSL) according to ISO 15686 was determined. The service life of Basotect® G+ EcoBalanced is not limited when used properly. The performance of the insulation can be impaired by extraordinary effects (see 4.14).

4.14 Extraordinary Effects

Fire

Basotect® G+ EcoBalanced meets the most important international fire safety standards. It´s long-term resistance to high temperatures and excellent 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® G+ EcoBalanced 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® G+ EcoBalanced particularly suitable for applications with high fire safety.

In tests on the fire characteristics required to meet national and international standards, Basotect® G+ EcoBalanced achieves the highest classification possible for organic materials. For instance, Basotect® G+ EcoBalanced is rated as B1 according to the German classification DIN 4102 and V-0 / HF-1 according to the Standard 94 of the Underwriters Laboratories (UL 94). Furthermore, the fire requirements for class A according to ASTM E84 are fulfilled.

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 that occur similarly in the case of wood, concrete or clay tiles.

Exposure to moisture impairs the insulation properties. Basotect® G+ EcoBalanced is vapour permeable and dry out on their 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® G+ EcoBalanced at 23°C was tested according to ISO 175. 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® G+ EcoBalanced is resistant to water.

Basotect® G+ EcoBalanced is not hazardous to water.

Mechanical destruction

Basotect® G+ EcoBalanced is a flexible foam and thus displays limited mechanical stability. Therefore, if the material will be subject to greater mechanical impact it should be protected appropriately (e.g. textile covering).

Basotect® G+ EcoBalanced is not UV resistant. If the material is subject to UV rays it should be protected accordingly.

4.15 Re-use Phase

Waste from Basotect® G+ EcoBalanced can be recycled for purposes of heat and material recovery. Flake composite foams made of the same material and having densities ranging from 25 to 100 kg/m^3 exhibit outstanding sound absorption in the lower and medium frequency ranges. Loose flake filling has already been successfully installed in hollow spaces of suspended ceilings with the objective of improving their acoustic properties. Flakes made of Basotect® G+ EcoBalanced have also been used as a binder for liquids.

4.16 Disposal

Disposal of the materials according to local regulations. Waste of Basotect® G+ EcoBalanced can be treated within a waste landfill and treating the packaging material within plastic waste incineration.

Recycling of Basotect® G+ EcoBalanced has not been included in the calculation of the LCA or this EPD. At the end of its life cycle, it can be disposed of to landfill and with a proper treatment of leachate, Landfill gas thus can be recovered for steam and electricity generation. In this EPD end of life is considered with 100% landfill of Basotect® G+ EcoBalanced waste foam and packaging waste for waste incineration plant which is currently the most common practice. Additional details for the scenario are provided is section 6.0 of this document.

4.17 Further Information

Further information about Basotect can be found at

https://plastics-rubber.basf.com/northamerica/en/performance_polymers/products/basotect

5.0 LCA Information

5.1 Declared Unit

This assessment quantifies and creates an EPD for the product from cradle to installation, including end-of-life. The declared unit for the study is defined based on PCR "Part B: Mechanical, Specialty, Thermal, and Acoustic Insulation Product EPD Requirements" as:

Item	Value	Unit
Declared unit	**1**	**m^3**
Equivalent Mass	9.0	kg
Density	9.0	kg/m^3

The declared unit is 1 m^3 of Basotect G+ EcoBalanced with a density of 9 kg/m^3.

5.2 System Boundary

Type of EPD: Cradle to installation with end of life. The modules considered in the Life Cycle Assessment are:

- A1: Raw materials supply
- A2: Transport to manufacturer
- A3: Manufacturing
- A4: Transport to building site
- A5: Installation into building
- C1: Deconstruction / demolition
- C2: Waste transport
- C3: Waste processing for reuse, recovery or recycling
- C4: Disposal
- D: Reuse-/Recovery-/Recycling potential

The analysis of the product life cycle includes production of the basic materials, transport of the basic materials, manufacture of the product and the packaging materials and is declared in module A1-A3. A4 includes the shipping from Germany to the US customer with ship and truck. A5 includes the disposal of packaging. A5 excludes the assembly itself as this is done by BASF customers, and no primary data is available.

The end-of-life scenarios include transport from the location of usage to the waste landfill plant (C2) and the treatment of Basotect waste in a landfill plants (C4) are included. C1 and C3 are reported as zero because of missing data. The recovery potential (D) outside the system boundary contains the energy substitution in the waste landfill plants.

5.3 Estimates & Assumptions

For modules A1-A3, it is assumed that only 85% of the cooling water input undergoes wastewater treatment due to leakages and evaporation. For module C2, a distance of 75 km[1] was assumed based on literature[2], as BASF does not have access to such primary data.

Pentane is employed as a foaming agent during the production process and subsequently combusted. Therefore, a dataset for burning natural gas was incorporated into the LCA model based on its calorific value.

5.4 Cut Off Rules

The assessment considers all reported data from production, including thermal energy and electric power consumption, using the best available life cycle inventory (LCI) datasets. 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

[1] EPA,` LMOP Landfill and Project Database', September 2024, (LMOP Landfill and Project Database | US EPA)

[2] 'Far and Away:A Look at Long -Haul Waste Transport', Waste 360, 2012, (Far and Away: A Look at Long-Haul Waste Transport)

datasets. For background system cut-off criteria, refer to the Sphera database documentation. No known flows are deliberately excluded from this EPD.

5.5 Data Sources

The LCA model was set up using the LCA for Experts Software- System 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. Data from the last update of 2024 is used.

5.6 Data Quality

The requirements for data quality and background data correspond with the requirements of the PCR. The created LCA model for the product is based on production data from 2021 to 2023. The technological coverage reflects the physical reality for the declared product. Used datasets are complete according to the system boundary. The last updated version of the Sphera database from 2024 is used for this study.

Overall, the quality of the data used is considered to be very good and appropriate to support the conclusions derived from the results of this study. Reference year of this study is 2023. The robustness of the LCA values is high due to comprehensive production data from 2021 to 2023, ensuring variability and accuracy. Geographical representativity and high-quality background data from the latest Sphera database enhance reliability. The complete datasets used provide an accurate reflection of environmental impacts, supporting robust conclusions.

5.7 Period Under Review

Primary production data is taken from a 2021-2023 average.

5.8 Allocation

Basotect® G+ EcoBalanced production does not produce co-products, so no allocation is needed. If pre-steps in the value chain require allocation, it will follow an existing PCR or mass allocation method. Benefits resulting from module C are allocated 100% to module D.

6.0 Scenarios and additional technical information

The following technical information is a basis for the declared modules. The values refer to the declared unit of 1 m^3 of Basotect® G+ EcoBalanced foam made from melamine resin, a thermoset polymer.

End of Life (C1-C4)

It is assumed that 100% of Basotect® G+ EcoBalanced foam waste are discarded to a landfill, commonly a Construction & Demolition landfill, for this analysis. The average transport distance from the building to landfill site is assumed to be 75 kms. Additional details for this scenario can be found on the following table.

C1-C4 (End of Life)	Value	Unit
Collection process (collected with mixed construction waste)	9.65	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfill	9.00	kg
Incineration	0.65	kg
Product for final disposal	9.00	kg
Removal of biogenic carbon	10.08	kg CO_2 eq.
Biogenic carbon content of the product	0.306	kg C/ kg product

Reuse-, Recovery-, Recycling-Potential (D)

No Reuse or Recycling is applied in this EPD. The recovery potential in module D results from energy recovery of low-density plastic waste in form of electric and thermal energies. Additional details for this scenario can be found on the following table.

D – (Reuse, Recovery or Recycling)	Value	Unit
Net energy benefit from energy recovery from waste treatment declared as exported energy	3.52	MJ
Net energy benefit from thermal energy recovery from waste treatment declared as exported energy	1.42	MJ
Net energy benefit from material flow declared in C3 for energy recovery	x	MJ
Electrical Process and conversion efficiencies	18.5	%
Process and conversion efficiencies	7.5	%
Further assumptions for scenario development	x	

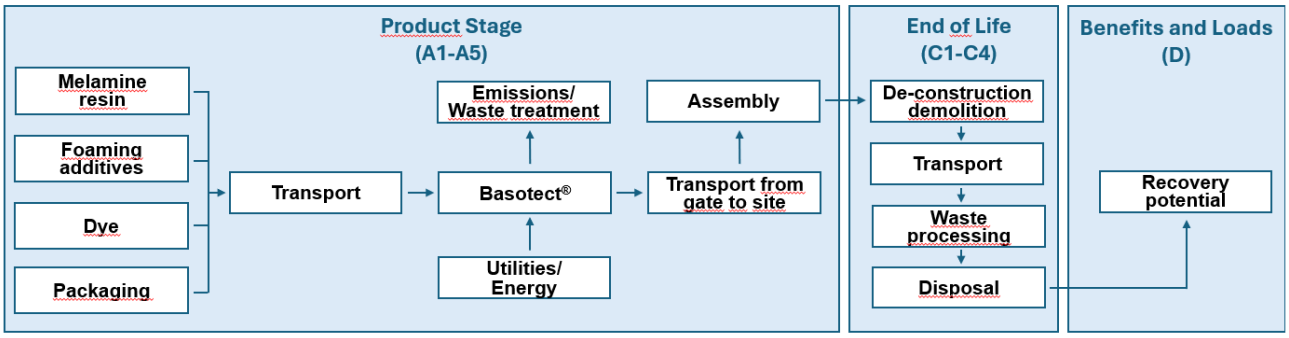
7.0 Environmental Performance

The following tables display the environmental impacts for the assessed base case declared unit of "1 m^3 of Basotect® G+ EcoBalanced foam made from melamine resin".

The environmental impact categories reported below are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development, however the EPD users shall not use additional measures for comparative purposes. Additionally, LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. Finally, many factors affect the comparability of EPDs. End users should be extremely cautious when comparing or evaluating EPD data of different EPD publishers.

Description of the System Boundary (X = Included in LCA; MND = Module not Declared)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X



7.1 LCA results for Basotect G+ EcoBalanced

The results are presented for the declared unit of 1 m^3 of foam blocks of Basotect® G+ EcoBalanced with density of 9 kg/m^3 and carbon content of 0,31 kg C/kg product. The below results cover the environmental impacts of 1 m^3 of Basotect® G+ EcoBalanced. Third party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of total impact (either at the unit process level or in aggregate) to any of the required impact categories identified by the applicable PCR.

		Raw material supply	Transport	Manufacturing	Transportation from Europe to USA	Installation Phase	Demolition	Transport	Waste processing for reuse, recovery or recycling.	Disposal	Reuse-Recovery-Recycling potential
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
North American Life Cycle Impact Assessment Results (GWP – IPCC AR6 2021, ADP fossil – CML baseline v4.7 Aug. 2016, Rest – TRACI 2.2)											
GWP (excl.)	kg CO2 eq.	4.99E+01			6.19E+00	1.60E+00	0.00E+00	6.29E-02	0.00E+00	3.44E+00	-7.45E-01
GWP (incl.)	kg CO2 eq.	3.98E+01			6.19E+00	1.60E+00	0.00E+00	6.29E-02	0.00E+00	4.32E+00	-7.45E-01
ODP	kg CFC-11 eq.	1.32E-07			7.82E-11	2.62E-13	0.00E+00	2.37E-12	0.00E+00	6.03E-13	-5.14E-12
AP	kg SO2 eq.	8.75E-02			7.44E-02	4.95E-04	0.00E+00	3.74E-04	0.00E+00	9.25E-03	-7.53E-04
EP	kg N eq.	5.74E-02			6.00E-02	1.41E-04	0.00E+00	2.79E-04	0.00E+00	2.95E-03	-3.38E-04
SFP	kg O3 eq.	1.97E+00			2.16E+00	3.95E-03	0.00E+00	1.03E-02	0.00E+00	5.03E-02	-1.21E-02
ADP_{fossil}	MJ	6.03E+02			7.51E+01	7.94E-01	0.00E+00	7.98E-01	0.00E+00	2.87E+00	-9.19E+00
Note - These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes. Caption: GWP = Global Warming Potential, ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, ADP fossil = Abiotic Resource Depletion Potential of Non-renewable (fossil) energy resource											
International Life Cycle Impact Assessment Indicators (CML-baseline, v4.7 August 2016)											
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP	kg CO2 eq.	3.95E+01			6.15E+00	1.60E+00	0.00E+00	6.28E-02	0.00E+00	4.13E+00	-7.39E-01
ODP	kg CFC-11 eq.	1.06E-07			7.80E-11	2.62E-13	0.00E+00	2.36E-12	0.00E+00	6.03E-13	-5.14E-12
AP	kg SO2 eq.	7.50E-02			5.93E-02	4.14E-04	0.00E+00	3.09E-04	0.00E+00	7.90E-03	-7.23E-04
EP	kg PO43- eq.	3.16E-02			1.16E-02	3.83E-05	0.00E+00	5.50E-05	0.00E+00	9.31E-03	-8.65E-05
POCP	kg C2H4 eq.	9.25E-03			3.43E-03	1.59E-05	0.00E+00	3.61E-05	0.00E+00	2.14E-03	-7.39E-05
Caption: GWP = Global Warming Potential. ODP = Ozone Depletion Potential. AP = Acidification Potential. POCP = Photochemical Oxidant Creation Potential											
Life Cycle Inventory Results: Resource Use											
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
RPRE	MJ	1.62E+03			8.16E-01	5.16E-02	0.00E+00	0.00E+00	0.00E+00	4.26E-01	2.81E+00
RPRM	MJ	1.44E+02			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRPRE	MJ	6.28E+02			7.55E+01	8.32E-01	0.00E+00	8.05E-01	0.00E+00	2.97E+00	1.19E+01
NRPRM	MJ	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM	Kg	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	-7.28E-01	5.45E-04	2.92E-03	0.00E+00	0.00E+00	0.00E+00	7.70E-04	-3.71E-03

Caption: RPRE - Renewable primary resources used as energy carrier (fuel). RPRM: Renewable primary resources with energy content used as material. NRPRE: Non-renewable primary resources used as an energy carrier (fuel). NRPRM: Non-renewable primary resources with energy content used as material.SM: Secondary materials. RSF: Renewable secondary fuels. NRSF: Non-renewable secondary fuels. RE: Recovered energy. FW: Use of net freshwater resources

Life Cycle Inventory Results: Output Flows and Waste Categories

Parameter	Unit	A1 A2 A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	5.61E-04	1.72E-09	1.37E-10	0.00E+00	0.00E+00	0.00E+00	7.14E-10	-5.98E-09
NHWD	kg	1.60E+00	4.39E-03	1.40E-01	0.00E+00	0.00E+00	0.00E+00	7.83E+00	-3.86E-03
RWD	kg	9.01E-03	5.93E-05	1.32E-05	0.00E+00	0.00E+00	0.00E+00	3.26E-05	-9.50E-04
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption: HWD = Hazardous Waste Disposed. NHWD = Non-Hazardous Waste Disposed. RWD = Radioactive waste disposed. CRU = Components for Re-Use. MR = Material for Recycling. MER = Materials for Energy Recovery. EE = Recovered Energy exported from the Product System

Life Cycle Inventory Results: Carbon Emissions and Removals

Parameter	Unit	A1 A2 A3	A4	A5	C1	C2	C3	C4	D
BCRP	kg CO2 eq.	1.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E+01	0.00E+00
BCRK	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCWER	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWEN	kg CO2 eq.	3.27E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption: BCRP: Biogenic Removals from Product. BCRK: Biogenic Carbon Removals from Packaging. BCEK: Biogenic Carbon Emissions from Packaging. BCWER: Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources used in Production Processes. CWEN: Carbon Emissions from Combustion Waste from Non-Renewable Sources used in Production Processes.

8.0 Interpretation

All environmental impact categories are significantly influenced by the provision of raw materials and the production process. The raw materials have the highest environmental contribution across the indicators reported. This is mainly due to the raw material melamine resin, which dominates almost all categories. 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. Electricity has nearly no impact even though there is microwave radiation used in the production process. This is compensated using renewable electricity, 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.

The use of biogenic feedstocks and green electricity significantly reduces the fossil-based impacts, as evidenced by the lower values in categories such as Climate Change. Overall, the contribution analysis highlights the importance of using biogenic feedstocks and green electricity in reducing the environmental impacts.

8.1 VOC emissions

VOC emissions were measured on Basotect® G+ EcoBalanced (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® G+ EcoBalanced (25 mm) made of block foam showed that the requirements of the California Department of Public Health regarding the testing and evaluation of volatile organic chemical emissions from indoor sources (CDPH/EHLB/Standard Method V1.2., January 2017) are fulfilled. The measurements were carried out at Eurofins, Denmark.

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