SENTINEL HOLDING
INSTITUT

SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

15166-10-1003

Austrotherm XPS® PLUS 30 SF

Product group: Panel products - Insulation

Austrotherm Dämmstoffe GmbH
Hirtenweg 11
19322 Wittenberge

Product qualities:

- SHI Product Assessment 2024
- QNG Qualitätssiegel Nachhaltiges Gebäude
- DGNB NEW CONSTRUCTION 2023.2
- DGNB NEW CONSTRUCTION 2023
- DGNB NEW CONSTRUCTION 2018
- BNB-BN NEUBAU V2015
- EU TAXONOMY
- BREEAM DE NEUBAU 2018
- LEED v4.1 (outside US)

CERTIFIED SUSTAINABLE PRODUCT
SHI PRODUCT PASSPORT
SENTINEL HOLDING INSTITUT
www.sentinel-holding.eu

Köttner

Helmut Köttner
Scientific Director
Freiburg, 26 August 2026

Product:
Austrotherm XPS® PLUS 30 SF

SHI Product Passport no.:
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AUSTROTHERM
Dämmstoffe

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The SHI Database is the first and only database for construction products whose comprehensive processes and data accuracy are regularly verified by the independent auditing company SGS-TÜV Saar

SGS TÜV SAAR

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SHI Product Assessment 2024

Since 2008, Sentinel Holding Institut GmbH (SHI) has been establishing a unique standard for products that support healthy indoor air. Experts carry out independent product assessments based on clear and transparent criteria. In addition, the independent testing company SGS regularly audits the processes and data accuracy.

Criteria	Product category	Harmful substance limit	Assessment
SHI Product Assessment	Insulation materials	TVOC ≤ 300 µg/m^3 Formaldehyd ≤ 24 µg/m^3	Indoor Air Quality Certified
Valid untill: 08 October 2026			

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QNG - Qualitätssiegel Nachhaltiges Gebäude

The Qualitätssiegel Nachhaltiges Gebäude (Quality Seal for Sustainable Buildings), developed by the German Federal Ministry for Housing, Urban Development and Building (BMWSB), defines requirements for the ecological, socio-cultural, and economic quality of buildings. The Sentinel Holding Institut evaluates construction products in accordance with QNG requirements for certification and awards the QNG ready label. Compliance with the QNG standard is a prerequisite for eligibility for the KfW funding programme. For certain product groups, the QNG currently has no specific requirements defined. Although classified as not assessment-relevant, these products remain suitable for QNG-certified projects.

Criteria	Pos. / product group	Considered substances	QNG assessment
3.1.3 Schadstoffvermeidung in Baumaterialien	12.1 Rigid plastic foam insulation boards and spray foams	Halogenated propellants / SVHC: HBCD, TCEP / emissions	QNG ready
Verification: Herstellererklärung vom 21.01.2026			

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DGNB New Construction 2023.2

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact	40 Dämmplatten aus Kunststoffschäumen (innen und außen)	Gehalt an gefährlichen Stoffen: TCEP (SVHC), Halogenierte Treibmittel	Not relevant for assessment
Verification: Herstellererklärung vom 21.01.2026			

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DGNB New Construction 2023

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings. The 2023 version sets high standards for ecological, economic, socio-cultural, and functional aspects throughout the entire life cycle of a building.

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 03.05.2024 (3rd edition)	40 Synthetic foam insulation for buildings and building services	Halogenated propellants	Quality level 4
Verification: Herstellererklärung vom 21.01.2026			

Criteria	Assessment
ENV1.1 Climate action and energy (*)	May positively contribute to the overall building score
Verification: EPD vom 01.04.2026	

Criteria	Assessment
ECO1.1 Life cycle cost (*)	May positively contribute to the overall building score
Verification: EPD vom 01.04.2026	

Criteria	Assessment
ECO2.6 Climate resilience (*)	May positively contribute to the overall building score
Verification: EPD vom 01.04.2026	

Criteria	Assessment
SOC1.1 Thermal comfort (*)	May positively contribute to the overall building score
Verification: EPD vom 01.04.2026. AgBB Prüfbericht vom 09.10.2020.	

Criteria	Assessment
TEC1.4 Use and integration of building technology (*)	May positively contribute to the overall building score
Verification: EPD vom 01.04.2026. Technisches Datenblatt von 12/2024.	

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 29.05.2025 (4th edition)	40 Synthetic foam insulation for buildings	Halogenated propellants / SVHC: HBCD, TCEP / emissions	Quality level 4
Verification: Herstellererklärung vom 21.01.2026			

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DGNB New Construction 2018

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings.

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact			Not relevant for assessment

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BNB-BN Neubau V2015

The Bewertungssystem Nachhaltiges Bauen (Assessment System for Sustainable Building) is a tool for evaluating public office and administrative buildings, educational facilities, laboratory buildings, and outdoor areas in Germany. The BNB was developed by the former Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and is now overseen by the Federal Ministry for Housing, Urban Development and Building (BMWSB).

Criteria	Pos. / product type	Considered substance group	Quality level
1.1.6 Risiken für die lokale Umwelt	36a Mineral and non-mineral external wall insulations (external wall paints see Position 6, plasters see Position 35)	Biocides / hazardous substances / halogenated blowing agents	Quality level 3
Verification: Zusätzlich gilt Position 32a): Herstellererklärung vom 21.01.2026			

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EU taxonomy

The EU Taxonomy classifies economic activities and products according to their environmental impact. At the product level, the EU regulation defines clear requirements for harmful substances, formaldehyde and volatile organic compounds (VOCs). The Sentinel Holding Institut GmbH labels qualified products that meet this standard.

Criteria	Product type	Considered substances	Assessment
DNSH - Pollution prevention and control	Internal insulation	Stoffe nach Anlage C, Formaldehyd, Karzinogene VOC Kategorie 1A/1B	compliant
Verification: Herstellererklärung vom 21.01.2026 . EPD vom 03.12.2019. Prüfbericht Eco-Institut vom 09.10.2020 (B55498-001). Konformitätserklärung vom 10.10.2024 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

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BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) is a UK-based building assessment system that evaluates the sustainability of new constructions, refurbishments, and conversions. Developed by the Building Research Establishment (BRE), the system aims to assess and improve the environmental, economic, and social performance of buildings.

Criteria	Product category	Considered substances	Quality level
Hea 02 Indoor Air Quality	Ceiling, wall, and acoustic and thermal insulation materials	Emissions: Formaldehyde, TVOC, TSVOC, carcinogens	Exemplary quality

Verification: Prüfbericht Eco-Institut vom 09.10.2020 (B55498-001). Konformitätserklärung vom 10.10.2024 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.

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LEED v4.1

LEED (Leadership in Energy and Environmental Design) is an internationally recognised building certification system developed by the U.S. Green Building Council. It is one of the most widely used sustainability standards for buildings worldwide and is particularly applied in internationally oriented projects. LEED assesses buildings holistically across categories such as energy efficiency, resource conservation, material selection, indoor environmental quality and site sustainability. Depending on the number of points achieved, projects are awarded one of the certification levels: LEED Certified, Silver, Gold or Platinum.

Criteria	Product category	Considered substances	Assessment
EQ Credit: Low-Emitting Materials	Dämmstoffe	Emissionen: Formaldehyd, VOC, Krebserregende Stoffe	compliant
Verification: Prüfbericht Eco-Institut vom 09.10.2020 (B55498-001). Konformitätserklärung vom 10.10.2024 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

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Product labels

In the construction industry, high-quality materials are crucial for a building's indoor air quality and sustainability. Product labels and certificates offer guidance to meet these requirements. However, the evaluation criteria of these labels vary, and it is important to carefully assess them to ensure products align with the specific needs of a construction project.



This product is SHI Indoor Air Quality certified and recommended by Sentinel Holding Institut. Indoor-air-focused construction, renovation, and operation of buildings is made possible by transparent and verifiable criteria thanks to the Sentinel Holding concept.



Products bearing the Sentinel Holding Institute QNG-ready seal are suitable for projects aiming to achieve the "Qualitätssiegel Nachhaltiges Gebäude" (Quality Seal for Sustainable Buildings). QNG-ready products meet the requirements of QNG Appendix Document 3.1.3, “Avoidance of Harmful Substances in Building Materials.” The KfW loan program Climate-Friendly New Construction with QNG may allow for additional funding.



The IBU (“Institut Bauen und Umwelt e.V.”) is an initiative of building product manufacturers committed to sustainability in construction. It serves as the programme operator for Environmental Product Declarations (EPDs) in accordance with the EN 15804 standard. The IBU EPD programme provides comprehensive life cycle assessments and environmental impact data for construction products, supported by independent third-party verification.

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Legal notices

(*) These criteria apply to the construction project as a whole. While individual products can positively contribute to the overall building score through proper planning, the evaluation is always conducted at the building level. The information was provided entirely by the manufacturer.

Find our criteria here: https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte

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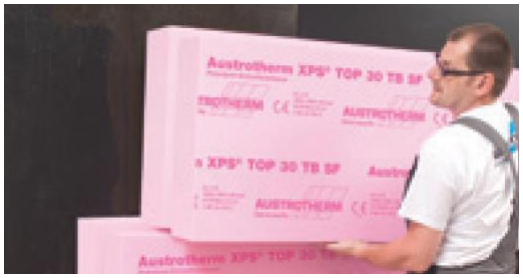
SGS TÜV SAAR

Publisher

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Produktdatenblatt

Austrotherm XPS® PLUS 30



Druckfeste Wärmedämmplatte mit **verbesserten Wärmedämmeigenschaften** aus extrudiertem Polystyrolhartschaum im Thermobonding Verfahren mit **Stufenfalz (SF)**

- Weitestgehend wasserunempfindlich
- Beste ökologische Eigenschaften
- Ausgezeichnete Wärmedämmung
- Für geförderten Wohnbau geeignet

Anwendung:	Wärmedämmung unter und über Bodenplatte, Feuchtraum, Industrieböden, Perimeterdämmung, Umkehrdächer, Duodach, Sporthallenbau		
nach DIN 4108-10	**DAD, DAA, DUK, DI, DEO, WAB, WZ, WI, PW, PB,** Druckbelastbarkeit: **dh**		
Lieferform:	Plattenabmessungen:	1265 x 615 mm	
	Nutzmaß:	1250 x 600 mm	
	Lieferdicken:	**80 – 400 mm**	
	Kantenausbildung:	Stufenfalz (SF)	
	Oberfläche:	Glatt	
Produktart:	Extrudierter Polystyrol Hartschaum nach EN 13164	XPS	
Bezeichnungs-Schlüssel:	XPS-EN13164-T1-DS(TH)-CS(10/Y)300-DLT(2)5-CC(2/1,5/50)130-WD(V)3-FTCD2-WL(T)0,7		
Qualität:	Fremdüberwacht durch das FIW München		
Techn. Daten:	Belastbarkeitsgruppe:	BG 30	
	Wärmeleitfähigkeit [W/mK]:	*Nennwert*	*Bemessungswert gem. DIN 4108-10*
	80-400mm	**0,032**	**0,033**
	Mindestrohdichte:	≥ 30 kg/m³	
	Druckspannung bei 10%:	CS(10/Y) 300 kPa	= 30 t/m²
	Kriechverhalten: (Gem. EN 1606 entspricht zul. Dauerdruckfestigkeit auf 50 Jahre)	CC(2/1,5/50)130 kPa	= 13 t/m²
	Geschlossenzelligkeit :	≥ 95 %	
	Elastizitätsmodul:	12 N/mm²	= 12000 kPa
	Wasseraufnahme Kapillar:	0	
	Wasseraufnahme durch Diffusion:	WD(V)3 Vol.%	
	Frost-Tau-Wechselbeständigkeit:	FTCD 2	
	Brandverhalten EN 13501-1:	E	
Verarbeitung:	Max. Anwendungsgrenztemperatur:	70°C	

Austrotherm XPS® PLUS 30 enthält keine Fluorchlorkohlenwasserstoffe (FCKWs), HFCKWs bzw. HFKWs. HBCD.

Entwicklung und Anwendungstechnik
Bearbeitung : 12/2023 DBA

Unsere anwendungstechnischen Empfehlungen in Wort und Schrift, die wir zur Unterstützung des Käufers/Verarbeiters aufgrund unserer Erfahrungen, entsprechend dem derzeitigen Erkenntnisstand in Wissenschaft und Praxis geben, sind unverbindlich und begründen kein vertragliches Rechtsverhältnis und keine Nebenverpflichtungen aus dem Kaufvertrag. Sie entbinden den Käufer nicht davon, unsere Produkte auf ihre Eignung für den vorgesehenen Verwendungszweck selbst zu prüfen.

Austrotherm Dämmstoffe GmbH Handelsreg.: HRB 9701 NP ● Amtsgericht Neuruppin UID: DE815392924 ● Steuer-Nr.: 052/105/05689 **austrotherm.de**
Geschäftsführer: Lars Peter, Alexander Sinner

19322 Wittenberge, Hirtenweg 15, Deutschland
Tel.: +49 3877 5650–610, Fax: +49 3877 5650-911
info@austrotherm.de

Bankverbindungen:
HypoVereinsbank IBAN: DE47733200730018833514 BIC: HYVEDEMM428
Oberbank IBAN: DE19701207001501148744 BIC: OBKLDEMX

Austrotherm Dämmstoffe GmbH
Anwendungstechnik
Hirtenweg 15
19322 Wittenberge
Tel: +49 151 155 758 04

Sentinel-Holding-Institut

21.01.2026

HERSTELLERERKLÄRUNG
EU-TAXONOMIE VERORDNUNG

Zur Bestätigung der Konformität gemäß Anlage C zur Vermeidung und Verminderung der Umweltverschmutzung gemäß der Delegierten Verordnung (EU) 2023/2486 der Kommission vom 27. Juni 2023.

Hiermit bestätigen wir:

Austrotherm Dämmstoffe GmbH
Hirtenweg 15
19322 Wittenberge

für das folgende Produkt / die folgenden Produkte:

Austrotherm XPS® TOP 30*, TOP 30 TB*,TOP KW
Austrotherm XPS® TOP 50*, TOP 50 TB*
Austrotherm XPS® TOP 70*, TOP 70 TB*
Austrotherm XPS® PLUS 30*
Austrotherm Uniplatte

*Platten mit Stufenfalz (SF), Nut & Feder (NF) oder geraden Kanten (GK), bzw. Rillen (Zusatz im Artikeltext)

Das Produkt/ Erzeugnis/ mindestens ein Teilerzeugnis enthält Stoffe der Kandidatenliste (Version zum Ausstellungsdatum) oberhalb 0,1 Massen%:	**nein**
Das Produkt/Erzeugnis/mindestens ein Teilerzeugnis enthält weitere CMR-Stoffe der Kategorie 1A oder 1B, die nicht auf der Kandidatenliste stehen, oberhalb von 0,1 Massen-% in mindestens einem Teilerzeugnis:	**nein**

Wittenberge, 21.01.2026

Ort, Datum, Unterschrift

Ihr Ansprechpartner für Rückfragen:
Name: Dirk Baune, Telefon: 0049-151-61612803
Mailadresse: dirk.baune@austrotherm.de

ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	EXIBA - European Extruded Polystyrene Insulation Board Association
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-EXI-20260134-IBH1-EN
Issue date	01.04.2026
Valid to	31.03.2031

Extruded Polystyrene (XPS) Foam Insulation with non-halogenated blowing agent

EXIBA

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

www.ibu-epd.com | https://epd-online.com



1. General Information

EXIBA

Programme holder

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

Declaration number

EPD-EXI-20260134-IBH1-EN

This declaration is based on the product category rules:

Insulating materials made of foam plastics, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

01.04.2026

Valid to

31.03.2031

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

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

Extruded Polystyrene (XPS) Foam Insulation with non-halogenated blowing agent

Owner of the declaration

EXIBA - European Extruded Polystyrene Insulation Board Association
Rue Belliard 40, box 16
B-1040 Brussels
Belgium

Declared product / declared unit

Extruded polystyrene (XPS) foam insulation boards with non-halogenated blowing agent produced by the members of the European Extruded Polystyrene Insulation Board Association (EXIBA).
The EPD applies to 1 m^3 of XPS board with an average density of 32 kg/m^3.

Scope:

The companies contributing to the data collection produce about 85% of the extruded polystyrene foam boards produced with non-halogenated blowing agent sold by the members of the EXIBA association in Europe. The data have been provided by 19 factories out of 7 companies (Austrotherm, BACHL, BASF, Fibran, JACKON Insulation, Ravago Building Solutions and URSA). Data refer to production for the year 2023.
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

Prof. Dr. Birgit Grahl,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Extruded polystyrene foam (XPS) is a thermoplastic insulation foam produced according to *EN 13164 Building insulation, EN 14307 Equipment insulation, EN 14934 Civil engineering* and available in board shape with a density range from 20 to 50 kg/m3.
The boards can be delivered in various compressive Strength values from 150 to 700 kPa. To meet the needs of various applications, the boards are produced with different surfaces: with the extrusion skin, planed, grooved or with thermal embossing. XPS boards are supplied with different edge treatments such as butt edge, ship lap and tongue and groove.
The EPD is related to unfaced XPS products only; Heat lamination of several XPS layers is included. Additional product treatment is not considered.
The declared product reflects the European average of the association members. For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies.
The product needs a declaration of performance taking into consideration one of the three EN
XPS standards (*EN 13164 Building insulation, EN 14307 Equipment insulation, EN 14934 Civil engineering*). For the application and use the respective national provisions apply.

2.2 Application

The variety of the performance properties of XPS thermal insulation foams make them suitable for use in a large number of applications such as: perimeter insulation, perimeter under foundation, insulation with water contact (see 4.2), inverted insulation for terrace roofs, insulation of pitched roofs, floor insulation including insulation of highly loaded industrial floors, insulation of thermal bridges for exterior walls, ETICS, insulation of cavity walls, agricultural building ceiling insulation, prefabricated elements e.g. building sandwich panels, insulation for building equipment and industrial installations (pipe sections, etc…) as well as a structural element for civil engineering.

2.3 Technical Data

Acoustic properties are not relevant for XPS. For fire performance, these products, except in Scandinavia achieve the fire classification Euroclass E according to *EN 13501-1*.

Physical properties data

Name	Value	Unit
Gross density	20 - 50	kg/m^3
Calculation value for thermal conductivity acc. to EN 12667 and EN 13164 Annex C	0.03 - 0.04	W/(mK)
Water vapour diffusion resistance factor acc. to EN 12086	50 - 250	-
Water absorption after diffusion acc. to EN 12088	3 - 5	Vol.-%
Deformation under compressive load and temperature acc. to EN 1605	≤ 5	%
Compressive stress or strength at 10% deflection acc. to EN 826	0.15 - 0.70	N/mm²
Compressive modulus of elasticity acc. to EN 826	10 - 40	N/mm²
Tensile strength perpendicular to faces acc. to EN 1607	0.1 - 0.4	N/mm²
Compressive creep/long-term comppressive strength acc. to EN 1606	< 0.25	N/mm²
Freeze-thaw resistance acc. to EN 12091	≤ 2	Vol.-%
Dimensional stability acc. to EN 1604	≤ 5	%

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 13164:2012+A1:2015 - Thermal Insulation products for buildings, EN 14307:2015 Thermal Insulation products for building equipment and industrial installations,* and *EN 14934:2007 Thermal insulation and light weight fill products for civil engineering applications*.

2.4 Delivery status

Length: 1000-3000 mm; Width: 600-1200 mm;
Thickness: 20-200 mm (400 mm multilayer product).

2.5 Base materials/Ancillary materials

Name	Value	Unit
Polystyrene (GPPS)	53 - 89	%
recycled PS (rGPPS)	0 - 41	%
Blowing agents	4 - 9	%
Flame retardant	0 - 4	%
Additives (e.g. pigments)	< 1.5	%

The brominated flame retardant is used to enable the foam to meet fire performance standards. Other additives are used, e.g. color pigments and processing aids in minor quantities.
Polystyrene (GPPS) is produced from oil and gas therefore, it is linked to the availability of these raw materials.
Information that the product does not contain substances listed in the Candidate List of substances of very high concern (*REACH* Regulation) exceeding 0.1 %.
This product contains substances listed in the candidate list (date: 21.01.2025) exceeding 0.1 percentage by mass: no
This product contains other Carcinogenic, Mutagenic, Reptrotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no
Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No.528/2012): no

2.6 Manufacture

XPS is produced by a continuous extrusion process using electricity as the main power source: polystyrene granules are melted in an extruder and a blowing agent is injected into the extruder under high pressure.
The drop in pressure at the exit die causes the polystyrene to foam into a board with a homogeneous and closed-cell structure.
Then the boards' edges are trimmed, and the product is cut to dimensions. The smooth foam skin resulting from the extrusion process remains on the boards or is removed mechanically for particular board types to achieve better adhesive strength in combination with e.g. concrete, mortar, or construction adhesives. Some boards receive special surface patterns or grooves.
Most of XPS foams off-grade material or scrap from production are ground and extruded in a separate recycling line, the resulting polystyrene granules are then used in the production process of XPS.
A large number of the manufacturing plants are certified according to *ISO 9001*.

2.7 Environment and health during manufacturing

No further health protection measures beyond the regulated measures for manufacturing firms are necessary during all production steps. A large number of the manufacturing plants are certified according to *ISO 14001* or/and *OCS*.

2.8 Product processing/Installation

Handling recommendations for XPS foams can be found in product and application literature, brochures and data sheets provided directly by suppliers or available from the internet.
There are no special required instructions regarding personal precautions and environmental protection during the product handling and installation.
The XPS cut off can be mechanical recycled and reinserting into the production of new XPS products.

2.9 Packaging

The boards are stacked in bundles, wrapped in 4 to 6 sided polyethylene film and palletised.
The polyethylene-based packaging film is recyclable and actually recycled in those countries having a return system.

2.10 Condition of use

Water pick-up by capillarity does generally not occur with XPS foams due to their closed-cell structure. The thermal insulation performance of XPS is practically not affected by exposure to water or water vapour.
Usually, maintenance will not be required if the XPS boards are installed according to handling installation requirements (see: Installation description, see chapter 2.8).

2.11 Environment and health during use

XPS product is in most applications not in direct contact with the environment nor with the indoor air. There is no significant release of substances from the product as installed during its service life, as confirmed by the best possible ratings obtained in existing Volatile Organic Compound (VOC) emission schemes; e. g. Committee for Health-related Evaluation of Building Product *AgBB* French labelling (see 7.1 VOC).

2.12 Reference service life

The durability of XPS foam is normally at least as long as the lifetime of the building in which it is used. This is explained by the superior mechanical and water resistance properties of these products.
Description of the influences on the ageing of the product when applied in accordance with the rules of technology.

2.13 Extraordinary effects

Fire

XPS products, except in Scandinavia, achieve the fire classification Euroclass E according to *EN 13501-1*. In Scandinavia XPS products achieve the fire classification Euroclass F according to *EN 13501-1*.

Fire performance

Name	Value
Building material class	E

If the contact with the external flame stops, neither further burning nor smouldering can be observed. Ignition of the foam can only be observed after longer flame exposures.

Water

Water pick-up by capillarity does generally not occur with XPS foams due to their closed-cell structure. The thermal insulation performance of XPS is practically not affected by exposure to water or water vapour.

Mechanical destruction

Not relevant for XPS products that have superior mechanical properties.

2.14 Re-use phase

In order to maximize the potential to re-use XPS boards, one must avoid that they are damaged or glued. Instead, separation layers between the insulation and the concrete should be used, or mechanical fixation should be applied.
In the inverted roof application, XPS boards are installed loose-laid and therefore can be easily removed and reused on another roof.
For existing conventional flat roofs, the XPS boards can stay in place when, for example, the existing roof construction is thermally upgraded as a plus-roof.
Recovered XPS boards from mechanically fixed applications can be reused for the insulation of basement walls and foundations.
XPS can be mechanically and chemically recycled.
Due to the high calorific value of polystyrene, the energy embedded in XPS boards can be recovered in municipal waste incinerators equipped with energy recovery units for steam and electricity generation and district heating.

2.15 Disposal

XPS boards that cannot be easily retrieved from the building are usually landfilled. The material is assigned to the waste category: 17 06 04 insulation materials other than those mentioned in 17 06 01 (insulation materials containing asbestos) and 17 06 03 (other insulation materials consisting of or containing dangerous substances) *European List of Waste*.

2.16 Further information

Additional information can be found at the following Webpages:
www.austrotherm.com
www.bachl.de
https://germany.ediltec.com/de
www.exiba.org
www.fibran.com
www.xps-spezialdaemmstoff.de
www.jackon-insulation.com
www.ravatherm.com
www.soprema.com
www.ursa.com

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 m^3 of XPS board. The declared product reflects the European average of the association members weighted by market share.

Declared unit

Name	Value	Unit
Gross density	32	kg/m^3
Declared unit	1	m^3

The weighted average for the declared product is calculated in relation to the production volume shares of 19 factories out of 7 participating companies, manufactured at the respective production locations across Europe.

The production process is almost identical for all products. With regard to the variability of the LCA results, fluctuations can occur due to differences e.g. in product compositions, densities, recycled content, and energy mix. A single score evaluation based on EN15804+A2 (EF 3.1) normalization is conducted to assess the range in variation of their corresponding environmental impacts relative to the weighted average. The range varies between +40 % and –46 % relative to the declared weighted average results. The LCA values are estimated to be robust.

For XPS products with densities or thickness different from the reference density of 32 kg/m^3, the environmental impacts may be calculated using the following equation:

$$I_{adap} = I_{ref} \times \frac{\rho_{adap}}{\rho_{ref}} \times \frac{d_{adap}}{d_{ref}}$$

I_{adap} – adapted LCIA indicator or LCI parameter
I_{ref} – LCIA indicator or LCI parameter for reference density of 32 kg/m^3
ρ_{adap} – adapted density
ρ_{ref} – reference density 32 kg/m^3
d_{adap} – adapted board thickness
d_{ref} – thickness of reference board (100 mm)

Exceptions are categories, which are not mainly driven by raw material consumption respective
mass. That applies to photochemical ozone creation potential (POCP) and ozone depletion potential (ODP). These two categories do not correlate with the mass of the product and cannot be evaluated that way.

3.2 System boundary

Type of EPD according to *EN15804*: Cradle to gate with options, modules C1–C4, and module D. The following modules are declared: A1–A3, C, D, and additional modules: A4 and A5.

Modules A1-A3
The product stage includes:

- Raw material supply (A1) comprises the production of virgin and recycled polystyrene granulate, blowing and co-blowing agents as well as flame retardants.
- The transport to the manufacturer is considered in module A2.
- The manufacturing of the XPS board (A3) comprises the provision of all materials, products and energy, as well as waste processing up to the end-of-waste state, including packaging of the product and the internal recycling process of the foam scrap.

Modules A4-A5
The construction process stage includes:

- Transport to the construction site (A4)
- Treatment of packaging material (A5) with benefit for potential avoided burdens due to energy substitution of electricity and thermal energy generation are declared in module D (D, D/1, and D/2).
- Installation efforts/losses such as cut-offs have not been accounted for in this module, since such losses highly depend on the specific building geometry and other site-specific factors. If relevant, cuttings can be estimated using the declared values for the production stage (e.g. 5 % wastage: multiplication of the life cycle assessment values by a factor of 0.05).

Modules C1-C4 and D
The end-of-life stage includes:

- Manual dismantling (C1)
- Transport to EoL (C2)
- Waste processing & disposal with three scenarios: Base scenario (C3, C4, D): 100 % incineration; Scenario 1 (C3/1, C4/1, D/1): 100 % landfill; Scenario 2 (C3/2, C4/2, D/2): 100 % recycling
- Reuse, recovery or recycling potential beyond system boundary (D)

3.3 Estimates and assumptions

For electricity production, the following approach has been chosen following the requirements of *IBU Part A*: country-specific residual grid mixes (excluding renewable energy where guarantee of origin(s) is not available). Otherwise, the electricity of the relevant renewable sources (including guarantee of origin) was modelled according to the primary data provided by the participating members in Europe.

The GWP for the electricity mix balanced in modules A1-A3 ranges between 0.0019 - 0.24 kg CO_2-e/kWh.
The GWP for the gas mix balanced in modules A1-A3 ranges between 0.070 - 0.093 kg CO_2-e/MJ.

3.4 Cut-off criteria

In the assessment, all reported data, i.e. all raw materials used, utilised thermal energy, and electric power consumption, were incorporated and modelled using the best available LCI data. Production of capital equipment, facilities and infrastructure required for manufacture is outside the scope of this assessment.

3.5 Background data

The LCA model is created using the *Sphera LCA FE* Software system for life cycle engineering and the Managed LCA content (MLC), developed by Sphera Solutions Inc.
Background data is taken from the MLC databases, see https://lcadatabase.sphera.com/.

3.6 Data quality

The foreground data, mainly the raw materials and energy consumption during the
production process is measured or calculated data. Some exceptions related to production emissions (i.e. blowing agent emissions) were estimated based on literature when necessary. The primary data collection has been done thoroughly; all relevant flows are considered. All participating members provided data for the identified product specifications with similar production process steps for European production.

To ensure consistency, all primary data are collected with the same level of detail using tailored questionnaires, while all

background data are sourced from the Sphera LCA FE databases.

Cross-checks concerning the plausibility of mass and energy flows are carried out on the data received. Similar checks are made on the software model developed during the study.

The background data has been taken from the latest available Sphera LCA FE database CUP 2025.1. Most of the necessary life cycle inventories are available in the database.
All primary and secondary data are collected specific to the countries/regions under study. Where country/region specific data are unavailable, proxy data are used (country/region specific data). The overall geographical representativeness is considered to be good.

3.7 Period under review

The foreground data collected by the participating members refers to the year 2023 (annual 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

There are no co-products generated during the XPS production. The applied software model does not contain any allocation.

Post-industrial XPS waste, which does not get reused in the process, is sent to a waste incineration plant. All applied incineration processes are displayed via a partial stream consideration for the combustion process, according to the specific composition of the incinerated material. For the waste incineration plant an R1-value of >0.6 is assumed. Resulting electrical and thermal energy benefits are declared in module D.

Environmental burden of the incineration of the product in the EoL scenario is assigned to module C3; resulting benefits for thermal and electrical energy are declared in module D. Benefits are given according to European average data for electrical and thermal energy
generated from natural gas.

Information about allocation procedure of single datasets is documented in https://lcadatabase.sphera.com/.

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. The background database used is *Sphera LCA FE*, CUP 2025.1

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

No biogenic carbon is declared in the product.

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	0.00141	kg C

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

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

The values refer to the declared unit of 1 m^3 XPS insulation foam board.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.127	l/100km
Transport distance	100	km
Capacity utilisation (including empty runs)	53	%
Gross density of products transported	32	kg/m^3

Installation into the building (A5)

Name	Value	Unit
Polyethylene foil/stretch film (waste packaging sent to incineration)	0.522	kg
XPS bar/EPS beam (waste packaging sent to incineration)	0.0525	kg
Wooden pallets (waste packaging sent to incineration)	0.00332	kg

End of life (C1-C4)

For the End of Life stage, the following scenarios are considered:

- Base scenario (C2, C3, C4, D): 50 km transport via truck with product disposal via 100 % incineration, where any relevant benefits are to be declared in module D.
- Scenario 1 (C2/1, C3/1, C4/1, D/1): 50 km transport via truck with product disposal via 100 % landfill without any benefits in module D/1.
- Scenario 2 (C2/2, C3/2, C4/2, D/2): 1170 km transport via truck and 440 km via ship with disposal via 100 % product recycling. This scenario considers the external mechanical recycling of the product based on primary data collected by participating members from external recycling facilities in Europe. Potential benefits from avoided burdens due to material substitution are declared in module D/2.

Name	Value	Unit
Collected separately waste type (XPS)	32	kg
Energy recovery (Base scenario)	32	kg
Landfilling (Scenario 1)	32	kg
Recycling (Scenario 2)	32	kg

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

Module D includes the potential recovery and/or recycling

potentials, expressed as net impacts and potential benefits. Benefits for the product incineration EoL scenario and packaging EoL are calculated by inverting the flows of European datasets (consumption electricity grid mix; thermal energy from natural gas). A waste incineration plant with R1-value > 0.6 is assumed. Benefits for the recycling scenario are calculated by inverting the flow of a dataset representing the production of virgin polystyrene granulate.

5. LCA: Results

The following tables display the environmental relevant results according to *EN 15804* for 1 m^3 XPS board. The EoL Scenarios are declared as follows:

- Base scenario (C2, C3, C4, D): 100 % incineration
- Scenario 1 (C2/1, C3/1, C4/1, D/1): 100 % landfill
- Scenario 2 (C2/2, C3/2, C4/2, D/2): 100 % recycling

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	X	X	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 XPS board

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
GWP-total	kg CO_2 eq	9.82E+01	4.02E-01	1.82E+00	0	1.98E-01	1.98E-01	3.66E+00	1.08E+02	0	5.46E+00	0	9.73E-01	0	-3.91E+01	-8.18E-01	-7.11E+01
GWP-fossil	kg CO_2 eq	9.79E+01	3.96E-01	1.82E+00	0	1.95E-01	1.95E-01	3.61E+00	1.08E+02	0	5.41E+00	0	9.7E-01	0	-3.88E+01	-8.12E-01	-7.08E+01
GWP-biogenic	kg CO_2 eq	2.23E-01	2.02E-03	5.21E-03	0	9.92E-04	9.92E-04	1.82E-02	2.98E-03	0	3.81E-02	0	1.8E-07	0	-2.01E-01	-4.2E-03	-2.29E-01
GWP-luluc	kg CO_2 eq	5.65E-02	4.18E-03	1.56E-05	0	2.05E-03	2.05E-03	3.77E-02	9.7E-04	0	1.2E-02	0	2.66E-03	0	-5.35E-02	-1.12E-03	-1.54E-02
ODP	kg CFC11 eq	1.99E-10	6.74E-14	1.02E-13	0	3.31E-14	3.31E-14	6.11E-13	5.84E-12	0	8.31E-11	0	3.31E-12	0	-3.66E-10	-7.66E-12	-8.66E-11
AP	mol H^+ eq	1.76E-01	9.04E-04	1.81E-04	0	4.44E-04	4.44E-04	8.96E-03	9.6E-03	0	8.19E-03	0	5.78E-03	0	-4.59E-02	-9.6E-04	-1.17E-01
EP-freshwater	kg P eq	1.97E-04	1.1E-06	1.24E-08	0	5.38E-07	5.38E-07	9.87E-06	7.17E-07	0	8.27E-06	0	5.42E-04	0	-3.55E-05	-7.44E-07	-9.12E-05
EP-marine	kg N eq	5E-02	3.98E-04	3.92E-05	0	1.96E-04	1.96E-04	3.88E-03	2.17E-03	0	1.98E-03	0	1.25E-03	0	-1.33E-02	-2.78E-04	-3.16E-02
EP-terrestrial	mol N eq	5.42E-01	4.24E-03	8.58E-04	0	2.08E-03	2.08E-03	4.14E-02	4.55E-02	0	2.25E-02	0	1.37E-02	0	-1.48E-01	-3.1E-03	-3.44E-01
POCP	kg NMVOC eq	3.12E-01	8.23E-04	1.16E-04	0	4.04E-04	4.04E-04	8.23E-03	6.37E-03	0	4.94E-03	0	3.96E-03	0	-3.6E-02	-7.53E-04	-1.38E-01
ADPE	kg Sb eq	9.19E-06	2.7E-08	1.15E-09	0	1.33E-08	1.33E-08	2.44E-07	6.56E-08	0	7.62E-07	0	6.6E-08	0	-3.84E-06	-8.05E-08	-4.73E-06
ADPF	MJ	2.46E+03	5.21E+00	2.13E-01	0	2.56E+00	2.56E+00	4.73E+01	1.2E+01	0	7.69E+01	0	1.61E+01	0	-6.87E+02	-1.44E+01	-2.1E+03
WDP	m^3 world eq deprived	1.43E+01	1.86E-03	1.66E-01	0	9.12E-04	9.12E-04	1.68E-02	8.79E+00	0	1.09E+00	0	1.2E-01	0	-4.05E+00	-8.47E-02	-1.32E+01

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

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m3 XPS board

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PERE	MJ	1.12E+02	3.92E-01	1.09E-01	0	1.93E-01	1.93E-01	3.54E+00	3.35E+00	0	5.09E+01	0	2.68E+00	0	-2.24E+02	-4.69E+00	-5.2E+01
PERM	MJ	5.06E-02	0	-5.06E-02	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	1.12E+02	3.92E-01	5.87E-02	0	1.93E-01	1.93E-01	3.54E+00	3.35E+00	0	5.09E+01	0	2.68E+00	0	-2.24E+02	-4.69E+00	-5.2E+01
PENRE	MJ	1.37E+03	5.21E+00	2.49E+01	0	2.56E+00	2.56E+00	4.73E+01	1.08E+03	1.06E+03	1.14E+03	0	1.61E+01	0	-6.87E+02	-1.44E+01	-2.1E+03
PENRM	MJ	1.09E+03	0	-2.47E+01	0	0	0	0	-1.06E+03	-1.06E+03	-1.06E+03	0	0	0	0	0	0
PENRT	MJ	2.46E+03	5.21E+00	2.13E-01	0	2.56E+00	2.56E+00	4.73E+01	1.2E+01	0	7.69E+01	0	1.61E+01	0	-6.87E+02	-1.44E+01	-2.1E+03
SM	kg	3.71E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.73E+01

RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	4.01E-01	1.94E-04	3.89E-03	0	9.52E-05	9.52E-05	1.75E-03	2.06E-01	0	4.36E-02	0	3.51E-03	0	-1.74E-01	-3.65E-03	-3.28E-01

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

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:
1 m3 XPS board

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
HWD	kg	7.78E-07	2.09E-10	1.17E-10	0	1.03E-10	1.03E-10	1.9E-09	6.66E-09	0	9.73E-08	0	3.6E-09	0	-4.34E-07	-9.09E-09	-1.48E-07
NHWD	kg	9.08E-01	7.27E-04	7.62E-03	0	3.57E-04	3.57E-04	6.58E-03	6.19E-01	0	6.45E-02	0	3.2E+01	0	-3.42E-01	-7.16E-03	-4.94E-01
RWD	kg	3.14E-02	9.82E-06	1.22E-05	0	4.83E-06	4.83E-06	8.9E-05	6.89E-04	0	1.17E-02	0	2.32E-04	0	-5.17E-02	-1.08E-03	-1.16E-02
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	6.48E-03	0	0	0	0	0	0	0	0	3.2E+01	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	3.82E+00	0	0	0	0	1.79E+02	0	0	0	0	0	0	0	0
EET	MJ	0	0	6.8E+00	0	0	0	0	3.19E+02	0	0	0	0	0	0	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 m3 XPS board

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PM	Disease incidence	1.76E-06	7.24E-09	1.06E-09	0	3.56E-09	3.56E-09	8.44E-08	5.6E-08	0	6.74E-08	0	5.95E-08	0	-3.74E-07	-7.83E-09	-1.06E-06
IR	kBq U235 eq	4.75E+00	1.41E-03	1.96E-03	0	6.93E-04	6.93E-04	1.28E-02	1.1E-01	0	1.94E+00	0	3.11E-02	0	-8.53E+00	-1.79E-01	-1.84E+00
ETP-fw	CTUe	1.41E+03	6.77E+00	7.94E-02	0	3.32E+00	3.32E+00	6.13E+01	4.8E+00	0	1.27E+01	0	3.68E+01	0	-6.06E+01	-1.27E+00	-1.3E+03
HTP-c	CTUh	2.72E-08	9.13E-11	1.14E-11	0	4.49E-11	4.49E-11	8.28E-10	5.88E-10	0	1.21E-09	0	5.06E-10	0	-7.03E-09	-1.47E-10	-2.36E-08
HTP-nc	CTUh	5.13E-07	5.1E-09	5.59E-11	0	2.51E-09	2.51E-09	4.61E-08	3.11E-09	0	2.52E-08	0	8.99E-09	0	-1.16E-07	-2.43E-09	-3.59E-07
SQP	SQP	8.85E+01	2.3E+00	6.66E-02	0	1.13E+00	1.13E+00	2.07E+01	3.78E+00	0	2.98E+01	0	2.48E+00	0	-1.31E+02	-2.75E+00	-3.09E+01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

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

Overall, the environmental impact of the life cycle is mainly determined by the pre-chain of the raw materials in module A1 for all indicators. For some indicators e.g., Photochemical ozone formation, human health and Eutrophication, module A3 and module C4/1 show some influence.

The main driver of the LCA in most impact categories is Polystyrene (PS) production. Another important driver is the electricity consumption during XPS production.

In general, the transport, the production of blowing agents, flame retardants, and additives have lower relevance to the considered impact categories with a few exceptions.

In the Climate Change, biogenic indicator, some of the additives have shown relevant negative influence due to the biogenic carbon content in their upstream chains. Transport A2 have also shown some influence on the Climate Change, land use and land use change indicator. Similarly, in the resource use indicator (minerals and metals), pigments are dominating the contributions due to makeup of some of the colourants used. As for the Photochemical ozone formation, human health indicator, the production emissions has shown some relevant influence related to the release to some of the co-blowing

agents during production.

The EoL Base scenario (C3) – thermal treatment leads to significantly higher GWP contributions and benefits when compared to the remaining two EoL scenarios (recycling (C3/2) and landfill (C4/1)). Potential benefits in module D are based on the energy substitution from the incineration of the XPS foam product (C3) and packaging treatment (A5) where the latter is duplicated/contributing to modules D/1 and D/2.
To assess the range in variation of the environmental impacts across the 19 sites under study with respect to the declared average product, a single score evaluation based on EN15804+A2 (EF 3.1) normalization is conducted. The single score of each site is calculated based on the mapped MLC datasets to the corresponding material compositions and production processes.

The range in the environmental impact indicators varies between +40 % and –46 % relative to the declared weighted average results. For the GWP-total indicator, the range is between -/+ 28 % relative to the declared weighted average GWP-total result.

7. Requisite evidence

7.1 VOC Emissions

XPS products can be used indoor however, they are generally not exposed to the indoor air but covered by a finishing element or system.

XPS manufacturers regularly check the VOC emissions of their products and always meet the requirements of the Committee for Health-related Evaluation of Building Products/German Institute for Structural Engineering (AgBB) method.

The tested products all complied with the requirements of *AgBB* for use in the indoor environment.

The tested products also all achieved the A+ rating of the French VOC labelling scheme.

7.2 Leaching performance

EXIBA commissioned a study focusing on the release of substances from different XPS insulation boards due to contact with water.

To examine the possible leaching of substances, the horizontal dynamic surface leaching (HDSL) test according to *DIN CEN/TS 16637-2* was performed and the resulting eluates were analysed.

Only three substances were detected at concentrations above the limit of quantification in one or more XPS insulation boards: styrene, iso-butane and barium. There are German threshold values (GFS-values) for styrene (sum alkylbenzene 20 µg/L) and barium (340 µg/L). The measured concentrations were below these threshold values.

No brominated flame retardants were detected in all eluates in contact with XPS insulation boards.

8. References

Literature References

CPR
Regulation No. 305/2011: Construction Products Regulation of the European Parliament and of the European Council, 2011.

EN 15804
EN 15804:2012+A2:2019/AC:2021: Sustainability of construction works -Environmental Product Declarations - Core rules for the product category of construction products, 18.08.02021

EN ISO 14025
EN ISO 14025:2011-10 Environmental labels and declarations - Type III environmental declarations - Principles and procedures

IBU Part A
PCR - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, version 1.4, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 15.04.2024

IBU Part B
PCR – Part B: Requirements on the EPD for Insulating materials made of foam plastics, version/v11, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 01.08.2021

Further References

AgBB
Indoor air quality requirements in buildings: Health evaluation of volatile organic compounds (VVOC, VOC and SVOC) emissions from construction products, German Committee for Health-Related Evaluation of Building Products, 2024

DIN CEN/TS 16637-2
German version EN 16637-2:2023: Construction products - Assessment of release of dangerous substances - Part 2: Horizontal dynamic surface leaching test

ISO 9001
ISO 9001: 2015, Quality management systems - Requirements

ISO 14001
ISO 14001: 2015, Environmental management systems - Requirements with guidance for use

EN 1604
EN 1604: 2013, Thermal insulating products for building applications – Determination of dimensional stability under specified temperature and humidity conditions

EN 1605
EN 1605: 2013, Thermal insulating products for building applications – Determination of deformation under specified compressive load and temperature conditions

EN 1606
EN 1606: 2013, Thermal insulating products for building applications – Determination of compressive creep

EN 1607
EN 1607: 2013, Thermal insulating products for building applications – Determination of tensile strength perpendicular to face

EN 12086
EN 12086: 2013, Thermal insulation products for building applications – Determination of water vapour trans-mission properties

EN 12088
EN 12088: 2013, Thermal insulation products for building applications – Determination of
long-term water absorption by diffusion

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EN 12091: 2013, Thermal insulation products for building applications – Determination of freeze-thaw resistance

EN 826
EN 826: 2013, Thermal insulation products for building applications – Determination of
compression behaviour

EN 13501-1
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EN 12667
EN 12667: 2001, Thermal performance of buildings materials and products – Determination of
thermal resistance by means of guarded hot plate and heat flow meter methods -
Products of high and medium thermal resistance

EN 13164
EN 13164: 2015, Thermal insulation products for buildings – Factory-made extruded polystyrene foam (XPS) products – Specification

EN 14307
EN 14307: 2017, Thermal insulation products for building equipment and industrial installations - Factory made extruded polystyrene foam (XPS) products - Specification

EN 14934
EN 14934: 2007, Thermal insulation and light weight fill products for civil engineering applications - Factory made products of extruded polystyrene foam (XPS) - Specification

European list of waste
European list of waste: 2014/955/EU, Commission Decision amending 2000/532/EC on the list of waste

Ordinance on Biocide Products No.528/2012
Regulation (EU) No 528/2012 of the European Parliament and of the Council of22 May 2012 concerning the making available on the market and use ofbiocidal products

REACH
Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

Sphera LCA FE
Sphera LCA for Experts, LCA FE, software-system and databases, Managed LCA content MLC (fka GaBi database), University of Stuttgart and Sphera Solutions GmbH, 2025, CUP Version: 2025.1, MLC data set documentation under https://lcadatabase.sphera.com/

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Owner of the Declaration

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https://exiba.org/

Sicherheitsdatenblatt

gemäß Verordnung (EG) 1907/2006

***Überarbeitet am**:06/2023* ***Version:** 3*

ABSCHNITT 1: Bezeichnung des Stoffs beziehungsweise des Gemischs und des Unternehmens

1.1 Produktidentifikator
***Produktname:** - Austrotherm XPS® TOP, XPS® TOP TB und XPS® PLUS*

1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird
Keine weiteren relevanten Informationen verfügbar.

Verwendung des Stoffes / des Gemisches – *Wärmedämmplatte*

1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt

Bezeichnung des Unternehmens:
Austrotherm GmbH
Friedrich Schmid-Straße 165
A-2754 Waldegg/Wopfing
Fax: +43 (0) 2633/401-11

Auskunftsgebender Bereich:
Austrotherm GmbH
Tel.: +43 (0) 2633/401-0

1.4 Notrufnummer: *Tel.: +43 (0)1/406 43 43 (Vergiftungsinformationszentrale)*

ABSCHNITT 2: Mögliche Gefahren

2.1 Einstufung des Stoffs oder Gemischs
Einstufung gemäß Verordnung (EG) Nr. 1272/2008
Das Produkt ist gemäß CLP-Verordnung nicht eingestuft.

2.2 Kennzeichnungselemente
***Kennzeichnung gemäß Verordnung (EG) Nr. 1272/2008** - entfällt*
***Gefahrenpiktogramme** - entfällt*
***Signalwort -** entfällt*
***Gefahrenhinweise** – entfällt*

2.3 Sonstige Gefahren
Ergebnisse der PBT- und vPvB-Beurteilung
***PBT:** - Nicht anwendbar.*
***vPvB:** - Nicht anwendbar.*

ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen

3.2 Gemische
***Beschreibung:** - Extrudierter Polystyrol-Hartschaum*
***Gefährliche Inhaltsstoffe:** - entfällt*

ABSCHNITT 4: Erste-Hilfe-Maßnahmen

4.1 Beschreibung der Erste-Hilfe-Maßnahmen
***Allgemeine Hinweise:** - Keine besonderen Maßnahmen erforderlich.*
***nach Hautkontakt:** - Im Allgemeinen ist das Produkt nicht hautreizend.*

4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen
Bei bestimmungsgemäßer Verwendung sind bisher keine schädlichen Wirkungen festgestellt worden. Bei der Weiterverarbeitung durch z.B. Schneiden, Sägen oder Schleifen, können Partikel und Stäube entstehen. Kontakt mit Staub kann mechanische Reizung der Augen herbeiführen. Nach Einatmen von Staub kann es zu Reizungen der Atemwege kommen.

4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung
Keine weiteren relevanten Informationen verfügbar.

ABSCHNITT 5: Maßnahmen zur Bekämpfung

5.1 Löschmittel
***Geeignete Löschmittel:** - Feuerlöschmaßnahmen auf die Umgebung abstimmen.*
***Aus Sicherheitsgründen ungeeignete Löschmittel:** - Wasser im Vollstrahl.*

5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren
Bei einem Brand kann freigesetzt werden:
- *Kohlenmonoxid (CO)*
- *Kohlendioxid (CO2)*
- *Kohlenwasserstoffe*
- *Stickoxide (NOx)*
- *Styrol*

Unter bestimmten Brandbedingungen sind Spuren anderer giftiger Stoffe nicht auszuschließen.

5.3 Hinweise für die Brandbekämpfung
***Besondere Schutzausrüstung:** - Umgebungsluftunabhängiges Atemschutzgerät tragen.*
Weitere Angaben
Brandrückstände und kontaminiertes Löschwasser müssen entsprechend den behördlichen Vorschriften entsorgt werden.

ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung

6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren
Nicht erforderlich.

6.2 Umweltschutzmaßnahmen: *- Keine besonderen Maßnahmen erforderlich.*

6.3 Methoden und Material für Rückhaltung und Reinigung:
In geeigneten Behältern der Rückgewinnung oder Entsorgung zuführen.

6.4 Verweis auf andere Abschnitte
Informationen zur sicheren Handhabung siehe Abschnitt 7.
Informationen zur persönlichen Schutzausrüstung siehe Abschnitt 8.
Informationen zur Entsorgung siehe Abschnitt 13.

ABSCHNITT 7: Handhabung und Lagerung

7.1 Schutzmaßnahmen zur sicheren Handhabung: - *Staubbildung vermeiden.*
Hinweise zum Brand- und Explosionsschutz: *- Keine besonderen Maßnahmen erforderlich.*

7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten
Lagerung:
Anforderung an Lagerräume und Behälter:
Zusammenlagerungshinweise: - Getrennt von Lebensmitteln lagern.
Weitere Angaben zu den Lagerbedingungen:
Die Produkte sind trocken zu lagern, vor hohen Temperaturen (>70°C) sowie vor UV-Strahlung zu schützen.
Lagerklasse: - keine Daten verfügbar

7.3 Spezifische Endanwendungen: - *Keine weiteren relevanten Informationen verfügbar.*

ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstung

8.1 Zu überwachende Parameter
Bestandteile mit arbeitsplatzbezogenen, zu überwachenden Grenzwerten:
Das Produkt enthält keine relevanten Mengen von Stoffen mit arbeitsplatzbezogenen, zu überwachenden Grenzwerten.
Zusätzliche Hinweise: *- Als Grundlage dienten die bei der Erstellung gültigen Listen.*

8.2 Begrenzung und Überwachung der Exposition
Geeignete technische Steuerungseinrichtungen - Keine weiteren Angaben, siehe Abschnitt 7.

Individuelle Schutzmaßnahmen, zum Beispiel persönliche Schutzausrüstung
Allgemeine Schutz- und Hygienemaßnahmen:
Bei der Arbeit nicht essen, trinken, rauchen, schnupfen.
Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.
Vor den Pausen und bei Arbeitsende Hände waschen.

Atemschutz: *In unbelüfteten Räumen oder bei Staubentwicklung Einwegmasken (gem. EN 149 FFP1) tragen.*

Handschutz: *Handschuhe zum Schutz vor mechanische Verletzungen.*

Körperschutz: Körperbedeckende Arbeitsschutzkleidung

ABSCHNITT 9: Physikalische und chemische Eigenschaften

9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften

Allgemeine Angaben

Aggregatzustand	fest
Farbe	rosa
Geruch:	geruchlos
Schmelzpunkt/Gefrierpunkt:	Nicht bestimmt
Entzündbarkeit	Dieses Material ist brennbar, aber nicht leicht entzündbar.
Flammpunkt:	380 °C
pH-Wert:	Nicht anwendbar.
Löslichkeit	
Wasser:	nicht löslich
Dichte und/oder relative Dichte	
Dichte bei 20 °C:	30 -40 kg/m³

9.2 Sonstige Angaben

Form:	fest in verschiedenen Formen
Wichtige Angaben zum Gesundheits- und Umweltschutz sowie zur Sicherheit	
Zündtemperatur:	400 °C
Explosive Eigenschaften:	Das Produkt ist nicht explosionsgefährlich.
Zustandsänderung	
Verdampfungsgeschwindigkeit:	Nicht anwendbar.

Angaben über physikalische Gefahrenklassen	
Explosive Stoffe/Gemische und Erzeugnisse mit Explosivstoff:	entfällt
Entzündbare Gase:	entfällt
Aerosole:	entfällt
Oxidierende Gase:	entfällt
Gase unter Druck:	entfällt
Entzündbare Flüssigkeiten:	entfällt
Entzündbare Feststoffe:	entfällt
Selbstzersetzliche Stoffe und Gemische:	entfällt
Pyrophore Flüssigkeiten:	entfällt
Pyrophore Feststoffe:	entfällt
Selbsterhitzungsfähige Stoffe und Gemische:	entfällt
Stoffe und Gemische, die in Kontakt mit Wasser entzündbare Gase entwickeln:	entfällt
Oxidierende Flüssigkeiten:	entfällt
Oxidierende Feststoffe:	entfällt
Organische Peroxide:	entfällt
Gegenüber Metallen korrosiv wirkende Stoffe und Gemische:	entfällt
Desensibilisierte Stoffe/Gemische und Erzeugnisse mit Explosivstoff:	entfällt

ABSCHNITT 10: Stabilität und Reaktivität

10.1 Reaktivität - *Keine weiteren relevanten Informationen verfügbar.*

10.2 Chemische Stabilität
***Zu vermeidende Bedingungen:** - Keine Zersetzung bei bestimmungsgemäßer Verwendung.*

10.3 Möglichkeit gefährlicher Reaktionen - *Keine gefährlichen Reaktionen bekannt.*

10.4 Zu vermeidende Bedingungen - *Keine weiteren relevanten Informationen verfügbar.*

10.5 Unverträgliche Materialien:
Löslich in aromatischen Verbindungen, halogenierten Lösungsmitteln und Ketonen

10.6 Gefährliche Zersetzungsprodukte:
Produkt ist beständig unter Normalbedingungen. Die Bildung von Zersetzungsprodukten ist abhängig von der Temperatur, der Temperatur, der Luftzufuhr und dem Vorhandensein anderer Materialien.
Zersetzungsprodukte können u.a. folgendes beinhalten:
aromatische Verbindungen, Aldehyde, Ethylbenzol, Polymerfragmente
Unter nichtbrennbaren Bedingungen bei sehr hohen Temperaturen können geringe Mengen aromatische Kohlenwasserstoffe wie z.B. Styrol und Ethylbenzol entstehen.

***Weitere Angaben:** langfristig 70°C, oberhalb von 70°C kann eine Verformung/Erweichen auftreten*

ABSCHNITT 11: Toxikologische Angaben

11.1 Angaben zu den Gefahrenklassen im Sinne der Verordnung (EG) Nr. 1272/2008

Akute Toxizität
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Ätz-/Reizwirkung auf die Haut
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Schwere Augenschädigung/-reizung
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Keimzellmutagenität
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Karzinogenität
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Reproduktionstoxizität
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Spezifische Zielorgan-Toxizität bei einmaliger Exposition
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Spezifische Zielorgan-Toxizität bei wiederholter Exposition
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
Aspirationsgefahr
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

11.2 Angaben über sonstige Gefahren
Endokrinschädliche Eigenschaften
Keiner der Inhaltsstoffe ist enthalten.

ABSCHNITT 12: Umweltbezogene Angaben

12.1 Toxizität
***Aquatische Toxizität:** - Keine weiteren relevanten Informationen verfügbar.*

12.2 Persistenz und Abbaubarkeit - *Keine weiteren relevanten Informationen verfügbar.*
***Sonstige Hinweise:** Das Produkt ist biologisch nicht abbaubar*

12.3 Bioakkumulationspotenzial - *Keine weiteren relevanten Informationen verfügbar.*

12.4 Mobilität im Boden - *Keine weiteren relevanten Informationen verfügbar.*

12.5 Ergebnisse der PBT- und vPvB-Beurteilung
***PBT:** - Nicht anwendbar.*
***vPvB:** - Nicht anwendbar.*

12.6 Endokrinschädliche Eigenschaften
Das Produkt enthält keine Stoffe mit endokrinschädlichen Eigenschaften.

12.7 Andere schädliche Wirkungen
Weitere ökologische Hinweise:
***Allgemeine Hinweise:** Keine Wassergefährdung bekannt.*

ABSCHNITT 13: Hinweise zur Entsorgung

13.1 Verfahren der Abfallbehandlung
***Empfehlung:** Kleinere Mengen können gemeinsam mit Hausmüll deponiert werden.*
Europäischer Abfallkatalog
17 06 04 Dämmmaterial mit Ausnahme desjenigen, das unter 17 06 01 und 17 06 03 fällt
Verpackungen:
Empfehlung: Entsorgung gemäß den behördlichen Vorschriften.

ABSCHNITT 14: Angaben zum Transport

14.1 UN-Nummer oder ID-Nummer **ADR, IMDG, IATA**	entfällt
14.2 Ordnungsgemäße UN-Versandbezeichnung **ADR, IMDG, IATA**	entfällt
14.3 Transportgefahrenklassen **ADR, ADN, IMDG, IATA** **Klasse**	entfällt
14.4 Verpackungsgruppe **ADR, IMDG, IATA**	entfällt
14.5 Umweltgefahren:	Nicht anwendbar
14.6 Besondere Vorsichtsmaßnahmen für den Verwender	Nicht anwendbar.
14.7 Massengutbeförderung auf dem Seeweg gemäß IMO-Instrumenten.	Nicht anwendbar
UN "Model Regulation":	entfällt

ABSCHNITT 15: Rechtsvorschriften

15.1 Vorschriften zu Sicherheit, Gesundheits - und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch

Europäisches Verzeichnis der im Handel befindlichen Altstoffe (EINECS):
Die Bestandteile dieses Produkts sind im EINECS gelistet oder von der Bestandspflicht befreit.

EG-Einstufung und Kennzeichnung:
Dieses Produkt ist nicht als gefährlich gemäß EG-Kriterien eingestuft.

Zusätzliche Informationen:
REACH Verordnung (EG) Nr. 1907/2006:
Dieses Produkt ist ein Erzeugnis und daher nicht deklarationspflichtig. Gem. Richtlinie 1999/45 (EG) sind für XPS Produkte keine Sicherheitsdatenblätter gesetzlich vorgeschrieben.

***15.2 Stoffsicherheitsbeurteilung:** - Nicht anwendbar*

ABSCHNITT 16: Sonstige Angaben

Die Angaben stützen sich auf den heutigen Stand unserer Kenntnisse, sie stellen jedoch keine Zusicherung von Produkteigenschaften dar und begründen kein vertragliches Rechtsverhältnis.

Ansprechpartner:
Austrotherm GmbH
Tel.: +43 (0) 2633/401-0

Abkürzungen und Akronyme:
***ADR:** - Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the*
International Carriage of Dangerous Goods by Road)
***IMDG:** - International Maritime Code for Dangerous Goods*
***IATA:** - International Air Transport Association*
***GHS:** - Globally Harmonised System of Classification and Labelling of Chemicals*
***EINECS:** - European Inventory of Existing Commercial Chemical Substances*
***ELINCS:** - European List of Notified Chemical Substances*
***CAS:** - Chemical Abstracts Service (division of the American Chemical Society)*
***VbF:** - Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)*
***PBT:** - Persistent, Bioaccumulative and Toxic*
***vPvB:** - very Persistent and very Bioaccumulative*