

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Etex Building Performance International
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ETE-20220189-ICA1-EN
Issue date	02/09/2022
Valid to	01/09/2027

PROMASTOP®-CC
Etex Germany Exteriors GmbH

www.ibu-epd.com | <https://epd-online.com>



1. General Information

Etex Germany Exteriors GmbH Programme holder IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	PROMASTOP®-CC Owner of the declaration Etex Building Performance International 500 Rue Marcel Demonque F-84915 Avignon France Site of production Etex Germany Exteriors GmbH Im Breitspiel 20 69126 Heidelberg Germany
Declaration number EPD-ETE-20220189-ICA1-EN	Declared product / declared unit The declared unit is 1 kg of PROMASTOP®-CC.
This declaration is based on the product category rules: Coatings with organic binders, 01.2019 (PCR checked and approved by the SVR)	Scope: The life cycle assessment is based on production data of PROMASTOP®-CC of the year 2020 at the production site Heidelberg, Germany. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as EN 15804.
Issue date 02/09/2022	Verification The standard EN 15804 serves as the core PCR Independent verification of the declaration and data according to ISO 14025:2010 ☐ internally ☒ externally
Valid to 01/09/2027	
 Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)	 Vito D'Incognito (Independent verifier)
 Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.)	

2. Product

2.1 Product description/Product definition

PROMASTOP®-CC is a water-based 'hybrid' fire stopping coating. It combines the positive qualities of intumescent and ablative coatings. In the field of fire stopping penetrations, PROMASTOP®-CC provides reliable protection against the spread of smoke fire and heat due to its foaming effect and simultaneous formation of a hard and solid char.

For the placing of the product on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration ETA 16/0523: 23.05.2017 and the CE-marking.
For the application and use the respective national provisions apply.

2.2 Application

PROMASTOP®-CC can be used as a coating for coated batt system.
PROMASTOP®-CC is a fire stopping coating for services in walls and floors. It is designed for use with single cables, cable bundles, combustible and non-combustible pipes, fire dampers and also insulated ventilation systems to prevent the spread of smoke, fire and heat.

2.3 Technical Data

Constructional data

Name	Value	Unit
Density	1500	kg/m ³
Solids content	76 - 82	%
pH value	5.5 - 8.5	-log ₁₀ (a _{H+})
VOC content according to ISO 11890-2	<1	g/l

Reaction to fire according to EN 13501-1	B-s1,d0	-
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Values are guidance values and do not reflect a statistical evaluation or guaranteed value.

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *ETA 16-0523*, 23.05.2017.

2.4 Delivery status

PROMASTOP®-CC is delivered in 5 kg or 12,5 kg plastic buckets.

2.5 Base materials/Ancillary materials

The main constituents of the product (in mass percentages):

Polymer emulsion (50 % in water) 25-50 %

Aluminium hydroxide 25-50 %

Ammonium polyphosphate 10-20 %

Pigment TiO₂ < 5 %

Graphite < 3 %

Additives < 3 %

Mineral fibre < 1 %

In-can preservatives < 0.225 %

Water 5 - 15 %

1) This product contains substances listed in the *candidate list* (date: 08.07.2021) exceeding 0.1 percentage by mass: no.

2) This product contains other CMR substances in categories 1A or 1B which are not on the *candidate list*, exceeding 0.1 percentage by mass: no

3) Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) *Ordinance on Biocide Products No. 528/2012*): yes.

In-can preservatives used are reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7], and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1) CAS 55965-84-9 (PT6), sodium pyriithione CAS 3811-73-2 (PT6) and 1,2-benzisothiazol-3(2H)-one CAS 2634-33-5 (PT6).

2.6 Manufacture

PROMASTOP®-CC is manufactured in a fully automatic vacuum dissolver. The raw materials are dosed manually.

The raw materials undergo an incoming inspection by the quality laboratory before use. The produced batch also goes through quality control and specific quality features are checked. External monitoring for PROMASTOP®-CC takes place only with UL marking.

The quality management system of the company and the production facility are certified according to *ISO9001*.

2.7 Environment and health during manufacturing

Promat commits to a clean, healthy and safe working environment for every person working in and for the company.

The raw materials are stored safely so that they cannot get into the surroundings/environment. There are adequately dimensioned extraction systems. Protective work clothing is made available to the employees. The

cleaning water is collected and professionally disposed by a disposal company.

The company and the manufacturing site have an environment, energy, health and safety management system which is *ISO 14001*, *ISO 50001* and *ISO 45001* certified. The manufacturing plant adheres to the German environmental and health and safety regulations.

2.8 Product processing/Installation

PROMASTOP®-CC can be applied with a brush, roller or spatula.

2.9 Packaging

The coating is filled in plastic buckets made of polypropylene (PP). The plastic buckets are packed on pallets for shipping and are protected with polyethylene foil.

2.10 Condition of use

PROMASTOP®-CC will form after drying, where water is evaporating, a thin film and remains as such on the substrate.

2.11 Environment and health during use

PROMASTOP®-CC is a fire stop coating with extremely low emissions. Emission tests performed at *Eurofins* confirm compliance with various national and international standards.

During the use phase, the product is considered to pose no health risk.

2.12 Reference service life

The intended use of PROMASTOP®-CC is assumed to be 10 years according to the *ETA 16-0523*, 23.05.2017. An accelerated ageing test with the following fire test proved even a longer service life of 30 to 33 years according to the *Pavus* test report. Above mentioned service life is related to ambient conditions, correct handling, installation and regular inspection. Therefore the mentioned service life is not a guarantee given by the manufacturer. It should help to select an adequate product in accordance with the building life- time.

2.13 Extraordinary effects

Fire

PROMASTOP®-CC has the reaction to fire class B-s1,d0 according to *EN13501-1*. In the event of a fire, due to the high temperatures, the coating forms a char and delays the spread of fire. Once exposed to high temperatures the coating has to be replaced.

Fire protection

Name	Value
Building material class	B
Burning droplets	s1
Smoke gas development	d0

Water

PROMASTOP®-CC has the use category X. Therefore the coating itself can be exposed to weathering. In case of any extraordinary and longer exposure to water, the product would probably detach from the substrate. As the product is only used in low quantities in the building, it is expected that even following the

unforeseeable influence of water, the product would not contribute to environmental damage.

Mechanical destruction

To ensure correct functionality repair works should be done in accordance with the appropriate installation guidelines and in accordance with *ETA 16-0523*. No environmental impact is known related to mechanical destruction.

2.14 Re-use phase

PROMASTOP®-CC could be used for energy recovery in incineration plants, due to its organic substances in the formulation.

2.15 Disposal

PROMASTOP®-CC must be disposed in a safe manner in accordance with local/national regulations. The waste code in accordance with the *European List of Waste* is 08 01 11* - waste paint and varnish containing organic solvents or other dangerous substances.

2.16 Further information

Further information is available on the following web site :
<https://www.promat.com>

3. LCA: Calculation rules

3.1 Declared Unit

This declaration refers to the declared unit of 1 kg of PROMASTOP®-CC. The density of PROMASTOP®-CC is 1500 kg/m³.

Declared unit

Name	Value	Unit
Gross density (mean value)	1500	kg/m ³
Declared unit	1	kg

3.2 System boundary

The type of EPD is cradle to grave. The environmental product declaration relates to the production stage (module A1: provision of raw materials; A2: transport; A3: manufacture) and the construction process stage (module A4: transport to the construction site and module A5: installation losses as well as the treatment of packaging material). The modules B1 to B7 are declared with no impacts during the use stage. The end-of-life stage is also considered (C1: dismantling, C2: transport to a disposal site, C3: no impacts from waste processing and C4: disposal). The credits outside the system boundary are taken into account in module D.

3.3 Estimates and assumptions

No major estimates or assumptions had to be made to the information provided in this EPD.

3.4 Cut-off criteria

No cut-off criteria are applied in this study. All reported data were incorporated and modelled using the best available LCI data.

3.5 Background data

The background data has been taken from the latest available *GaBi* database CUP 2021.2. The requirements for data quality and background data correspond to the specifications of the *PCR Part A*.

3.6 Data quality

The requirements on the data quality and the background data correspond to the provisions in *EN 15804* and the *IBU PCR part A* (IBU 2020) respectively:

- All primary data are collected for the year 2020. All secondary data come from the *GaBi* databases and are representative of the years 2017-2020. As the study intended to compare

the product systems for the reference year 2020, temporal representativeness is good.

- All primary and secondary data are collected specific to the countries/regions under study. Where country/region specific data are unavailable, proxy data are used. The overall geographical representativeness is considered to be good.
- All primary and secondary data are modelled to be specific to the technologies or technology mixes under study. Where technology-specific data are unavailable, proxy data are used. The overall technological representativeness is considered to be good.
- Primary data are collected by the client using a specifically adapted spreadsheet. Sphera supported the data collection by preparing a specific questionnaire and virtual or onsite support.

Overall, the data quality can be described as good. The primary data collection has been done thoroughly; all relevant flows are considered.

3.7 Period under review

The period under review for the collection of production data is the year 2020.

3.8 Allocation

The production process does not deliver any co-products. The applied software model does not contain any allocation.

The overall production of Etex Germany Exteriors GmbH comprises further products besides the product considered in this study. Data for thermal and electrical energy refer to the declared product. During data collection, the allocation is done via volume produced per machine.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

4. LCA: Scenarios and additional technical information

Characteristic product properties

Information on biogenic Carbon

Biogenic carbon is only present in packaging (wooden pallets).

Assumed water content in wooden pallet (packaging): 18 %

The biogenic carbon content of the packaging is:
 $0,0597 \text{ kg pallet/declared unit} * 0,82 * 0,5 \text{ kg C / kg pallet (abs. dry)} = 0,025 \text{ kg C/declared unit}$

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in accompanying packaging	0.025	kg C

The following technical scenario information is required for the declared modules.

Transport to the building site (A4)

Module A4 considers a 700 km truck transport from the manufacturing plant in Heidelberg to an average European customer site.

Name	Value	Unit
Transport distance	700	km
Capacity utilisation (including empty runs)	61	%

Installation into the building (A5)

The installation of PROMASTOP-CC is done manually and no energy is required. Installation losses have been accounted for in module A5. Paint losses have been considered as 2%.

The packaging material treatment and disposal are also considered in module A5.

Name	Value	Unit
Electricity consumption	0	kWh
Material loss	0.02	kg
Output substances following waste treatment on site (packaging material)	0.0977	kg

End of life (C1-C4)

The end-of-life scenarios are as follows:

C1 – The deconstruction of the PROMASTOP-CC coating is assumed to take place at the demolition of the walls and the substrates onto which it is applied. In this case, the environmental impact is assumed to be very low. Therefore, no environmental loads for the dismantling of this product is considered.

C2 – Transport to treatment/disposal site: Average transport distance from the demolition site to waste treatment is assumed as 50 km to landfill.

C4 – Disposal: The PROMASTOP-CC coatings are 100 % landfilled.

waste		
Landfilling	1	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

For the thermal and electrical energy generated in Module A5 due to thermal treatment of packaging, avoided burdens have been calculated by the inversion of electricity grid mix and thermal energy from natural gas, using European datasets.

Metals from packaging (bucket handle) are assumed to reach the end of waste status directly at construction site. The treatment and credits for avoided primary production (for the net scrap amount only) are grouped to module D.

Name	Value	Unit
Collected as mixed construction	1	kg

5. LCA: Results

Disclaimer EP-freshwater:

This indicator has been calculated as "kg P eq" as required in the characterisation model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; <http://epca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE					CONSTRUCTION PROCESS STAGE	USE STAGE						END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X	X	X	X	X	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg of PROMASTOP-CC

Core Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ -Eq.]	2.11E+0	6.41E-2	2.61E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.20E-3	0.00E+0	1.51E-2	-9.08E-2
GWP-fossil	[kg CO ₂ -Eq.]	2.19E+0	6.36E-2	1.70E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.14E-3	0.00E+0	1.51E-2	-9.03E-2
GWP-biogenic	[kg CO ₂ -Eq.]	-7.72E-2	0.00E+0	9.04E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.94E-5	0.00E+0	0.00E+0	-4.53E-4
GWP-luluc	[kg CO ₂ -Eq.]	1.70E-3	5.22E-4	5.84E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.40E-5	0.00E+0	4.45E-5	-6.28E-5
ODP	[kg CFC11-Eq.]	1.41E-14	8.15E-18	3.76E-16	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.30E-19	0.00E+0	5.94E-17	-1.04E-15
AP	[mol H ⁺ -Eq.]	8.78E-3	2.19E-4	2.21E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.42E-5	0.00E+0	1.08E-4	-1.18E-4
EP-freshwater	[kg PO ₄ -Eq.]	1.10E-5	1.89E-7	2.75E-7	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.23E-8	0.00E+0	2.55E-8	-1.19E-7
EP-marine	[kg N-Eq.]	1.74E-3	1.02E-4	4.95E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.62E-6	0.00E+0	2.80E-5	-3.36E-5
EP-terrestrial	[mol N-Eq.]	1.77E-2	1.13E-3	5.62E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.38E-5	0.00E+0	3.07E-4	-3.60E-4
POCP	[kg NMVOC-Eq.]	5.15E-3	1.97E-4	1.42E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.28E-5	0.00E+0	8.47E-5	-9.43E-5
ADPE	[kg Sb-Eq.]	4.25E-6	4.85E-9	8.73E-8	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.16E-10	0.00E+0	1.43E-9	-1.51E-8
ADPF	[MJ]	4.52E+1	8.49E-1	1.21E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.52E-2	0.00E+0	2.01E-1	1.57E+0
WDP	[m ³ world-Eq deprived]	2.69E-1	5.54E-4	2.52E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.60E-5	0.00E+0	1.62E-3	-6.97E-3

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg of PROMASTOP-CC

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	7.64E+0	4.74E-2	1.07E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.08E-3	0.00E+0	2.71E-2	-3.57E-1
PERM	[MJ]	8.80E-1	0.00E+0	-8.80E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	8.52E+0	4.74E-2	1.92E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.08E-3	0.00E+0	2.71E-2	-3.57E-1
PENRE	[MJ]	3.83E+1	8.50E-1	1.33E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.53E-2	0.00E+0	7.12E+0	-1.57E+0
PENRM	[MJ]	7.03E+0	0.00E+0	-1.10E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-6.92E+0	0.00E+0
PENRT	[MJ]	4.53E+1	8.50E-1	1.22E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.53E-2	0.00E+0	2.01E-1	-1.57E+0
SM	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m ³]	9.74E-3	5.42E-5	7.39E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.53E-6	0.00E+0	4.94E-5	-3.49E-4

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 = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:
1 kg of PROMASTOP-CC**

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	1.88E-8	4.28E-11	4.40E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.79E-12	0.00E+0	2.14E-11	-3.53E-10
NHWD	[kg]	1.12E+0	1.26E-4	4.37E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.22E-6	0.00E+0	1.00E+0	-7.39E-4
RWD	[kg]	8.06E-4	1.03E-6	1.62E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.69E-8	0.00E+0	2.07E-6	-1.15E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	2.55E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	4.00E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	7.14E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
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															

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 kg of PROMASTOP-CC**

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease Incidence]	9.64E-8	1.20E-9	2.22E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.81E-11	0.00E+0	1.34E-9	-1.02E-9
IRP	[kBq U235-Eq.]	9.70E-2	1.47E-4	1.66E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.58E-6	0.00E+0	2.13E-4	-1.88E-2
ETP-fw	[CTUe]	2.08E+1	6.13E-1	5.85E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.99E-2	0.00E+0	1.14E-1	-3.30E-1
HTP-c	[CTUh]	3.50E-9	1.24E-11	7.61E-11	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.05E-13	0.00E+0	1.69E-11	-1.50E-11
HTP-nc	[CTUh]	3.76E-7	7.41E-10	7.87E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.82E-11	0.00E+0	1.86E-9	-5.89E-10
SQP	[-]	3.66E+1	2.91E-1	7.64E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.90E-2	0.00E+0	4.24E-2	-2.44E-1
Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index															

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”.

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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

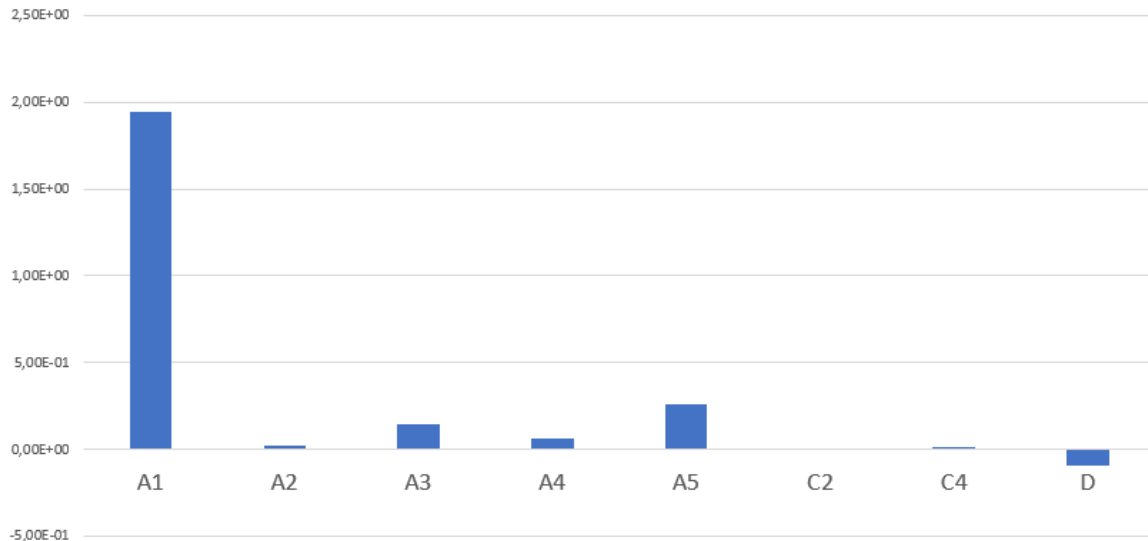
Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

The interpretation is based on the assumptions and limitations described in this background report, both with regard to the methods and the data. A dominance analysis is used for interpretation.

The following figure shows the results of the individual modules as an example for the global warming potential.

GWP results (CO₂ eq.) for 1kg of PROMASTOP-CC according to EN15804+A2



It is visible that the manufacturing phase dominates the product system. In addition, the packaging treatment in module A5 has relevant environmental impacts.

Interpretation of results for the environmental indicators according to ISO 14044:

- The resin has a significant influence (>50 %) on the ADPF and water use indicators and a relevant influence (entre 25 % et 50 %) on the GWP, ODP, EP and POCP indicators.
- The biogenic global warming potential shows the absorption of atmospheric carbon dioxide

during plant growth in connection with packaging (wooden pallet). The packaging makes moderate contributions in all other impact categories.

- Titanium dioxide has a significant impact on the resource use of minerals and metals indicator (ADPm).
- The ammonium polyphosphate has a relevant influence on the AP indicator.

7. Requisite evidence

7.1 VOC emissions

VOC emission measurements confirmed compliance with the AgBB/ABG requirements.

AgBB overview of results (28 days [µg/m³])

Name	Value	Unit
TVOC (C6 - C16)	44	µg/m ³
Sum SVOC (C16 - C22)	24	µg/m ³
R (dimensionless)	0.19	-
VOC without NIK	<5	µg/m ³
Carcinogenic Substances	<1	µg/m ³
Formaldehyde	<3	µg/m ³

Date: 11 April 2019

Measuring agency: Eurofins Product Testing A/S, Galten, Denmark

Report number: 392-2019-00089002_A_EN

8. References

Standards

EN 13501-1

EN 13501-1:2007+A1:2009, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

EN 15804

EN 15804:2012+A2:2019, Sustainability of construction works — Environmental Product

Declarations — Core rules for the product category of construction products.

ISO 9001

UNI EN ISO 9001:2015 September 2015, Quality management systems - Requirements

ISO 11890-2

ISO 11890-2:2013 Paints and varnishes —

Determination of volatile organic compound (VOC) content — Part 2: Gas-chromatographic method.

ISO 14001

UNI EN ISO 14001:2015, Environmental management systems - Requirements with guidance for use.

ISO 14025

DIN EN ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

ISO 45001

ISO 45001:2018, Occupational health and safety management systems — Requirements with guidance for use

ISO 50001

ISO 50001:2018, Energy management systems — Requirements with guidance for use

Further References**AgBB/AGB**

Ausschuss zur gesundheitlichen Bewertung von Bauprodukten, AgBB. Anforderungen an bauliche Anlagen bezüglich des Gesundheitsschutzes, AGB. (eng. German Committee for health-related evaluation of building products.

Candidate list

Candidate List of substances of very high concern for Authorisation, published on ECHA website, latest version 08.07.2021. (<https://echa.europa.eu/candidate-list-table>)

CPR

Construction Products Regulation, Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC Text with EEA relevance.

European List of Waste

2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council. (<http://data.europa.eu/eli/dec/2014/955/oj>)

ETA 16/0523

European technical approval of PROMASTOP®-CC.

Eurofins Product Testing A/S

Eurofins Product Testing A/S, Smedeskovvej 38, 8464 Galten, Denmark. Report number: 392-2019-00089002_A_EN

GaBi

GaBi Software System and Database for Life Cycle Engineering, 1992-2021, Sphera Solutions GmbH, Leinfelden-Echterdingen, with acknowledgement of LBP University of Stuttgart, program version GaBi 10; database version 2021.1.

GaBi documentation

GaBi dataset documentation for the software system and databases, LBP, University of Stuttgart and Sphera Solutions GmbH, Leinfelden-Echterdingen, 2021. (<http://www.gabi-software.com/support/gabi/gabi-database-2021-lci-documentation/>)

IBU 2021

Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021

Ordinance on Biocide Products

Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.

Pavus

Fire testing laboratory, Veselí nad Lužnicí, Czech Republic. Report number 60193174, 2016.

PCR Part A

PCR Part A: Calculation rules for the Life Cycle Assessment and Requirements on the Background Report according to EN 15 804+A2:2019, Version 1.0, Institut Bauen und Umwelt e.V., 2020.

PCR Part B

Product Category Rules for Building Products, Part B: Requirements on the EPD for coatings with organic binders, version 1.7, 2019 www.bau-umwelt.de

REACH Regulation

Regulation (EU) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

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