

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

SmartEPD-2025-055-0286-01.1

illbruck ME500



Date of Issue:
Jan 29, 2025


Expiration:
Jan 29, 2030


Last updated:
Jan 31, 2025



 **TREMCO**
Construction Products Group

General Information

Illbruck

 Tremco CPGermany GmbH, Werner-Haepf-Straße 1, 92439 Bodenwöhr

 +49 172 7198350

 markus.komma@tremcocpg.com  illbruck.com



Product Name:	ME500
Declared Unit:	1 m2
Declaration Number:	SmartEPD-2025-055-0286-01.1
Date of Issue:	February 05, 2025
Expiration:	February 05, 2030
Last updated:	February 05, 2025
EPD Scope:	Cradle to gate with other options A1, A2, A3, A4, A5, C1, C2, C3, C4, D
Market(s) of Applicability:	Europe

General Organization Information


Illbruck has been a leading manufacturer of high-performance sealants, membranes, and tapes for over 70 years. Their product range includes solutions for windows, façades, interiors, and exteriors, catering to both large construction projects and smaller refurbishment jobs. Illbruck is recognized for its commitment to innovation, quality, and ease of installation, offering products such as tapes, membranes, sealants, foams, and hybrids. These solutions are designed to seal the inner and outer building envelope and enhance energy efficiency, acoustic and thermal insulation, and air quality in buildings. With robust research and manufacturing capabilities, Illbruck stays ahead of industry trends, providing future-proofed solutions for various construction needs.


Further information can be found at: <https://www.illbruck.com/>

Limitations, Liability, and Ownership

Enter limitaions text here

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
Core PCR:	EPD International PCR for Construction Products 2019:14 (EN 15804:A2:2019/AC:2021) v1.3.2 Date of issue: December 08, 2023 Valid until: December 20, 2024
Sub-category PCR review panel:	 Contact Smart EPD for more information.



General Program Instructions:  Smart EPD General Program Instructions v.1.0, November 2022



Verification Information


LCA Author/Creator:

EPD Program Operator:



Verification:

 Juan David Villegas |  juan@parqhq.com



 Smart EPD |  info@smartepd.com |  www.smartepd.com |

 585 Grove St., Ste. 145 PMB 966, Herndon, VA 20170, USA

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External

 Ranjani Theregowda |  rtherego@gmail.com

Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External

 Ranjani Theregowda |  rtherego@gmail.com

Product Information

Declared Unit:

Mass:

Product Specificity:

1 m2

0.4064 kg

 Product Average

 Product Specific

Product Description

ME500 is a window- and facade-joint membrane with non-woven fleece fabric. It has an intelligent functional layer with variable water vapor permeability, providing perimeter window seal for airtight internal & weathertight external joints.

Further information can be found at: [ME500 I-MEMBRANE | Twin Aktiv \(illbruck.com\)](#)

Product Specifications

Product Classification Codes: EC3 - ThermalMoistureProtection -> WeatherBarriers

Material Composition

Material/Component Category	Origin	% Mass
Adhesive		38.71
Plastic		28.17
Synthetic Rubber		33.12

Packaging Material	Origin	kg Mass
Cardboard		0.03
Wood		0.01
Hdpe		0.01
Paper		0.03

Biogenic Carbon Content	kg C per m2
Biogenic carbon content in product	0.02
Biogenic carbon content in accompanying packaging	0.03

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

- Primary Data Year:January 2023 to December 2023
- Manufacturing Specificity:

✗

Industry Average

✗

Manufacturer Average

✗

Facility Specific

Averaging:
Averaging was not conducted for this EPD

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

Plants

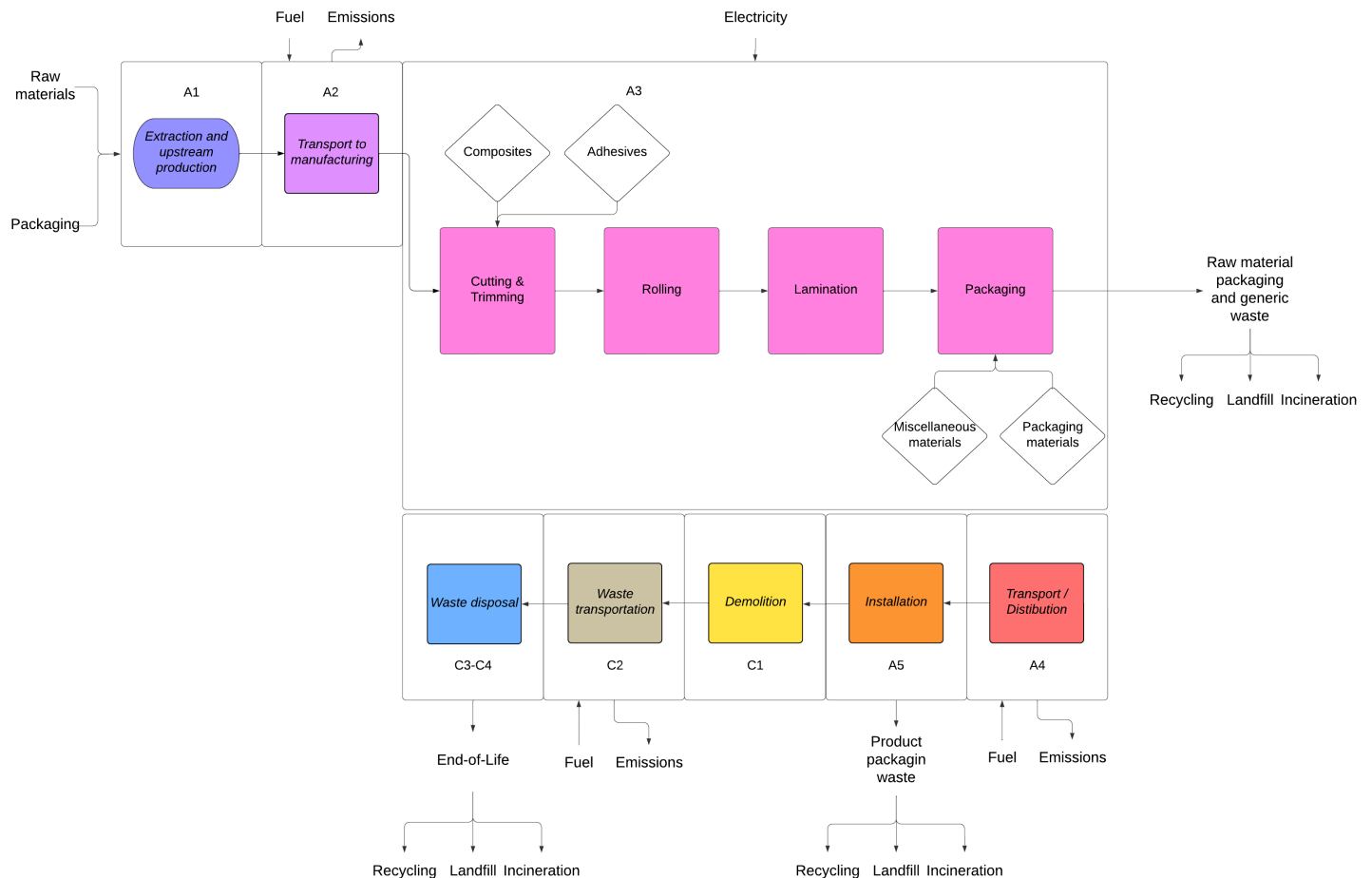


Legnica, Poland
Legnica, Poland



Bodenwöhr, Germany
Bodenwöhr, Germany

Product Flow Diagram



Software and Database

LCA Software:

SimaPro v. 9.5

LCI Foreground Database(s):

Ecoinvent v. 3.9.1

LCI Background Database(s):

Ecoinvent v. 3.9.1

Data Quality

The quality of inventory data is evaluated based on several criteria, including precision, completeness, consistency, and representativeness.

Precision and completeness:

- **Precision:** The inventory data used in this study were either directly measured, calculated, or estimated based on primary data sources, ensuring high precision. Background data from ecoinvent v3 database also has documented precision to the extent available.
- **Completeness:** The product system's mass balance and inventory completeness were thoroughly checked. Some exclusions were made in line with the PCR requirements, such as personnel impacts, R&D activities, business travel, secondary packaging, point of sale infrastructure, and the coating applicator. However, no data was intentionally omitted.

Consistency and reproducibility:

- **Consistency:** Primary data were collected with a similar level of detail, while background data primarily came from the ecoinvent database, with other databases used only if necessary or more representative. The modeling approach and other methodological choices were applied consistently throughout the model.
- **Reproducibility:** This study ensures reproducibility by providing comprehensive disclosure of input-output data, dataset choices, and modeling approaches. A knowledgeable third party should be able to approximate the results using the same data and modeling methods.

Representativeness:

- **Temporal:** Primary data were collected for the 12 month period of the 2023 calendar year to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database is typically representative of recent years. to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database is typically representative of recent years.
- **Geographical:** Geographical: Primary data represent production facilities in Germany and Poland. Where applicable, differences in electric grid mix were considered using appropriate secondary data. The use of country-specific data ensures high geographical representativeness, and proxy data were only used when country-specific data were unavailable.
- **Technological:** Both primary and secondary data were tailored to the specific technologies studied, ensuring high technological representativeness.

Life Cycle Module Descriptions

Primary data were collected for the 12-month period of the 2023 calendar year to ensure technical, geographical, and temporal representativeness. The manufacturing process starts with the reception of raw materials, typically in the form of rolls (e.g., composite materials, adhesives, and paper). Next, the raw materials undergo cutting, rolling, and lamination processes to create rolls of finished membrane products. After this step, the products are packaged and distributed to various distribution centers. Non-hazardous waste, consisting mainly of packaging material and finished product, is sent for disposal, incineration, and/or recycling.

LCA Discussion

Allocation Procedure

No cut-off criteria are defined for this study. The system boundary was defined based on relevance to the goal of the study. For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

Cut-off Procedure

The system boundary was defined based on relevance to the goal of the study. For the raw material (A1) and process related inputs (A3), all available energy and material flow data have been included in the model. Cut-off criteria of 1% was only applied for packaging materials, non hazardous waste streams. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:

✗ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	Truck and Trailer
Transport Distance:	545.36 km
Capacity Utilization:	53% %
Packaging Mass:	0.179 kg
Gross density of products transported:	180 kg/m3
Weight of products transported:	0.406 kg
Volume of products transported:	0.00225 m3
Capacity utilization volume factor:	1
Assumptions for scenario development:	Transport distance includes finished product to distribution center and distribution center to point of sale.

Installation in to the building/construction site (A5)

A5 Module

Product Lost per Functional Unit:	0.00813 kg
Mass of Packaging Waste Specified by Type:	0.0738 kg
Biogenic Carbon Contained in Packaging:	0.0292 kg
Assumptions for scenario development:	-

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected with Mixed Construction Waste:	0.398 kg
--	----------

Recovery

Incineration:	0.398 kg
---------------	----------

Results

Environmental Impact Assessment Results

EF 3.1

per 1 m2 of product .

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Method	Unit	A1A2A3	A4	A5	C1	C2	C3	C4	D
GWP-total	EF 3.1	kg CO2 eq	1.52e+0	2.63e-2	3.04e-2	0	3.99e-3	9.47e-1	0	-1.58e+0
GWP-biogenic	EF 3.1	kg CO2 eq	-9.64e-2	2.09e-5	6.05e-3	0	3.18e-6	7.29e-5	0	1.54e-1
GWP-fossil	EF 3.1	kg CO2 eq	1.62e+0	2.62e-2	2.43e-2	0	3.99e-3	9.47e-1	0	-1.74e+0
GWP-luluc	EF 3.1	kg CO2 eq	1.89e-3	1.28e-5	4.10e-6	0	1.95e-6	7.17e-6	0	-6.00e-4
ODP	EF 3.1	kg CFC11 eq	2.96e-6	5.96e-10	8.42e-11	0	9.06e-11	9.74e-10	0	-2.14e-8
AP	EF 3.1	mol H+ eq	8.86e-3	6.49e-5	1.89e-5	0	9.87e-6	2.16e-4	0	-1.17e-2
EP-freshwater	EF 3.1	kg P eq	2.79e-4	1.94e-6	1.30e-6	0	2.94e-7	2.83e-6	0	-1.90e-3
EP-marine	EF 3.1	kg N eq	1.84e-3	1.77e-5	3.69e-5	0	2.69e-6	1.23e-4	0	-1.73e-3
EP-terrestrial	EF 3.1	mol N eq	1.64e-2	1.82e-4	5.90e-5	0	2.76e-5	1.05e-3	0	-1.53e-2
POCP	EF 3.1	kg NMVOC eq	6.55e-3	1.06e-4	2.17e-5	0	1.61e-5	2.64e-4	0	-4.59e-3
ADP-minerals&metals	EF 3.1	kg Sb eq	5.33e-6	7.34e-8	2.23e-8	0	1.12e-8	4.55e-8	0	-1.35e-6
ADP-fossil	EF 3.1	MJ	3.51e+1	3.98e-1	5.98e-2	0	6.05e-2	1.75e-1	0	-2.04e+1
WDP	EF 3.1	m3 depriv.	3.48e-1	1.90e-3	1.63e-3	0	2.89e-4	4.30e-2	0	-2.76e-1

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particulate Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicators

per 1 m2 of product .

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3.13e+0	5.82e-3	5.47e-3	0	8.86e-4	7.17e-3	0	-3.65e+0
PERM	MJ	0	0	0	0	0	0	0	0
PERT	MJ	3.13e+0	5.82e-3	5.47e-3	0	8.86e-4	7.17e-3	0	-3.65e+0
PENRE	MJ	3.51e+1	3.98e-1	5.98e-2	0	6.05e-2	1.75e-1	0	-2.04e+1
PENRM	MJ	5.13e-3	1.68e-5	3.45e-5	0	2.55e-6	7.70e-6	0	-1.65e-3
PENRT	MJ	3.51e+1	3.98e-1	5.98e-2	0	6.05e-2	1.75e-1	0	-2.04e+1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	9.02e-3	5.40e-5	5.69e-5	0	8.20e-6	1.36e-3	0	-4.91e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 m2 of product .

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	9.00e-3	0	2.86e-2	0	0	3.98e-1	0	0
RWD	kg	1.23e-5	1.21e-7	1.57e-7	0	1.84e-8	8.87e-8	0	-1.55e-5
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.58e-2	0	5.31e-2	0	0	0	0	0
MER	kg	7.50e-5	0	2.91e-4	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Carbon Emissions and Removals
per 1 m2 of product .

Indicator	Unit	A1A2A3	A5	C4	D
BCRP	kg C	2.03e-2	0	0	ND
BCEP	kg C	0	0	2.03e-2	ND
BCRK	kg C	2.92e-2	0	0	ND
BCEK	kg C	0	2.92e-2	0	ND
CCE	kg C	0	0	0	ND

Note:

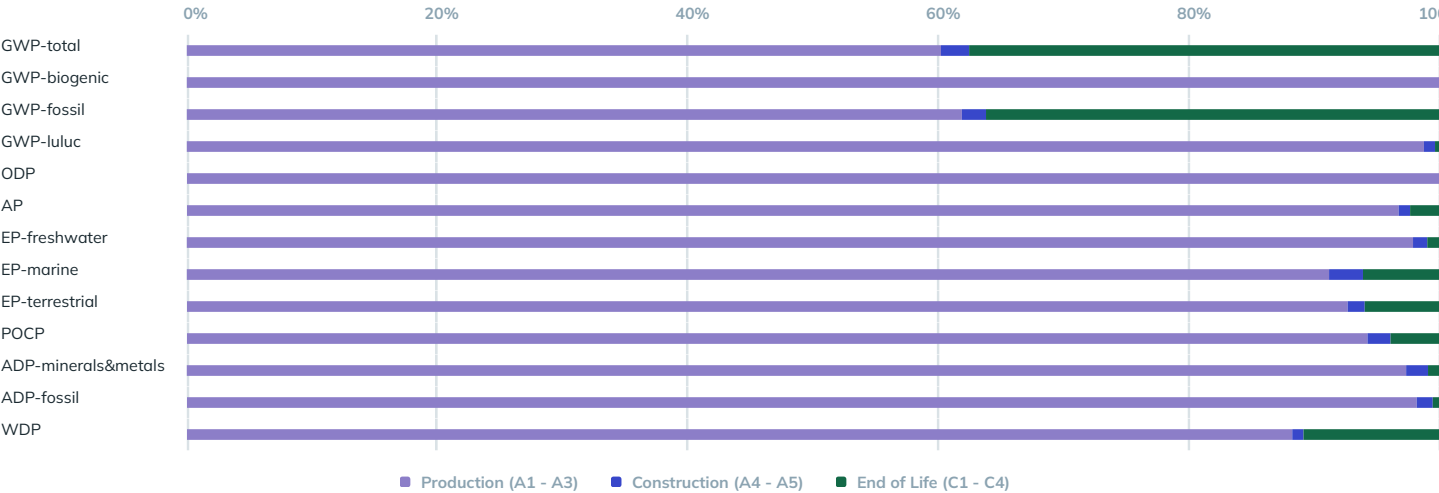
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

The product stage (A1-A3) shows the highest environmental impact, primarily due to raw material manufacturing and manufacturing energy use. For products with high manufacturing energy impacts, switching to renewable energy sources is recommended. Since raw materials significantly impact the environmental footprint, Illbruck should consider using alternative materials with lower environmental impacts. They should also seek suppliers who use sustainable manufacturing techniques and renewable energy. These changes would improve the overall sustainability of Illbruck's products.



Additional Environmental Information

None

References

- ISO 14025, "Environmental labels and declarations, Type III environmental declarations, Principles and procedures", ISO14025:2006

- EN 15804:2012+A2:2019. Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. Brussels: European Committee for Standardization (CEN).
- Construction Products Product Category Rule (PCR) 2019:14 v1.3.4
- ISO 14044, "Environmental management - Life cycle assessment - Requirements and guidelines", ISO14044:2006.
- Ecoinvent v3.9.1, December 2022. The ecoinvent database: Overview and methodology, Data quality guideline for the ecoinvent database version 3, www.ecoinvent.org