Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2

Cavipor® FTX

Registration number:	EPD-Kiwa-EE-000463-EN
Issue date:	03.11.2025
Valid until:	03.11.2030
Declaration owner:	BASF SE
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified

1. General information

1.1 PRODUCT

Cavipor® FTX

Cavipor® FTX is an insulating clay foam. Cavipor is an in-situ foam system used for filling hollow spaces for thermal and acoustic insulation. Cavipor® FTX consists of 3 components –Cavipor® F, Cavipor® T and Cavipor® X. These Cavipor components are produced at the BASF SE site in Ludwigshafen, Germany and sold by various BASF subsidiaries globally.

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-000463-EN

1.3 VALIDITY

Issue date: 03.11.2025

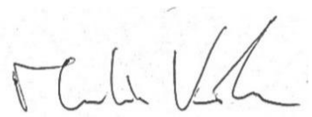
Valid until: 03.11.2030

1.4 PROGRAM OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
Germany

Raoul Mancke

(Head of program operations, Kiwa-Ecobility Experts)



Martin Köhrer

(Verification body, Kiwa-Ecobility Experts)

1.5 DETAILS OF THE DECLARATION OWNER

Declaration owner: BASF SE

Address: BASF SE, Carl-Bosch-Strasse 38, 67056 Ludwigshafen, Germany

E-mail: cavipor@basf.com

Website: www.cavipor.com

Production location: Carl-Bosch-Strasse 38, 67056 Ludwigshafen, Germany

Address production location: Carl-Bosch-Strasse 38, 67056 Ludwigshafen, Germany

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Morteza Nikravan (Dr. -Ing.)

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The program operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-EE GPI R.2.0

Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, Program EE 1201 (27.02.2025)

Kiwa-EE GPI R.2.0 Annex B1

Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, Program EE

1203 (27.02.2025)]

Product Category Rules for Building-Related Products and Services, IBU PCR part B (Requirements for the EPD for Mineral Insulating Materials, v11, 01.08.2024), in accordance with the requirements of EN 15804:2012+ A2:2019.

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPDs programs may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

LCA method: EN 15804+A2

LCA software: LCA for Experts version 10.9.1.17

Characterization method: EN 15804 +A2 based on EF 3.1

LCA database profiles: Sphera database

Version database: MLC 2025.1

1.11 PROJECT REPORT

This EPD is generated on the basis of the following report: Background report for Cavipor® FTX.

2. Product

2.1 PRODUCT DESCRIPTION

The scope of this EPD exclusively applies to Cavipor® FTX, produced at Ludwigshafen, BASF SE.

Cavipor® FTX is a nonflammable mineral-based clay foam used for cavity-filling for thermal and acoustic insulation. Cavipor® is a hydrophobic open-pore material that is self-sealing, allowing for fast and safe processing. The foam can be disposed of along with construction waste without need for separation and can be reused as foundation material. Cavipor® FTX consists of three components, all produced at the Ludwigshafen site of BASF SE:

Cavipor® F: filler

Cavipor® T: template

Cavipor® X: crosslinker

The components are packed for dispatch to the construction site in IBC containers (typically made of HDPE and steel). At the construction site, with the aid of a dedicated machine, these components are continuously mixed and frothed by adding pressurized air. The fresh foam is injected into hollow spaces of a building, thereby imparting an insulating effect upon hardening.

Product specification

The composition of the product is described in the following table:

Materials	Weight [m-%]
Mineral particles (clay, gypsum)	90%
Organic Binder system	7%
Surfactant system	3%

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

Cavipor® FTX foam is suitable for energy renovations of buildings with double-wall masonry and retrofitting of cavity walls.

Furthermore, hollow spaces in the roof, floor slabs or dry walls which are covered by diffusive layers can also be filled and thus thermically modernized with Cavipor® FTX.

Cavipor® FTX can be used as construction material according to ETA 19/0240. Regular supervision tests are conducted according to EAD 041561-00-1201.

2.3 REFERENCE SERVICE LIFE (RSL)

RSL PRODUCT

For this EPD, a calculation of reference service life was not necessary since the scope of the study does not consider the entire life cycle of the product, the indication of the reference service life (RSL) is voluntary.

2.4 TECHNICAL DATA

Technical data of Cavipor® FTX (dried):

Description	Test standard	Unit	Value
Bulk density (ISO 758)	EN 1602:2013	kg/m³	28-32
Heat conductivity	EN 12667:2001	W/(mK)	0,033
Heat conductivity, rated value	EN ISO 10456:2010	W/(mK)	0,034
Steam diffusion resistance	EN 12086	-	3

2.5 SUBSTANCES OF VERY HIGH CONCERN

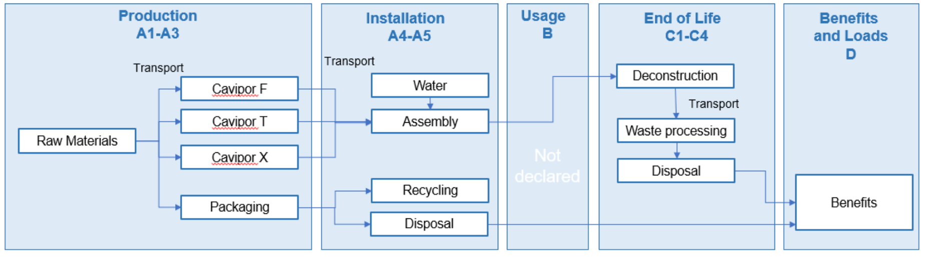
The product does not contain any substance that is listed in the table of substances of very high concern according to ECHA regulations in amounts > 0,1%.

2.6 DESCRIPTION PRODUCTION PROCESS

Cavipor® F contains around 3% organic polymeric binder as well as around 30% mineral components (mainly clay minerals). Cavipor® T contains the surfactant system as a mixture of alkyl-glycoside and ethoxylated alkyl alcohol sulfate salt (1-5%) and the precursor of the silconate-based Hydrophobizing agent (0.3-8%).

Cavipor® X contains the crosslinking agent. Once the water content of about 70% is evaporated (drying phase), the finished Cavipor® FTX foam is composed of 90% inorganic components (minerals) and 10% organic components from the cured system of binder and crosslinking agent and remaining surfactants.

The three water-based components are produced by combining and stirring the individual ingredients at room temperature, with no increased energy needs such as for heating or cooling. In order to produce the foam from the components and process it, energy is needed to operate three pumps and generate compressed air.



2.7 CONSTRUCTION DESCRIPTION

The fresh Cavipor® FTX foam is produced by mixing the three components in the following mixing ratio:

Cavipor® F: Cavipor® T: Cavipor® X = 1: 0.29: 0.17

For use as cavity wall insulation material, the components and the processing equipment are brought to the construction site in a small van or trailer, for example. Because of the self-sealing property of the foam, there is no need to seal smaller holes and cracks in the building in an additional work step before filling. The components are mixed with the air as described above and injected into the cavity to be filled as fluid foam, for example through drilling holes (~12 mm, 1 m spacing). The foam sets after around 1 minute and the drying phase begins.

For further application cases like in drywall, roof or floor slabs the injection or spray application method depends very much on the given situation and must be adapted, respectively.

3. Calculation rules

3.1 DECLARED UNIT

The declaration refers to the production and application of 1 m³ Cavipor® FTX foam. Volumetric mass density of fresh state as 109 kg/m³.

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m³
Weight per reference unit (fresh)	109	kg
Weight per reference unit (disposal)	30	kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

The scope of the declaration can be seen in the following figure:

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

This type of EPD is a cradle to gate_EPD with declared modules A1-A5, C1-C4 and D.

The modules of the EN 15804+A2 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for Cavipor® FTX, a product of BASF SE. This EPD is a manufacturer specific EPD declaring a specific product.

As the primary production data for this EPD is based on data from Ludwigshafen site in Germany the geographical scope here is Germany. The other modules are representative for German transport and disposal.

3.5 CUT-OFF CRITERIA

Cut-off for all input materials is 0.01 mass%, except for precious metal-containing catalysts with a cut-off of 0.0001 mass% in the background datasets for Cavipor® components. For background system cut-off criteria, refer to the Sphera database documentation. No known flows are deliberately excluded from this EPD.

3.6 ALLOCATION

No allocations were applied to production.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

Primary data including all raw materials, packaging materials, energy consumption and ancillary materials was comprehensively collected for the reference year 2024.

3.8 ESTIMATES AND ASSUMPTIONS

In modules A1-A3, for packaging, steel, part of IBC containers, is assumed to be 20% from the blast furnace route and 80% electric arc furnace route, the latter considered only processing impacts. Infrastructure is excluded.

In module A4 the distance to construction site was estimated based on BASF expert knowledge and practical data.

In module A5, for HDPE waste, a waste-to-energy treatment is assumed, credit for steam and electricity is given in module D. For waste steel from packaging, a 100% steel scrap recovery is assumed for the 20% material coming from blast furnace.

For module C2 an average transport distance for waste is assumed by a BASF expert. For module C4 the disposal in a landfill is assumed.

3.9 DATA QUALITY

The underlying background data is sourced from the Sphera database MLC 2025.1, with the latest update in 2025. The Primary data quality is considered to be of very good, as it is based on BASF’s 2024 production data from the Ludwigshafen site in Germany.

Quality requirement	Specific requirement	Data quality level	Notes
Time-related coverage	Age of data and minimum time period for data collection.	Very Good	Production data of 2024
Geographical coverage	Upstream: Unit process for raw material should be collected for respective geographic region	Good	Based on own production within Germany and DE, RER or GLO Sphera datasets for some other raw materials.
	Core: Unit process for production should represent the real site.	Very Good	Primary data taken from BASF Ludwigshafen site in DE.
	Downstream: End-of-life disposal should represent the region of disposal.	Very Good	DE Sphera datasets are used. Datasets for transport are only available in RER.
Technical representativeness	Qualitative assessment of the degree to which the data set reflects the true population of interest (technology)	Good	Data was selected to be most representative of the region and technology used.

3.10 POWER MIX

For electricity and steam used in BASF production processes, market-based approach is applied and provided by valid GoOs. BASF Ludwigshafen site-specific datasets were considered, with emissions for electricity as 2.9E-01 kg CO_2/kWh. These datasets were created by Sphera for BASF.

For electricity used in foam installation, local based is applied, using an average German electricity grid mix from Sphera datasets, with emissions of 1.7 kg CO_2/kWh.

4. Scenarios and additional technical information

4.1 RAW MATERIAL SUPPLY (A1)

No scenarios applied in A1 as raw materials and suppliers are well known.

4.2 TRANSPORT (A2)

No scenarios applied in A2 as transport mode and distance are well known.

4.3 MANUFACTURING (A3)

No scenarios applied in A3 as manufacturing is based on primary production data.

4.4 TRANSPORT TO CONSTRUCTION SITE (A4)

No scenarios applied in A4 as data is well known, and an average distance was created.

4.5 ASSEMBLY (A5)

No scenarios applied in A5 as data is well known, and electricity grid mix and mix for water consumption was used.

4.6 USE (B1)

Not declared.

4.7 MAINTENANCE (B2)

Not declared.

4.8 REPAIR (B3)

Not declared.

4.9 REPLACEMENT (B4)

Not declared.

4.10 REFURBISHMENT (B5)

Not declared.

4.11 OPERATIONAL ENERGY USE (B6)

Not declared

4.12 OPERATIONAL WATER USE (B7)

Not declared

4.13 DE-CONSTRUCTION, DEMOLITION (C1)

After use, the product is deconstructed and directly disposed to landfill. Negligible power consumption is taken for demolition.

4.14 TRANSPORT END-OF-LIFE (C2)

The base case is assumed with a transport distance of 50 km by a small truck (17,3t) within Germany. Three additional scenarios were developed as follows:

	Scenario 1	Scenario 2	Scenario 3
Distance	50 km	100 km	200 km
Transport mode	Truck, 3.3t payload capacity; diesel driven, Euro 0-VI mix, cargo (RER)	Truck, 17.3t payload capacity; diesel driven, Euro 0-VI mix, cargo (RER)	Truck, 17.3t payload capacity; diesel driven, Euro 0-VI mix, cargo (RER)

4.15 END OF LIFE (C3, C4)

The base scenario assumes the disposal of inert material in landfills within Germany. This represents one of the least favorable disposal methods in terms of environmental impacts and is considered conservative, yet it remains the most accurate depiction for the region, as landfill disposal is the predominant practice for Cavipor® FTX in Germany. As no further waste processing is required, C3 is considered as 0. Three additional scenarios were developed as per dataset availability, as follows:

	Scenario 1	Scenario 2	Scenario 3
Type of disposal	Inert matter (construction waste) on landfill (DE)	Inert matter in waste incineration plant (DE)	Inert matter (unspecified construction waste) on landfill (RER)

4.16 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The benefits are solely from packaging waste and steel scrap recycling. For the base case it is assumed that this is happening withing Germany. Three additional scenarios were developed as follows:

	Scenario 1	Scenario 2	Scenario 3
Benefits	DE datasets	DE datasets	RER datasets

5. Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. The results of the impact assessment are only relative statements that do not make any statements about endpoints of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER 1 m^3

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
AP	mol H^+ eqv.	8.0E-02	5.1E-02	1.6E-03	0.0E+00	9.8E-04	0.0E+00	3.2E-03	-1.9E-03
GWP-total	kg CO_2 eqv.	4.7E+01	7.4E+00	3.7E+00	0.0E+00	1.6E-01	0.0E+00	1.5E+00	-1.7E+00
GWP-b	kg CO_2 eqv.	-1.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E+00	0.0E+00
GWP-f	kg CO_2 eqv.	4.7E+01	7.3E+00	3.7E+00	0.0E+00	1.5E-01	0.0E+00	4.5E-01	-1.7E+00
GWP-luluc	kg CO_2 eqv.	9.7E-01	7.8E-02	5.8E-04	0.0E+00	1.6E-03	0.0E+00	2.7E-03	-6.4E-04
EP-m	kg N eqv.	2.5E-02	2.5E-02	6.8E-04	0.0E+00	4.9E-02	0.0E+00	8.2E-04	-6.3E-04
EP-fw	kg P eqv.	8.4E-05	2.0E-05	6.5E-05	0.0E+00	4.3E-07	0.0E+00	1.0E-06	-2.1E-06
EP-T	mol N eqv.	2.9E-01	2.7E-01	6.1E-03	0.0E+00	5.3E-03	0.0E+00	9.0E-03	-6.9E-03
ODP	kg CFC 11 eqv.	2.0E-07	8.9E-13	1.6E-11	0.0E+00	1.9E-14	0.0E+00	1.2E-12	-1.9E-11
POCP	kg NMVOC eqv	6.9E-02	4.7E-02	1.0E-03	0.0E+00	9.0E-04	0.0E+00	2.5E-03	-1.6E-03
ADP-f	MJ	7.3E+02	9.6E+01	8.5E+00	0.0E+00	2.0E+00	0.0E+00	5.9E+00	-2.4E+01
ADP-mm	kg Sb-eqv.	2.7E-06	5.0E-07	1.2E-07	0.0E+00	1.1E-08	0.0E+00	2.9E-08	-5.2E-07
WDP	m^3 world eqv.	7.6E-01	3.0E-02	3.2E-01	0.0E+00	6.4E-04	0.0E+00	5.1E-02	-2.3E-02

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	4.8E+02	1.2E+02	4.8E+00	0.0E+00	2.6E+00	0.0E+00	3.4E+00	-2.9E+00
PM	Disease incidence	1.5E-06	3.3E-07	1.3E-08	0.0E+00	6.2E-09	0.0E+00	4.0E-08	-1.4E-08
HTP-c	CTUh	1.1E-08	1.7E-09	4.7E-10	0.0E+00	3.5E-11	0.0E+00	8.1E-11	-1.7E-10
HTP-nc	CTUh	2.9E-07	9.5E-08	3.5E-08	0.0E+00	2.0E-09	0.0E+00	3.1E-09	-5.1E-09
IR	kBq U-235 eqv.	7.3E-01	1.8E-02	7.1E-02	0.0E+00	3.7E-04	0.0E+00	7.0E-03	-8.5E-02
SQP	Pt	9.0E+01	4.3E+01	4.6E+00	0.0E+00	9.0E-01	0.0E+00	1.7E+00	-5.5E+00

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals & metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weight water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some

construction materials is also not measured by this indicator.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI) PER 1 m^3

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5.2E+01	7.1E+00	7.1E+00	0.0E+00	1.5E-01	0.0E+00	1.0E+00	-8.6E+00
PERM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	5.2E+01	7.1E+00	7.1E+00	0.0E+00	1.5E-01	0.0E+00	1.0E+00	-8.6E+00
PENRE	MJ	7.3E+02	9.6E+01	8.5E+00	0.0E+00	2.0E+00	0.0E+00	5.9E+00	-2.4E+01
PENRM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ	7.3E+02	9.6E+01	8.5E+00	0.0E+00	2.0E+00	0.0E+00	5.9E+00	-2.4E+01
SM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	MJ	2.0E-27	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	MJ	2.4E-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	MJ	2.8E-01	3.4E-03	2.4E-02	0.0E+00	7.2E-05	0.0E+00	1.6E-03	-9.4E-03

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2.0E-04	3.5E-09	1.5E-08	0.0E+00	7.3E-11	0.0E+00	1.5E-09	-2.3E-08
NHWD	kg	2.7E+00	1.3E-02	8.5E-01	0.0E+00	2.7E-04	0.0E+00	3.0E+01	-5.0E-03
RWD	kg	5.2E-03	1.3E-04	7.1E-04	0.0E+00	2.7E-06	0.0E+00	6.1E-05	-8.6E-04

HWD=hazardous waste disposed | **NHWD**=non-hazardous waste disposed | **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MFR	kg	3.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EET	MJ	0.0E+00	0.0E+00	5.5E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EEE	MJ	0.0E+00	0.0E+00	1.3E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER KILOGRAM

The following information describes the biogenic carbon content in (the main parts of) the product at the factory gate per kilogram:

Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	2.8E-03	kg C
Biogenic carbon content in accompanying packaging	0	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of carbon dioxide uptake is considered. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

Uptake biogenic carbon dioxide	Amount	Unit
Product	1.0E-02	kg CO_2 (biogenic)
Packaging	0	kg CO_2 (biogenic)

6. Interpretation of results

6.1 CONTRIBUTION ANALYSIS

Across most of these categories, the lifecycle stage A1-A3 consistently shows the highest contribution, indicating that early production processes are a major driver of environmental impacts beyond just greenhouse gas emissions. A4 (transport to construction site) also contribute notably to certain categories, though to a lesser extent. and C2 (transport during end-of-life)

The following provides an overview of which production part contributes most significantly to environmental impacts, with climate change serving as an illustrative example. More than 60% of the climate change impact for A1-A3 comes from the Cavipor® F component. The other two components contain over 85% water and thus do not contribute significantly to the production phase. For Cavipor® F, nearly 65% of the total climate change impacts arise from raw materials since the organic binder contributes most. Utilities consumed during production account for nearly 10%, while transportation of these raw materials is close to 4% of the total climate change impact. Screening for more sustainable materials and process substitutes is under development but cannot be estimated at this point in time.

There are environmental impact categories where the main contributor is not A1-A3 but rather A4 (transport to construction site). Specifically, the categories eutrophication (marine) and eutrophication (terrestrial) show A4 as the dominant contributor.

6.2 SENSITIVITY ANALYSES

In general, the data quality for the A1-A3 modules is very high and can be considered highly reliable. This is due to the robust and comprehensive datasets available for these early life cycle stages and the fact that primary production data can be used, which is well within BASF's operational control.

However, greater uncertainties arise in modules A4 (transport to site), A5 (construction/installation), C (end-of-life), and D (benefits and loads beyond the system boundary). These uncertainties stem primarily from factors that are outside of BASF's direct influence, such as variability in transport distances, regional differences, and the lack of precise data on downstream processes. As such, the reliability of results for these modules is lower compared to A1-A3.

The results for modules C and D are particularly sensitive to the choice of datasets, transport distances, and regional context.

Overall, while the core production phase (A1-A3) offers robust and dependable results, interpretation of results for the later life cycle stages requires careful consideration of these uncertainties. Any comparative assessments or scenario analysis should note that results for modules A4, A5, C, and D are more subject to change depending on assumptions and external variables.

7. References

ISO 14040

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ISO 14044

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ISO 14025

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Kiwa-Ecobility Experts (Kiwa-EE)

General Product Category Rules - Version 2.1, 2022-02-14

Background database

Sphera database MLC 2025.1

NMD Determination Method V1.1 (March 2022)

PCR Part A

General Programme Instructions “Product Level” (SOP EE 1201_R.2.0, 2025), Kiwa-Ecobility Experts

PCR Part B

Requirements for the EPD for Mineral Insulating Materials, v11, 01.08.2024, Institute Construction and Environment e.V. (IBU)

Annex B1

Environmental Information Programme according to EN 15804 / ISO 21930 (SOP EE 1203_R.2.0, 2025), Kiwa-Ecobility Experts

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