ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Preprufe 160R Plus
Preprufe 160R Plus LT

Waterproofing membranes for buried structures (excluding additional application products)

INTERNATIONAL EPD SYSTEM

Programme: The International EPD System, www.environdec.com
Programme operator: EPD international AB
Type of EPD:
EPD of multiple products from a company: EPD of multiple products, based on a representative product.

EPD registration number: EPD-IES: 0005895

Version: 2
Version date: 2026-01-01
Validity: 5 years
Validity date: 2030-12-31

ECO PLATFORM EPD VERIFIED

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.

From: Saint-Gobain Construction Chemicals

General information

Programme information

PROGRAMME:	**The International EPD® System**
ADRESS:	EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden
WEBSITE:	www.environdec.com
E-MAIL:	support@environdec.com

PCR and verification

Product category rules (PCR)

CEN standard EN 15804:2012+A2:2019/AC:2021 serves as the Core Product Category Rules (PCR).
Product category rules (PCR): PCR 2019:14 Construction Products, version 2.0.1
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com for a list of members. **Chairs of the PCR review:** Rob Rouwette (chair), Noa Meron (co-chair).

Verification

External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through: ☒ Individual EPD verification without a pre-verified LCA/EPD tool ☐ Individual EPD verification with a pre-verified LCA/EPD tool ☐ EPD process certification* without a pre-verified LCA/EPD tool ☐ EPD process certification* with a pre-verified LCA/EPD tool ☐ Fully pre-verified EPD tool **Third party verifier:** Pierre-Alexis Duvernois (ELYS Conseil, 11 rue de Ligoger, 77580 Guérard, France) **Approved by:** The International EPD© System
Procedure for follow-up of data during EPD validity involves third part verifier: ☐ Yes ☒ No

Ownership and limitations on use of EPD

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

Information about EPD owner

Address and contact information of the EPD owner: Saint-Gobain Construction Chemicals, Tour Saint-Gobain 12, place de l'Iris, 92400 Courbevoie.
Description of the organisation of the EPD owner: Worldwide leader in light and sustainable construction, Saint-Gobain designs, manufactures and distributes materials and services for the construction and industrial markets.
LCA practitioner: Daniel Doran (daniel.doran@saint-gobain.com, Saint-Gobain LCA Central Team) and Anna Beatriz Suppelsa(annabeatriz.suppelsa@saint-gobain.com, Saint-Gobain LCA Central Team).
Communication: The intended use of this EPD is for B2B communication.

Product information

Product name(s): Preprufe 160R Plus; Preprufe 160R Plus LT. The reference product is Preprufe 160R Plus LT, which is the representative product.
Product identification: Membranes for waterproofing and the protection of concrete slabs and below ground concrete walls poured in confined space conditions, tested according to standards including EN 1850-2, EN 1848-2, EN 1849-2, EN 1928, EN 12691, EN 12310-1, EN 12317-2, EN 1931, EN 1296, EN 1847, EN 1548, EN 12730, EN 12311-2, EN 13501-1 and EN 13967.
UN CPC CODE: 3692 Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics.
Manufacturing site(s): 350 Magnolia drive, Mt Pleasant, Tennessee 38474, U.S.A.
Product(s) description: -
Pre applied waterproofing composite sheet membranes comprising of a thick HDPE film, pressure sensitive adhesive, and weather resistant protective coating for use below slabs or behind basement walls on confined sites.

Designed with Advanced Bond Technology™ and dual adhesive ZipLap™ seams, PREPRUFE® Plus membranes form, integral bond to poured concrete. This integral bond is specifically designed to provide a robust barrier to water, moisture and gas and prevents both the ingress and lateral migration of water.

PREPRUFE® Plus membranes are release liner free and designed for efficient, reliable installation. PREPRUFE® Plus ZipLap™ seams allow for an adhesive-to-adhesive bond at membrane sheet overlaps and deliver superior performance in harsh conditions without the need for specialized equipment, heat or power.

Parameter	Value / Description
Length (to EN 1848-2) [m]	36.65 (± 0.25)
Thickness (to EN 1849-2) [mm]	0.81 (± 0.06)
Width (to EN 1848-2) [m]	1.18 (± 0.010)

Application	Value / Description
Intended use and key functions	• Water and vapour proofing for all basement grades to BS 8102:2009. • Waterproofing civil engineering sub-structures. • Protection of reinforced concrete structures in most aggressive ground exposures including conditions experienced in the Arabian Peninsula.

Application	Value / Description
Expected influence on the operational aspects and impact of the building or other construction work	• The product has a lifespan of 100 years. It is assumed there is no requirement for maintenance, repair, replacement, or refurbishment during the use stage of the building.
Restrictions to a type of construction or building	• PREPRUFE® 160R Plus and PREPRUFE® 160R Plus LT membranes are only intended for use as specifically detailed in the product data sheet or consistent with other information that can be found at gcpat.uk. Contact GCP Technical Services where any other use is anticipated or intended. • PREPRUFE® 160R Plus and PREPRUFE® 160R Plus LT membranes are designed for in-service temperatures below 49°C. • PREPRUFE® 160R Plus and PREPRUFE® 160R Plus LT membranes can be applied horizontally on the following substrates: Concrete blinding, heave boards and/or rigid insulation. Concrete slab thickness must not exceed 500mm. • PREPRUFE® 800PA is recommended for application to poured concrete walls where walls will be accessible after removal of two sided formwork. Where PREPRUFE® 160R Plus and PREPRUFE® 160R Plus LT Membranes are used with conventional two-sided formwork, patching of tie-bar holes must conform with the GCP methods statement available from GCP technical services.
Lifespan	100 years. Providing that the product is installed correctly. Various tests attesting to durability of this product have been carried out. According to the Technical Note 'Durability - GCP membranes Preprufe® and Bituthene®', the lifespan considered for this product is 100 years in the field of buried structures designed in accordance with standard EN 1990:2002+A1 – Eurocode: Basis of structural design.

For more information: www.gcpat.uk

Visual representation of the product(s):

Content declaration

This EPD covers multiple products, the following represents: Preprufe 160R Plus LT.

Mass (weight) of product: 0.89 kg (as installed; excl. release liners)/Declared Unit
Mass (weight) of packaging: 0.14 kg/Declared Unit

Product components	Mass (kg)	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/ m2 product
HMA adhesive	3.7E-01 – 4.5E-01	0%	0%	0
PE Film	3.8E-01 – 4.6E-01	0%	0%	0
White coating	5.0E-02 – 6.1E-02	0%	0%	0
TOTAL	8.9E-01			

Packaging materials	Mass (kg)	Mass-% (versus the product)	Biogenic material, mass-% of packaging	Biogenic material, kg C/ m2 product
Cardboard carton	3.7E-02 – 4.5E-02	5%	14%	0.02
Cardboard core	5.4E-02 – 6.6E-02	7%	20%	0.03
Core adhesive	1.7E-04 – 2.0E-04	<1%	0%	0
Release liner	1.1E-02 – 1.3E-02	1%	0%	0
Stretch wrap	1.1E-03 – 1.4E-03	<1%	0%	0
Wooden pallet	2.0E-02 – 2.5E-02	3%	7%	<0.01

Hazardous substances

At the date of issue of this declaration, neither the product nor the packaging contain a "Substance of Very High Concern" (SVHC) at a concentration above 0.1% by weight, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

LCA information

TYPE OF EPD	Cradle to grave and module D.
DECLARED UNIT (DU)	To ensure the watertightness of buried structures over a surface area of 1 m² over a reference lifetime of 100 years (excluding additional installation products).
CONVERSION FACTOR TO MASS	0.89 kg (as installed; excl. release liners)/Declared Unit Other physical properties per DU:- Thickness: 0.81 mm Coverage: 1 m2. Due to overlapping of the membrane during installation, 1.035 m2 of membrane is assumed per declared unit.
SYSTEM BOUNDARIES	Cradle to grave and module D.
REFERENCE SERVICE LIFE (RSL)	N/A (no applicable complimentary PCR). See lifespan in the Product Information section.

CUT-OFF RULES	All data was available, and no cut-off rules have been applied, except for the following:- In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than the 5% of the whole mass and energy used, as well of the emissions to environment occurred. Flows related to human activities such as employee transport are excluded. The construction of buildings, production of machines and vehicles are excluded since the related flows are assumed to be negligible compared to the production of the construction product, when compared at these systems lifetime level.
ALLOCATIONS	Allocation has been avoided where possible. Where not possible, a mass allocation approach has been applied. The polluter pays and the modularity principles have been followed. Allocation of materials for recycling: Recycled material is not a main input or output from the product system.
DATA QUALITY ASSESSMENT	Data quality of primary and secondary data has been judged by its precision (e.g. measured or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied), and representativeness (geographical, technological, and temporal).
GEOGRAPHICAL COVERAGE/SCOPE AND TIME PERIOD	Scope (A4-C4): EUR. Data is from the following production sites: 350 Magnolia drive, Mt Pleasant, Tennessee 38474, U.S.A Data collected for the period: 2023.
BACKGROUND DATA SOURCE	Databases from Sphera CUP2025.1; ecoinvent v.3.11. EF package 3.1.
SOFTWARE	Sphera LCA for Experts version 10.

Data quality declaration

Process	Source type	Source	Reference year	Data category	Share of primary data of GWP-GHG Results for A1-A3
Manufacturing process					**6.3%**
Thermal energy	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	100.0%/0.0% primary/secondary	1.6%
Electricity	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	100.0%/0.0% primary/secondary	4.7%
Other manufacturing processes	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	Secondary	0.0%
Transport of raw materials				100% Secondary	**0.0%**
All transport of raw materials	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	Secondary	0.0%
Product raw materials				100% Secondary	**0.0%**
All product raw materials	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	Secondary	0.0%
Packaging raw materials				100% Secondary	**0.0%**
All packaging raw materials	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	Secondary	0.0%
Other				100% Secondary	**0.0%**
All other processes	Database	Sphera CUP2025.1; ecoinvent v.3.11	<5 years old	Secondary	0.0%
				Total share of primary data	**6.3%**

A1-A3 GWP-GHG	3.41E+00

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Item from table C.2 EN 15941:2024	Information
Data collection	2023
Sites used	350 Magnolia drive, Mt Pleasant, Tennessee 38474, U.S.A
Geography	Scope A1-A3: US Scope A4-C: EUR
Technology	Raw materials are received and mixed in batches to create the adhesive. The adhesive is then coated onto a backing, which is then laminated onto a film. After lamination, the product is wound onto a mandrel to the length specified for the product. The roll is then taken to a packaging cell for boxing, palletizing, and stretch wrapping before being transported to the warehouse for dispatch.
Averaging	N/A
LCI/LCA database	Sphera CUP2025.1; ecoinvent v.3.11
EPD used	None.
Data quality scheme	EN 15804:2012+A2:2019, Annex E, Table E.2
Use of fair data with more than 30% of a core impact	RoW source for USA: HDPE production and extrusion for product. RoW source for USA: Raw material component of product HMA.
Use of poor relevant data	EUR source for international: Diesel production for transport. EUR source for USA: Municipal waste landfill.
Use of very poor data	None.

Description of modules declared and geographical scope

Modules included: (X=included. ND=module not declared)

	PRODUCT STAGE			CON. PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse, recovery and recycling potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	US	US	US	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR

Modelling of manufacturing and upstream modules

The product stage of construction products is subdivided into three modules:-

- **A1. Raw materials supply**

This module includes the extraction and transformation of raw materials.

- **A2. Transport (to the manufacturer)**

This module includes the transportation of raw materials to the manufacturing site. This includes road, boat, and/or train transportation.

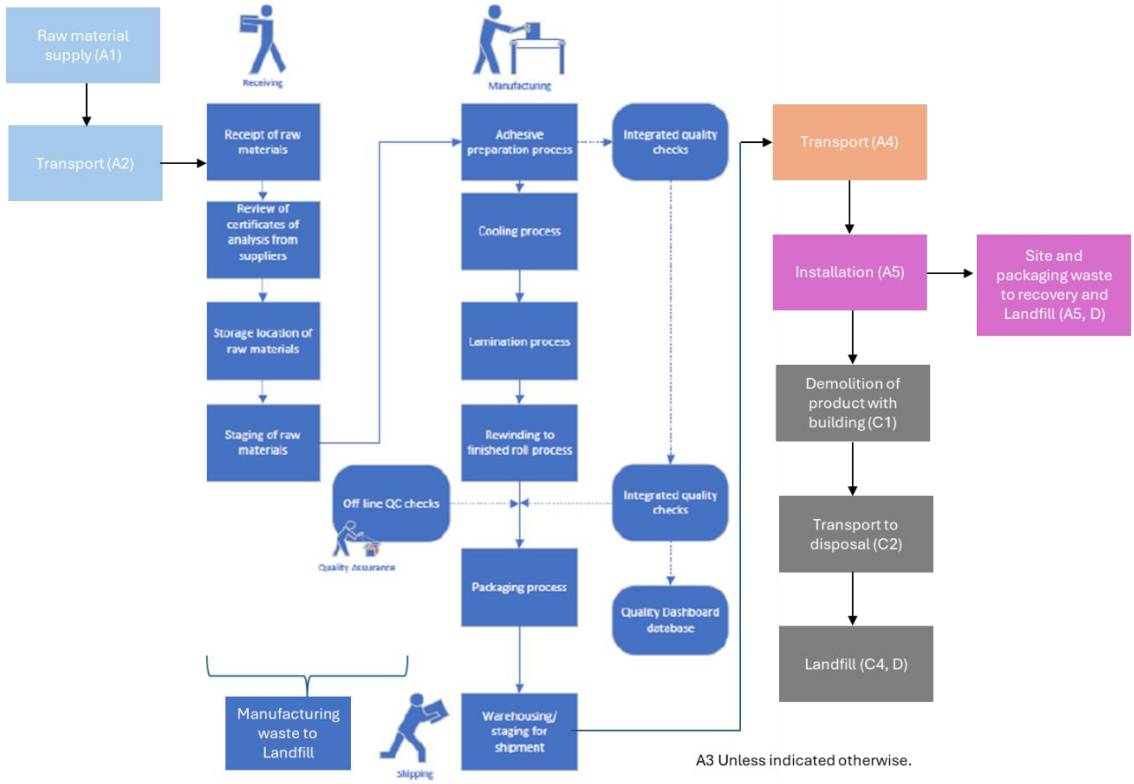
- **A3. Manufacturing**

This module includes manufacturing of the product(s) and manufacturing of associated packaging, by the manufacturer. The processing of any waste arising from this stage is also included.

Raw materials are received and mixed in batches to create the adhesive. The adhesive is then coated onto a backing, which is then laminated onto a film.

After lamination, the product is wound onto a mandrel to the length specified for the product. The roll is then taken to a packaging cell for boxing, palletizing, and stretch wrapping before being transported to the warehouse for dispatch.

Manufacturing process flow diagram



Modelling of downstream modules and module D
The construction process stage is subdivided into two modules:-

- **A4. Transport (to the construction site)**

This module includes transport from the factory gate to the construction site. This is calculated based on a scenario, with the parameters described in the following table.

Parameter	Value / Description
Transport mode(s)	
Truck	Truck-trailer, 27 t payload capacity.
Ship	Container ship, 5.000 to 200.000 dwt payload capacity.
Train	Average train (electrical and diesel), 726 t payload capacity.
Distance, per mode [km]	
Truck	1471
Ship	11516
Train	943
Capacity utilisation (including empty returns)	56% (30% empty returns).

- **A5. Construction-installation process**

This module includes the installation of the product, losses during installation (including the production required for these losses), and the processing of any waste arising during this stage (including packaging).

Installation is manual via self-adhesive bonding to the substrate and to the overlaps. As the membrane is self-adhesive, no equipment or energy is required for installation, such as a gas torch or hot air gun. Losses include offcuts during installation.

This module is calculated based on a scenario, with the parameters described in the following tables.

Parameter	Value / Description
Ancillary materials for installation (specified by material)	Not considered, e.g. Preprufe tapes.
Transport distance of waste [km]	
Landfill	80
Incineration (with and without energy recovery)	130
Recycling	n/a
Reuse	n/a
Waste route - product, per waste source	
All sources: Landfill	100%
All sources: Incineration (with energy recovery)	0%
All sources: Incineration (without energy recovery)	0%
All sources: Recycling	0%
Waste route - packaging, per waste source	
All sources: Landfill	15%
All sources: Incineration (with energy recovery)	81%
All sources: Incineration (without energy recovery)	4%
All sources: Recycling	0%
Pallet: Reuse (times)	7

Parameter	Value / Description
Direct emissions to ambient air, soil, and water	Not considered

Wastage of materials on the construction site, generated by the product's installation (specified by waste source)	Value / Description [kg]
Product	0.02
Packaging	
Cardboard carton	0.04
Cardboard core	0.06
Core adhesive	<0.01
Release liner	0.01
Stretch wrap	<0.01
Wooden pallet	0.02

The use stage is subdivided into seven modules:-

- **B1: Use**
- **B2: Maintenance**
- **B3: Repair**
- **B4: Replacement**
- **B5: Refurbishment**
- **B6: Operational energy use**
- **B7: Operational water use**

The product has a lifespan of 100 years. It is assumed there is no requirement for maintenance, repair, replacement, or refurbishment during the use stage of the building. Therefore, zero impacts are assumed for this stage.

The end-of-life stage is subdivided into four modules: -

- **C1: De-construction, demolition**

The scope of this module is the de-construction and/or demolition of the installed product during the de-construction and/or demolition of entire building.

- **C2: Transport**

The scope of this module is transport of the installed product from the de-construction demolition site to the waste processing facility(ies).

- **C3: Waste processing**

The scope of this module is waste processing of the installed product for reuse, energy recovery and/or recycling.

- **C4: Waste disposal**

The scope of this module is the final disposal of the installed product (including physical pre-treatment and site management).

Description of the scenarios and additional technical information for the end of life:-

Parameter	Value / Description
Deconstruction and/or demolition (C1)	The energy considered is 0.045 MJ/kg of the installed product.
Collection process (specified by type)	The entire product (100%) is collected with mixed construction waste.

Parameter	Value / Description
Transport distance of waste (C2) [km]	
Landfill	80
Incineration (with and without energy recovery)	130
Recycling	n/a
Reuse	n/a
Waste route, per waste source (C and D)	
All sources: Landfill	100%
All sources: Incineration (with energy recovery)	0%
All sources: Incineration (without energy recovery)	0%
All sources: Recycling	0%
Other assumptions for scenario development	None

- **D: Reuse, recovery, recycling, potential**

Module D declares the net environmental benefits and loads beyond the system boundary from the reuse, recycling or energy recovery of the product. Module D considers: -

- Inputs of secondary materials: Recycled (pre- and post-consumer) or reused inputs/raw materials entering the system for use in the product or packaging.
- Outputs of secondary materials: Product and packaging end-of-life waste and manufacturing waste exiting the system for recycling, reuse or energy recovery.

See the end-of-life scenarios described above (A4 and C1 to C4). For the product, 100% of the waste is landfilled and no load or benefit is identified. For packaging, a benefit occurs due to the fraction incinerated with energy recovery.

Environmental performance

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Environmental impact category	PRODUCT STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1-A3	A4 Transport	A5 Construction-Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling potential
Climate change - total [kg CO2 eq.]	3.26E+00	2.77E-01	3.27E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-03	5.63E-03	0.00E+00	2.69E-02	-2.37E-02
Climate change - fossil [kg CO2 eq.]	3.38E+00	2.75E-01	1.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-03	5.56E-03	0.00E+00	2.68E-02	-2.36E-02
Climate change - biogenic [kg CO2 eq.]	-1.24E-01	4.34E-04	2.14E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.05E-07	1.16E-05	0.00E+00	7.59E-05	-6.85E-05
Climate change - land use and land use change [kg CO2 eq.]	3.05E-03	1.17E-03	1.06E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-07	5.75E-05	0.00E+00	7.34E-05	-1.82E-05
Ozone Depletion [kg CFC 11 eq.]	7.87E-08	1.87E-13	1.57E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.97E-11	6.58E-16	0.00E+00	9.15E-14	-5.22E-10
Acidification [mol H+ eq.]	1.20E-02	5.35E-03	3.96E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.59E-05	7.18E-06	0.00E+00	1.60E-04	-3.89E-05
Eutrophication aquatic freshwater [kg P eq.]	7.73E-05	3.77E-07	2.06E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-08	1.51E-08	0.00E+00	1.50E-05	-7.31E-08
Eutrophication aquatic marine [kg N eq.]	2.38E-03	1.29E-03	9.17E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-05	2.75E-06	0.00E+00	3.46E-05	-1.30E-05
Eutrophication terrestrial [mol N eq.]	2.47E-02	1.41E-02	9.87E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	2.90E-05	0.00E+00	3.77E-04	-1.38E-04
Photochemical ozone formation [kg NMVOC eq.]	1.48E-02	3.66E-03	4.22E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-05	6.00E-06	0.00E+00	1.09E-04	-5.24E-05
Depletion of abiotic resources - minerals and metals [kg Sb eq.][1]	1.52E-05	1.27E-08	3.04E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-09	3.70E-10	0.00E+00	1.82E-09	-1.70E-08
Depletion of abiotic resources - fossil fuels [MJ, net calorific value][1]	8.50E+01	3.45E+00	1.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.18E-02	7.11E-02	0.00E+00	4.44E-01	-8.69E-01
Water use [m3 world eq. deprived][1]	1.41E+00	2.66E-03	4.71E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E-04	2.24E-05	0.00E+00	3.30E-03	-3.63E-03

[1]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

Resource use parameter	PRODUCT STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1-A3	A4 Transport	A5 Construction-Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling potential
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE) [MJ, net calorific value][2]	3.18E+00	2.24E-01	3.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-04	5.23E-03	0.00E+00	7.41E-02	-1.70E-01
Use of renewable primary energy resources used as raw materials (PERM) [MJ, net calorific value][2,3]	2.03E+00	0.00E+00	-7.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT) [MJ, net calorific value][2]	5.21E+00	2.24E-01	-3.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-04	5.23E-03	0.00E+00	7.41E-02	-1.70E-01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE) [MJ, net calorific value][2]	5.29E+01	3.45E+00	1.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.18E-02	7.11E-02	0.00E+00	4.44E-01	-8.69E-01
Use of non-renewable primary energy resources used as raw materials (PENRM) [MJ, net calorific value][2,3]	3.21E+01	0.00E+00	4.41E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT) [MJ, net calorific value][2]	8.50E+01	3.45E+00	1.66E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.18E-02	7.11E-02	0.00E+00	4.44E-01	-8.69E-01
Use of secondary material (SM) [kg]	1.58E-02	0.00E+00	3.15E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF) [MJ, net calorific value]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ, net calorific value]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW) [m3]	3.31E-02	1.50E-04	1.11E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.69E-06	2.52E-06	0.00E+00	9.68E-05	-2.80E-04

[2]From EPD International Construction Product PCR 2.0 (Annex 3). Option B was retained to calculate the primary energy use indicators.

[3]Both the product and its packaging are considered in this impact category. Negative values may occur when materials are recycled or recovered, but not when landfilled.

Waste category and output flow	PRODUCT STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1-A3	A4 Transport	A5 Construction-Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling potential
Hazardous waste disposed (HWD) [kg]	1.25E-01	1.15E-10	2.50E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.67E-05	2.58E-12	0.00E+00	9.93E-11	-1.73E-04
Non-hazardous waste disposed (NHWD) [kg]	7.71E+00	4.70E-04	1.92E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.03E-04	9.36E-06	0.00E+00	8.84E-01	-3.59E-03
Radioactive waste disposed (RWD) [kg]	4.71E-04	3.29E-05	1.26E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-09	9.36E-08	0.00E+00	6.39E-06	-1.79E-04
Components for re-use (CRU) [kg]	0.00E+00	0.00E+00	1.92E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MFR) [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery (MER) [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity (EEE) [MJ]	0.00E+00	0.00E+00	2.52E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal (EET) [MJ]	0.00E+00	0.00E+00	4.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional environmental impact indicators	PRODUCT STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1-A3	A4 Transport	A5 Construction-Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling potential
Particulate matter emissions [Disease incidence]	1.24E-07	9.18E-08	4.64E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-09	6.15E-11	0.00E+00	1.64E-09	-2.10E-10
Ionising radiation, human health [kBq U235 eq.][4]	7.69E-02	5.36E-03	2.04E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.72E-06	1.30E-05	0.00E+00	8.58E-04	-4.55E-02
Ecotoxicity (freshwater) [CTUe][1]	1.97E+01	3.25E+00	5.37E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.76E-03	9.23E-02	0.00E+00	1.02E+00	-4.48E-02
Human toxicity, cancer effects [CTUh][1]	1.16E-09	4.82E-11	2.63E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E-13	1.24E-12	0.00E+00	1.40E-11	-7.46E-12
Human toxicity, non-cancer effects [CTUh][1]	2.29E-08	1.80E-09	5.68E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.60E-12	7.00E-11	0.00E+00	2.48E-10	-7.10E-11
Land use related impacts / soil quality [dimensionless][1]	2.52E+01	7.16E-01	5.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.44E-03	3.16E-02	0.00E+00	6.86E-02	-7.87E-02

[1]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

[4]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.

Environmental impact category	PRODUCT STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1-A3	A4 Transport	A5 Construction-Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling potential
GWP-GHG [kg CO2 eq.][5]	3.41E+00	2.75E-01	1.30E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.99E-03	5.59E-03	0.00E+00	2.67E-02	-2.35E-02

Information on biogenic carbon content	PRODUCT STAGE
	A1-A3
Biogenic carbon content in product [kg C][6]	0.00E+00
Biogenic carbon content in packaging [kg C][6]	5.64E-02

[5]This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.
[6]1 kg biogenic carbon is equivalent to 44/12 kg CO2.

The packaging contains biogenic carbon due to: Wooden pallet and cardboard.

Variation between products

The following table shows the variation per environmental indicator between the reference product and the maximum and minimum product (if the reference product is not the maximum/minimum product), as well as the variation between the maximum and minimum product.

Environmental impact category	PRODUCT STAGE A1-A3		
	% Between Reference and Minimum	% Between Reference and Maximum	% Between Minimum and Maximum
GWP-GHG [kg CO2 eq.]	<10%	<10%	<10%
Climate change - total [kg CO2 eq.]	<10%	<10%	<10%
Climate change - fossil [kg CO2 eq.]	<10%	<10%	<10%
Climate change - biogenic [kg CO2 eq.]	<10%	<10%	<10%
Climate change - land use and land use change [kg CO2 eq.]	<10%	<10%	<10%
Ozone Depletion [kg CFC 11 eq.]	<10%	<10%	<10%
Acidification [mol H+ eq.]	<10%	<10%	<10%
Eutrophication aquatic freshwater [kg P eq.]	<10%	<10%	<10%
Eutrophication aquatic marine [kg N eq.]	<10%	<10%	<10%
Eutrophication terrestrial [mol N eq.]	<10%	<10%	<10%
Photochemical ozone formation [kg NMVOC eq.]	<10%	<10%	<10%
Depletion of abiotic resources - minerals and metals [kg Sb eq.][1]	<10%	<10%	<10%
Depletion of abiotic resources - fossil fuels [MJ, net calorific value][1]	<10%	<10%	<10%
Water use [m3 world eq. deprived][1]	<10%	<10%	<10%

Additional environmental information

Electricity information

The manufacturing site uses the following electricity:-

Parameter	Information
Location	Representative of electricity purchased by manufacturer.
Geographical & technical representativeness	Residual mix (estimated; renewables excluded)
Coal	31.0%
Natural gas	32.8%
Nuclear	36.1%
Oil	1.1%
Hydro	n/a
Solar	n/a
Wind	n/a
Dataset version	Sphera 2025.1 datasets for the above sources, nation: USA.
Source of electricity mix	USA eGrid data.
GHG-GWP kg CO2 eq. per kWh	0.5

Abbreviations

AIB	Association of issuing bodies
DU	Declared unit
EPD	Environmental product declaration
eq.	Equivalent
FU	Functional unit
g	Gram
GJ	Giga joules (as net calorific value)
IOBC	Instantaneous oxidation of biogenic carbon
EF	Environmental footprint
GO's	Guarantee of origin
kg	kilogram
kWh	kilowatt-hour
L	litre
LCA	Life cycle assessment
LCI	Life cycle inventory analysis
LCIA	Life cycle impact assessment
MJ	Mega joules (as net calorific value)
PCR	Product category rules
RSL	Reference service life (in years)
Tonne	Metric tonne

References

- ISO 14040:2006 Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006 Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- EN 15804:2012+A1:2013 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- EN 15804:2012+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- EPD International. General Program Instructions (GPI) for the International EPD® System (version 5.0.1) www.environdec.com.
- The International EPD System PCR 2019:14 Construction products and Construction services. Version 2.0.1
- EN 15941 Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data
- European Chemical Agency, Candidate List of substances of very high concern for Authorization. https://echa.europa.eu/candidate-list-table
- LCA report name: 'Project report for the verification of the Environmental Product Declaration of Preprufe 160/300R Plus Waterproofing Membranes'.

Version history

Date	Version	Description of differences
2025-01-30	**1**	Original version of the EPD
2026-01-01	**2**	1. Updated to current PCR version 2. Updated to current background LCA data 3. Product description 4. Data collection updated, along with resulting updates to content declaration, LCA information and environmental performance sections.