

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Tyvek® FireCurb Soft



Owner of the declaration:

Isola AS

Produkt:

Tyvek® FireCurb Soft

Declared unit:

1 m²

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core

PCR

NPCR 022:2018 Part B for Roof waterproofing

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-5472-4775-EN

Registration number:

NEPD-5472-4775-EN

Issue date:

28.11.2023

Valid to:

28.11.2028

ver-190624

EPD software:

LCAno EPD generator ID: 73898

The Norwegian EPD Foundation

General information

Product:

Tyvek® FireCurb Soft

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-norge.no

Declaration number:

NEPD-5472-4775-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 022:2018 Part B for Roof waterproofing

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 m2 Tyvek® FireCurb Soft

Declared unit (cradle to gate) with option:

A1-A3,A4,A5,C1,C2,C3,C4,D

Functional unit:

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

Owner of the declaration:

Isola AS
Contact person: Trond Risberg
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e-mail: t.risberg@isola.no

Manufacturer:

Isola AS
Prestemoen 9
3946 Porsgrunn, Norway

Place of production:

Luxemburg

, Europe

Management system:

ISO 9001 Certificate No: QSC-6011, ISO 14001:2015

Organisation no:

928 764 745

Issue date:

28.11.2023

Valid to:

28.11.2028

Year of study:

2023

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway. NEPDT19

Developer of EPD: Trond Risberg

Reviewer of company-specific input data and EPD: Alexandra Maria Wigestam

Approved:



Håkon Hauan, CEO EPD-Norge

Product:

Product description:

Tyvek® FireCurb Soft is a lightweight, advanced, fire-retardant membrane that self-extinguishes when ignited. It uses a halogen-free flame-retardant additives to reduce the formation of droplets and smoke with minimal environmental impact. Tyvek® FireCurb Soft® takes the airtight and watertight yet vapour-open breather membranes of Tyvek® membranes and adds flame retardancy properties that can significantly increase building safety. Suitable for use in all building types, from bungalows to high-rises. For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration EN 13859-2: Flexible sheets for water proofing – Part 2: Underlays for walls and the CEMarking. For the application and use the respective national provisions apply.

Application:

The product is used on the cold side of building facades. It is placed in front or behind insulation and will improve water and wind tightness during construction and the lifetime of the building.

Product specification

Materials	kg	%
Membrane	0,07	100,00
Total	0,07	100,00

Technical data:

Reaction to fire* : class B-s1,d0

Grammage acc. to EN 1849-2: 0.066 kg/m²

Resistance to water penetration acc. to EN 1928: class W1

Water vapor diffusion equivalent: 0.03 m

Market:

Scandinavia

Reference service life, product

The service life of membranes out of plastic or elastomers is 40 years according to BNB (<http://www.nachhaltigesbauen.de/baustoff-undgebaeuedaten/nutzungsdauern-von-bauteilen.html>). Since the whole lifecycle of the product is not considered and for sake of compliance to EN 15804+A2 (2019), the functional unit does not have to be declared. Instead, the declaration unit is 1 m² of an envelope.

Reference service life, building

60 years

LCA: Calculation rules

Declared unit:

1 m² Tyvek® FireCurb Soft

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Regarding background data, the Luxembourg and German electricity grid mix were applied to the production plants in these countries. Other background data were specific to Germany or the European average and were not older than 10 years. A proxy was used for the main flame retardant additive, as well as for the colour paste for finishing (generic waterbased colour paste composition). The representativeness can be classified as very good for all the foreground data, and for most of the background data. The GaBi database (Sphera Solutions GmbH, 2022.1) was used to model background data.

Materials	Source	Data quality	Year
Membrane	EPD-DUP-20220248-CBA1-EN	EPD	2019

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage		Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	

System boundary:

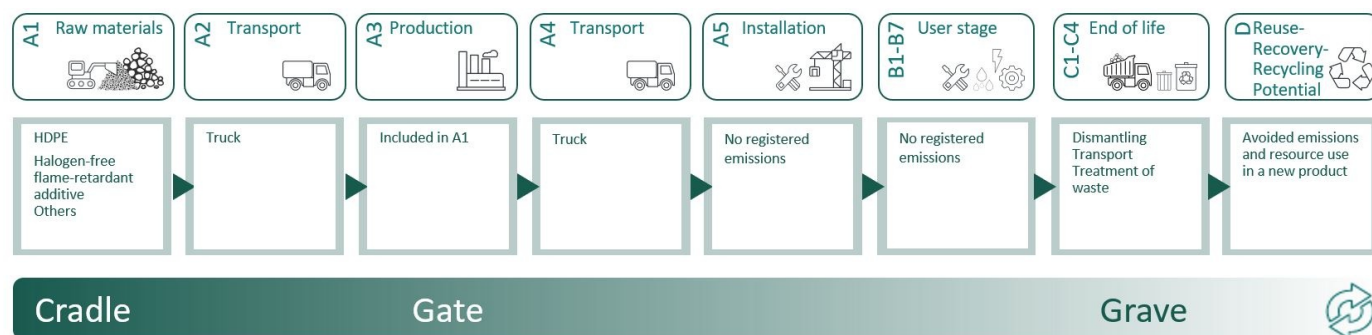
The system boundaries of the EPD follow the modular construction system as described by EN 15804. The LCA considers the following modules: A1-A3: Manufacturing of pre-products, packaging, ancillary materials, transport to the factory and production, with the associated energy supply and waste handling

A4: Transport to the construction site

A5: Installation into the building including disposal of packaging

C4: Waste disposal, namely incineration

D: Potential for reuse, recovery and/or recycling including benefits for product incineration from module C4



Additional technical information:

Base materials/Ancillary materials The product is made from HDPE (ca. 88 % of product weight) and is coated with fire-retardant additive and ink (ca. 12 % of product weight). This product/article/at least one partial article contains substances listed in the candidate list (date: 16. Nov 2022) exceeding 0.1 percentage by mass: no.














LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, EURO 6 (kgkm)	36,7 %	300	0,043	l/tkm	12,90
Assembly (A5)					
	Unit	Value			
Material loss (kg)	Units/DU	0,02			
De-construction demolition (C1)					
	Unit	Value			
Waste treatment, PE plastic product (kg)	kg/DU	0,07			
Transport to waste processing (C2)					
	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, EURO 6 (kgkm)	36,7 %	35	0,043	l/tkm	1,51
Waste processing (C3)					
	Unit	Value			
Waste treatment, PE plastic product, incineration (kg)	kg	0,07			
Disposal (C4)					
	Unit	Value			
Waste treatment, PE plastic product, landfilling of ashes from incineration (kg)	kg	0,01			
Benefits and loads beyond the system boundaries (D)					
	Unit	Value			
Substitution of electricity, in Norway (MJ)	MJ	0,11			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	1,64			

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 GWP-total	kg CO ₂ -eq	3,66E-01	3,24E-03	1,06E-02	0,00E+00	3,78E-04	1,69E-01	2,74E-04	-9,87E-03	
 GWP-fossil	kg CO ₂ -eq	3,51E-01	3,23E-03	1,03E-02	0,00E+00	3,77E-04	1,69E-01	2,74E-04	-9,52E-03	
 GWP-biogenic	kg CO ₂ -eq	1,44E-02	1,34E-06	2,88E-04	0,00E+00	1,56E-07	2,05E-06	1,70E-07	-1,97E-05	
 GWP-luluc	kg CO ₂ -eq	8,43E-05	1,15E-06	-4,84E-06	0,00E+00	1,34E-07	2,93E-07	5,89E-08	-3,28E-04	
 ODP	kg CFC11 -eq	1,83E-09	7,33E-10	-1,39E-05	0,00E+00	8,50E-11	1,89E-10	5,20E-11	-6,94E-04	
 AP	mol H+ -eq	1,24E-03	9,29E-06	2,39E-05	0,00E+00	1,08E-06	2,22E-05	1,37E-06	-7,84E-05	
 EP-FreshWater	kg P -eq	8,05E-07	2,58E-08	1,84E-10	0,00E+00	3,02E-09	1,85E-08	3,30E-09	-8,46E-07	
 EP-Marine	kg N -eq	2,11E-04	1,84E-06	3,97E-06	0,00E+00	2,15E-07	1,04E-05	4,63E-07	-2,56E-05	
 EP-Terrestrial	mol N -eq	2,28E-03	2,06E-05	4,29E-05	0,00E+00	2,40E-06	1,13E-04	5,17E-06	-2,77E-04	
 POCP	kg NMVOC -eq	7,29E-04	7,88E-06	1,38E-05	0,00E+00	9,19E-07	2,74E-05	1,47E-06	-7,65E-05	
 ADP-minerals&metals ¹	kg Sb-eq	1,88E-07	8,93E-08	4,11E-09	0,00E+00	1,04E-08	9,59E-09	2,86E-09	-9,47E-08	
 ADP-fossil ¹	MJ	8,32E+00	4,89E-02	1,65E-01	0,00E+00	5,70E-03	1,56E-02	4,06E-03	-1,36E-01	
 WDP ¹	m ³	1,17E-01	4,73E-02	-2,91E-02	0,00E+00	5,52E-03	4,76E-02	2,03E-02	-1,70E+00	







GWP-total = Global 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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

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

Remarks to environmental impacts




Additional environmental impact indicators										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 PM	Disease incidence	6,95E-10	1,98E-10	-7,40E-11	0,00E+00	2,30E-11	1,23E-10	2,20E-11	-4,75E-09	
 IRP ²	kgBq U235 -eq	5,37E-04	2,14E-04	-7,60E-07	0,00E+00	2,49E-05	3,83E-05	1,74E-05	-8,70E-04	
 ETP-fw ¹	CTUe	8,99E-02	3,63E-02	-1,13E-02	0,00E+00	4,23E-03	3,90E-02	4,22E-03	-7,41E-01	
 HTP-c ¹	CTUh	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,00E-12	0,00E+00	-1,30E-11	
 HTP-nc ¹	CTUh	8,70E-11	4,00E-11	-8,00E-12	0,00E+00	5,00E-12	1,64E-10	6,00E-12	-7,10E-10	
 SQP ¹	dimensionless	1,41E-01	3,42E-02	-1,42E-02	0,00E+00	3,99E-03	1,09E-02	9,45E-03	-9,10E-01	

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)

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed




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
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										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 PERE	MJ	8,73E-01	7,00E-04	6,71E-04	0,00E+00	8,17E-05	5,05E-04	1,33E-04	-8,41E-01	
 PERM	MJ	7,63E-04	0,00E+00	1,53E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	8,74E-01	7,00E-04	6,87E-04	0,00E+00	8,17E-05	5,05E-04	1,33E-04	-8,41E-01	
 PENRE	MJ	8,33E+00	4,89E-02	1,65E-01	0,00E+00	5,71E-03	1,56E-02	4,06E-03	-1,36E-01	
 PENRM	MJ	1,86E-04	0,00E+00	3,73E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PENRT	MJ	8,33E+00	4,89E-02	1,65E-01	0,00E+00	5,71E-03	1,56E-02	4,06E-03	-1,36E-01	
 SM	kg	3,65E-03	0,00E+00	7,97E-05	0,00E+00	0,00E+00	3,36E-04	0,00E+00	0,00E+00	
 RSF	MJ	5,42E-05	2,50E-05	-9,46E-07	0,00E+00	2,92E-06	1,45E-05	3,40E-06	-1,47E-04	
 NRSF	MJ	1,82E-04	8,95E-05	-9,84E-04	0,00E+00	1,04E-05	1,21E-04	2,39E-04	-4,99E-02	
 FW	m ³	3,98E-03	5,23E-06	6,04E-05	0,00E+00	6,10E-07	3,73E-05	3,68E-06	-1,01E-03	

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"






*INA Indicator Not Assessed

End of life - Waste										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 HWD	kg	6,73E-06	2,52E-06	5,13E-04	0,00E+00	2,94E-07	1,28E-02	1,28E-02	-6,40E-06	
 NHWD	kg	1,44E-02	2,38E-03	3,37E-04	0,00E+00	2,77E-04	1,62E-03	1,42E-03	-3,22E-03	
 RWD	kg	1,51E-04	3,33E-07	3,02E-06	0,00E+00	3,89E-08	4,99E-08	2,48E-08	-7,13E-07	

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

*Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Output flow										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 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	
 MFR	kg	0,00E+00	0,00E+00	5,89E-07	0,00E+00	0,00E+00	2,95E-05	0,00E+00	0,00E+00	
 MER	kg	0,00E+00	0,00E+00	3,04E-09	0,00E+00	0,00E+00	1,52E-07	0,00E+00	0,00E+00	
 EEE	MJ	0,00E+00	0,00E+00	2,17E-03	0,00E+00	0,00E+00	1,09E-01	0,00E+00	0,00E+00	
 EET	MJ	0,00E+00	0,00E+00	3,28E-02	0,00E+00	0,00E+00	1,64E+00	0,00E+00	0,00E+00	

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

*Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products






Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	3,51E-01	3,24E-03	1,03E-02	0,00E+00	3,78E-04	1,69E-01	2,74E-04	-9,73E-03

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
 ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
 EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
 ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
 ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
 Iversen et al., (2018) eEPD v3.0 - Background information for EPD generator system. LCA.no report number 04.18.
 Ruttenborg et al., (2023) EPD generator for NPCR022:2022 Part B for Roof waterproofing - Background information for EPD generator application and LCA data, LCA.no report number 10.23
 NPCR Part A: Construction products and services. Ver. 2.0. March 2021, EPD-Norge.
 NPCR 022 Part B for Roof waterproofing. Ver. 2.0 March 2022, EPD-Norge.

Standards EN 12114 EN 12114:2000, Thermal performance of buildings - Air permeability of building components and building elements - Laboratory test method EN 12310-1 EN 12310-1:1999, Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; determination of resistance to tearing (nail shank). EN 12311-1 EN 12311-1:1999, Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; Determination of tensile properties EN 12572 EN 12572:2016, Hygrothermal performance of building materials and products — Determination of water vapour transmission properties — Cup method EN 1297 EN 1297:2004, Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water EN 13859-1 EN 13859-1:2014, Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 1: Underlays for discontinuous roofing EN 13859-2 EN 13859-2:2014, Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 2: Underlays for walls EN 15804 EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products. EN 1849-2 EN 1849-2:2019, Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 2: Plastic and rubber sheets EN 1928 EN 1928:2000, Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of watertightness ISO 14025 EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures. Further References BNB Bewertungssystem Nachhaltiges Bauen <https://www.nachhaltigesbauen.de/austausch/nutzungs-dauern-von-bauteilen/> GaBi software and database:2022 GaBi software/database, version 10.6.1.35. Sphera Solutions GmbH, 2022. IBU 2021 Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com PCR 2021, Part A PCR Guidance-Texts for Building-Related Products and Services: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019 PCR 2017, Part B PCR Guidance-Texts for Building-Related Products and Services: Requirements on the EPD for False ceiling and underlay sheeting (version 1.6, 2017)

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