epddanmark

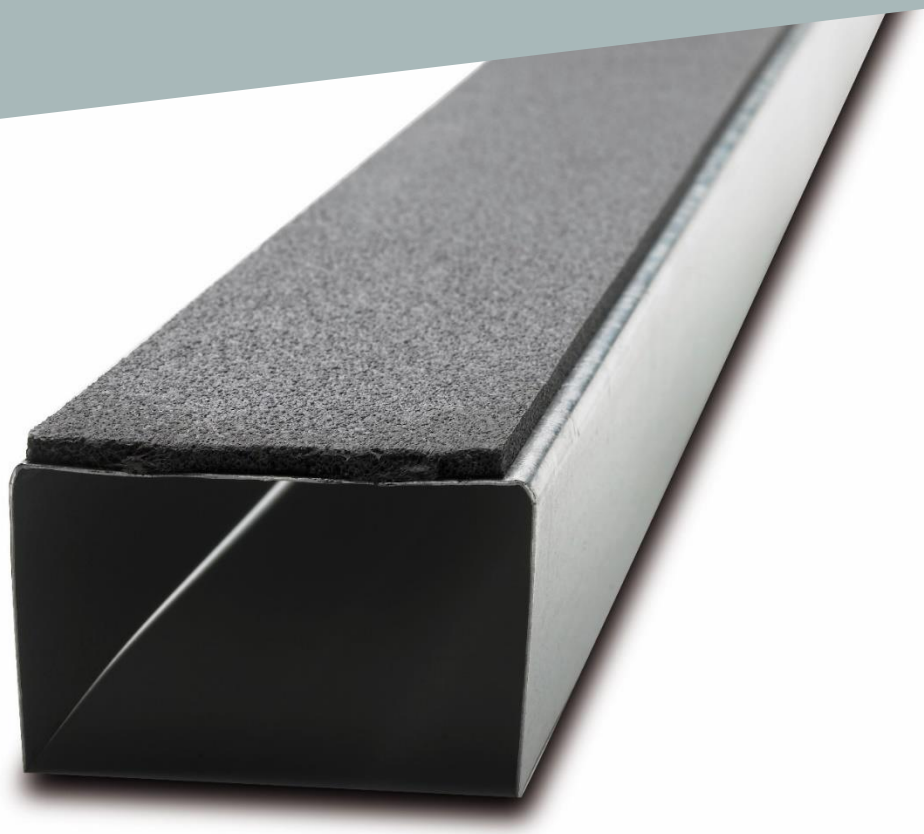
ECO PLATFORM EPD VERIFIED

Owner: Triplan International A/S
No.: MD-23205-EN
Issued: 26-03-2024
Valid to: 26-03-2029

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**



Owner of declaration
Triplan International A/S
Industriskellet 12, DK-2635 Ishøj
VAT No.: 16664081

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)
Polyethylene mat for application on Triplan steel building profiles.

Number of declared datasets/product variations: 1

Production site
Triplan International A/S
Industriskellet 12
DK-2635 Ishøj

Use of Guarantees of Origin
☐ No certificates used
☒ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
1 m^2 polyethylene mat glued onto steel building profiles

Year of production site data (A3)
2021/2022

EPD version
- Version 1

Issued: 26-03-2024
Valid to: 26-03-2029

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☐Cradle-to-gate with options, modules C1-C4 and D
☒Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

Stefan Emil Danielsson

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Product information

Product description

The main product components are shown in the table below.

Material	Weight-% of declared product
Polyethylene foam	81,3%
Adhesive	18,7%

Product packaging:

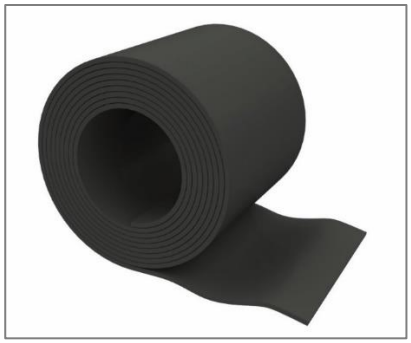
The product covered in this EPD does not require any sales- or transport packaging.

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the manufacturing of polyethylene mat glued onto Triplan steel building profiles on the production site located in Ishøj, Denmark. Product specific data are based on consumption- and production data collected in the period 01.08.2021 to 30.09.2022.

Background data are based on LCA for Experts version 10.7 databases and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Picture of product(s)



Hazardous substances

The product covered in this EPD does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation".

(http://echa.europa.eu/candidate-list-table)

Product(s) use

Polyethylene mat glued onto Triplan steel building profiles, used for improved tightening and sound-insulation. The mat is mounted directly on the profiles or shipped with a thickness of 4 mm on rolls either 41 mm, 66 mm, 91 mm, or 116 mm wide.

Essential characteristics

The polyethylene mat is not covered by harmonised technical specifications.

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

https://www.triplan.dk/en

Reference Service Life (RSL)

The polyethylene mat has an estimated reference service life of 50 years cf. Annex 4 in "BUILD rapport 2021:32 – BUILD levetidstabel version 2021".

The polyethylene mat declared in this EPD is glued onto Triplan steel building profiles declared in MD-23204-EN. In practice, it is assumed that the service life of the mat can exceed the stated RSL and does not need to be replaced during the lifetime of the steel building profile. Thus, the end-of-life of the mounted polyethylene mat will occur post de-construction/ demolition of the steel building profile.

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 m^2 polyethylene mat glued onto Triplan steel building profiles.

Name	Value	Unit
Declared unit	1	m^2
Density	0,122	kg/m^2
Conversion factor to 1 kg.	8,197	-

Important notice

The results of this EPD relate to 1 m^2 installed polyethylene mat. The fraction of material waste during installation is project specific, and it is therefore important to account for the m^2 polyethylene mat installed and the material waste during installation, when calculating the environmental impacts of the construction project. In this EPD 5% material waste is assumed, and the impacts from additional production processes to compensate for the loss of wastage of products is accounted for in A5.

Functional unit

Not defined.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019, which serves as the core PCR.

Guarantee of Origin – certificates

Foreground system:

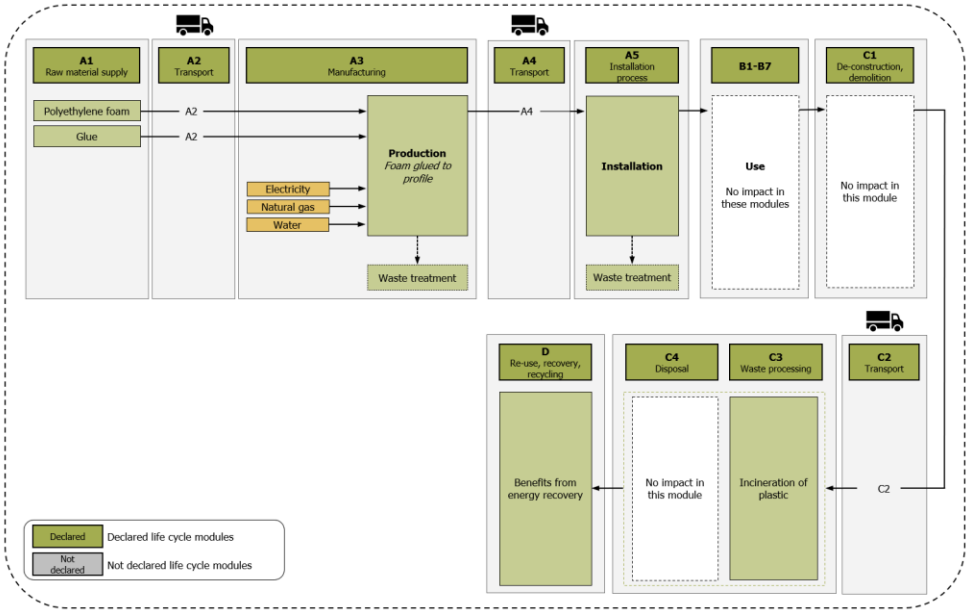
At the production site, electricity from European wind power covered by GO is used. Remaining energy processes in A1 – A3 are modelled using residual mix from the background database.

Background system:

Upstream and downstream processes in the background system are modelled using grid mix from the background database.

Flowdiagram

The flow diagram below presents the main processes included in the life cycle of the polyethylene mat.



System boundary

This EPD is based on a cradle-to-grave and module D LCA, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

Triplan uses an extruded polyethylene mat that is attached to steel building profiles with an adhesive, in order to achieve a better seal and greater sound insulation. The mat is based on a 4 mm thick layer of polyethylene foam and is mounted in between the steel rails and posts.

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The production of electrical energy, resulting from the disposal of waste in municipal waste incineration, is allocated within the system boundary, and the generated electrical energy is deducted from the consumption.

Construction process stage (A4-A5) includes:

A4 – Transport to construction site

A5 – Installation

The polyethylene mat glued onto Triplan steel building profiles, are sold within Denmark.

From the factory gate, the polyethylene mat is transported to the construction site. The transport scenario is based on an average distance and means of transportation.

The installation stage comprises material waste processing up to the "end-of-waste" state or final disposal. Energy recovered from waste incineration is declared in module D.

An average material waste of 5% is assumed. The impacts from additional production processes to compensate for the loss of wastage of products is accounted for in A5.

It is assumed that the installation of the polyethylene mat attached to Triplan steel building profiles is a primarily manual process, hence no energy consumption is considered.

Use stage (B1-B7) includes:

There are no activities in B1-B7.

It is assumed that after installation, and under normal conditions of use, there is not a need for maintenance, repairs, replacements or renovation of the polyethylene mat. There is also no energy/water consumption associated with the product during the use phase.

End of Life (C1-C4) includes:

End of life includes a Danish scenario for waste processing of plastics. End-of-life is modelled using a 100% waste incineration scenario.

C1 – Deconstruction/demolition

C2 – Transport to incineration

C3 – Waste processing

The end-of-life of the polyethylene mat occurs post de-construction/demolition of the steel building profiles. The polyethylene mat is assumed separated from the steel profiles after dismantling.

From the building site, the polyethylene mat is transported to a Waste-to-Energy (WtE) plant.

The transport scenario is based on an average distance and means of transportation.

At the WtE plant, the plastic waste is incinerated to produce electricity and district heating. Energy recovered from waste incineration is declared in module D.

There are no activities in C4.

Re-use, recovery and recycling potential (D) includes:

Energy recovered by waste incineration is modeled as avoided production of Danish electricity and heat.

LCA results

ENVIRONMENTAL IMPACTS PER M2 POLYETYLEN MAT										
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	4,91E-01	1,27E-03	4,69E-02	0,00E+00	0,00E+00	6,37E-04	4,45E-01	0,00E+00	-3,37E-01
GWP-fossil	[kg CO_2 eq.]	4,88E-01	1,26E-03	4,67E-02	0,00E+00	0,00E+00	6,29E-04	4,45E-01	0,00E+00	-3,36E-01
GWP-biogenic	[kg CO_2 eq.]	2,71E-03	2,88E-06	1,36E-04	0,00E+00	0,00E+00	1,44E-06	8,86E-06	0,00E+00	-5,25E-04
GWP-luluc	[kg CO_2 eq.]	2,73E-04	1,18E-05	1,46E-05	0,00E+00	0,00E+00	5,90E-06	1,02E-06	0,00E+00	-1,94E-05
ODP	[kg CFC 11 eq.]	1,91E-12	1,66E-16	9,66E-14	0,00E+00	0,00E+00	8,29E-17	2,51E-14	0,00E+00	-1,54E-12
AP	[mol H^+ eq.]	7,95E-04	1,90E-06	4,38E-05	0,00E+00	0,00E+00	9,49E-07	7,90E-05	0,00E+00	-2,66E-04
EP-freshwater	[kg P eq.]	8,66E-07	4,66E-09	4,41E-08	0,00E+00	0,00E+00	2,33E-09	8,59E-09	0,00E+00	-4,92E-07
EP-marine	[kg N eq.]	2,46E-04	6,92E-07	1,31E-05	0,00E+00	0,00E+00	3,46E-07	1,50E-05	0,00E+00	-1,02E-04
EP-terrestrial	[mol N eq.]	2,47E-03	8,19E-06	1,42E-04	0,00E+00	0,00E+00	4,09E-06	3,60E-04	0,00E+00	-1,08E-03
POCP	[kg NMVOC eq.]	8,82E-04	1,67E-06	4,62E-05	0,00E+00	0,00E+00	8,34E-07	4,01E-05	0,00E+00	-2,74E-04
ADPm[1]	[kg Sb eq.]	4,49E-08	8,44E-11	2,27E-09	0,00E+00	0,00E+00	4,22E-11	3,47E-10	0,00E+00	-2,53E-08
ADPf[1]	[MJ]	1,45E+01	1,74E-02	7,29E-01	0,00E+00	0,00E+00	8,68E-03	6,49E-02	0,00E+00	-5,44E+00
WDP[1]	[m^3 world eq. deprived]	7,13E-02	1,54E-05	5,63E-03	0,00E+00	0,00E+00	7,70E-06	4,14E-02	0,00E+00	-7,29E-03
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential									
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.									
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									

ADDITIONAL ENVIRONMENTAL IMPACTS PER M2 POLYETYLEN MAT										
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	5,84E-09	1,57E-11	3,18E-10	0,00E+00	0,00E+00	7,86E-12	4,87E-10	0,00E+00	-1,83E-09
IRP[2]	[kBq U235 eq.]	4,60E-02	4,86E-06	2,31E-03	0,00E+00	0,00E+00	2,43E-06	1,50E-04	0,00E+00	-9,88E-03
ETP-fw[1]	[CTUe]	6,86E+00	1,24E-02	3,45E-01	0,00E+00	0,00E+00	6,21E-03	1,50E-02	0,00E+00	-2,41E-01
HTP-c[1]	[CTUh]	2,50E-10	2,52E-13	1,27E-11	0,00E+00	0,00E+00	1,26E-13	3,68E-12	0,00E+00	-6,75E-11
HTP-nc[1]	[CTUh]	9,04E-09	1,12E-11	4,59E-10	0,00E+00	0,00E+00	5,61E-12	1,17E-10	0,00E+00	-3,09E-10
SQP[1]	-	1,21E+00	7,25E-03	6,21E-02	0,00E+00	0,00E+00	3,63E-03	2,41E-02	0,00E+00	-1,43E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.									
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.									
	[2] 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.									

RESOURCE USE PER M2 POLYETYLEN MAT										
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2,57E+00	1,26E-03	1,30E-01	0,00E+00	0,00E+00	6,31E-04	2,61E-02	0,00E+00	-2,17E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,57E+00	1,26E-03	1,30E-01	0,00E+00	0,00E+00	6,31E-04	2,61E-02	0,00E+00	-2,17E+00
PENRE	[MJ]	8,14E+00	1,74E-02	7,30E-01	0,00E+00	0,00E+00	8,71E-03	6,49E-02	0,00E+00	-5,44E+00
PENRM	[MJ]	6,36E+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
PENRT	[MJ]	1,45E+01	1,74E-02	7,30E-01	0,00E+00	0,00E+00	8,71E-03	6,49E-02	0,00E+00	-5,44E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	2,30E-03	1,38E-06	1,64E-04	0,00E+00	0,00E+00	6,92E-07	9,69E-04	0,00E+00	-6,30E-04
Caption	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 = Net use of fresh water									
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.									

WASTE CATEGORIES AND OUTPUT FLOWS PER M2 POLYETYLEN MAT										
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	-5,37E-10	5,39E-14	-2,71E-11	0,00E+00	0,00E+00	2,70E-14	-5,22E-12	0,00E+00	4,41E-10
NHWD	[kg]	5,49E-03	2,66E-06	4,48E-04	0,00E+00	0,00E+00	1,33E-06	3,47E-03	0,00E+00	-4,02E-03
RWD	[kg]	2,86E-04	3,26E-08	1,44E-05	0,00E+00	0,00E+00	1,63E-08	1,36E-06	0,00E+00	-8,68E-05
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,00E-03	0,00E+00	5,00E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	5,00E-02	0,00E+00	0,00E+00	0,00E+00	9,99E-01	0,00E+00	0,00E+00
EET	[MJ]	4,13E-01	0,00E+00	2,33E-01	0,00E+00	0,00E+00	0,00E+00	4,24E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy									
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.									

BIOGENIC CARBON CONTENT PER M2 POLYETYLEN MAT		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packagaing	[kg C]	0,00E+00
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

LCA interpretation

A contribution analysis has been conducted with the aim of identifying which processes and materials contribute the most to the core environmental impacts. Overall, the results show that the greatest environmental impacts take place in the life cycle modules A1 – A3. From the contribution analysis, it appears that the production of polyethylene mat in A1 has the largest contribution to the overall results in most impact categories across all declared life cycle modules.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel mix, 6.91 wt.% share bio C	-
Vehicle type	Truck, Euro 6 A-C, 28 - 32t gross weight / 22t payload capacity	-
Transport distance	100	km
Capacity utilisation (including empty runs)	61	%
Gross density of products transported	0,148	kg/m^2
Capacity utilisation volume factor	1	-

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	-	kg
Water use	-	m^3
Other resource use	-	kg
Energy type and consumption	-	kWh
Waste materials (material waste)	0,00741	kg
Output materials	1	m^2
Direct emissions to air, soil or water	-	kg

Reference service life

RSL information	Unit
Reference service Life	80 years
Declared product properties	Technical specifications and guidance can be obtained from the company's website https://www.triplan.dk/en or from direct contact to Triplan at +45 4353 9999 or triplan@triplan.dk.
Design application parameters	
Assumed quality of work	
Outdoor environment	
Indoor environment	
Usage conditions	
Maintenance	
RSL information	Unit
Reference service Life	50 years
Declared product properties	Technical specifications and guidance can be obtained from the company's website https://www.triplan.dk/en or from direct contact to Triplan at +45 4353 9999 or triplan@triplan.dk.
Design application parameters	
Assumed quality of work	
Outdoor environment	
Indoor environment	
Usage conditions	
Maintenance	

Note: The polyethylene mat declared in this EPD is glued onto Triplan steel building profiles declared in MD-23204-EN. In practice, it is assumed that the service life of the mat can exceed the stated RSL and does not need to be replaced during the lifetime of the steel building profile.

Use (B1-B7)

There are no activities in B1-B7.

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	m^2
Collected with mixed waste	0	m^2
For reuse	0	m^2
For recycling	0	m^2
For energy recovery	1	m^2
For final disposal	0	m^2
Assumptions for scenario development	Assumed to be 100% incineration	-

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Displaced material	0	kg
Energy recovery from waste incineration (A5)	0,29	MJ
Energy recovery from waste incineration (C3)	5,24	MJ

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

Publisher	www.epddanmark.dk Template version 2023.1
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Line Granheim Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA software /background data	LCA for Experts version 10.7, 2023.1 including databases www.gabi-software.com
3rd party verifier	Stefan Emil Danielsson Circonomy Consulting

General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025
DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040
DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044
DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"