

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

Owner of the Declaration	Wallmann A/S
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-WAL-20220054-CBC1-EN
Issue date	30.03.2022
Valid to	29.03.2027

Wallmann "No Noise" underlag
Wallmann A/S

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ECO PLATFORM

EPD
VERIFIED

VELEGNET TIL LAMINAT- OG TRÆGULVE



General Information

Wallmann A/S

Programme holder

IBU – Institut Bauen und Umwelt e.V.
 Hegelplatz 1
 10117 Berlin
 Germany

Declaration number

EPD-WAL-20220054-CBC1-EN

This declaration is based on the product category rules:

Floor coverings, 06.04.2023
 (PCR checked and approved by the SVR)

Issue date

30.03.2022

Valid to

29.03.2027



Dipl.-Ing. Hans Peters
 (Chairman of Institut Bauen und Umwelt e.V.)



Dipl.-Ing. Hans Peters
 (Managing Director Institut Bauen und Umwelt e.V.)

Wallmann "No Noise" underlag

Owner of the declaration

Wallmann A/S
 Sabroesvej 20B
 8600 Silkeborg
 Denmark

Declared product / declared unit

Polyurethane underlayment mats - 1 m² polyurethane underlayment mats with renewable plant oil

Scope:

The manufacturer declaration applies to a group of similar products with a minimum weight of 1 kg/m² and a maximum total weight of 4 kg/m². The product is available as rolls and tiles. It is manufactured at the Windmoller GmbH site in Detmold, Germany. LCA results for product groups having a lower total weight than 4 kg/m² can be taken from the corresponding tables of the annexe. Specific data can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe').

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+A1. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



Angela Schindler,
 (Independent verifier)

Product

Product description/Product definition

Underlayment mats based on polyurethane are produced with renewable plant oil and with natural inorganic filler. The mats are available in different weights and thicknesses and are offered as rolls or tiles. The declaration applies to a group of products with a minimum total weight of 1 kg/m² and a maximum total weight of 4 kg/m². The mats consist of a laminated polyurethane core.

LCA results for products with lower weights can be taken from the corresponding tables of the annexe. Results for specific products with total weights between 1 kg/m² and 4 kg/m² can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe'). For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the technical requirements of the underlayment mats are covered by *EN 16354:2019-01*.

Application

The products are applied below floor coverings. They can be used in domestic, commercial and industrial areas.

Technical Data

Name	Value	Unit
Product Form	mats	-
Grammage	4000	kg/m ²
Polyurethane layer	3833	g/m ²
Lamination	167	g/m ²

LCA: Calculation rules

Declared Unit

Name	Value	Unit
Declared unit	1	m ²
Grammage	4	kg/m ²
Layer thickness	0.002	m
Gross density	2000	kg/m ³

The declared unit refers to 1 m² produced underlay mat. The output of module A5 'Assembly' is 1 m² installed underlay mat.

System boundary

Type of EPD: Cradle-to-gate with options

System boundaries of modules A, B, C, D:

Modules C3, C4 and D are indicated separately for three end-of-life scenarios:

- 1 - landfill disposal
- 2 - municipal waste incineration
- 3 - recovery in a cement plant

A1-A3 Production:

Energy supply and production of the basic material, processing of secondary material, auxiliary material, transport of the material to the manufacturing site, emissions, waste water treatment, packaging material

Performance data of the product can be found on the manufacturer's technical information section (www.wallmann.dk).

Base materials/Ancillary materials

Name	Value	Unit
Polyurethane including 73 % renewable material	18,4	%
Inorganic Fillers	76,2	%
Organic layers	4,6	%
Additives	0,8	%

This product contains substances listed in the *ECHA candidate list* (19.01.2021) or other carcinogenic, mutagenic or reprotoxic (CMR) substances in categories 1A or 1B which are not on the *candidate list* exceeding 0.1 percentage by mass: no

Reference service life

A calculation of the reference service life according to *ISO 15686* is not possible.

The service life of the underlay mats strongly depends on the correct installation. The service life of the declared underlay mats is mainly dependent on the service life of the covering layer.

A minimum service life of 10 years can be assumed, technical service life can be considerably longer.

and waste processing up to the landfill disposal of residual waste (except radioactive waste). Benefits for generated electricity and steam due to the incineration of production waste are aggregated. Biogenic carbon that is stored in renewable material (plant oil, packaging paper) is taken into account as well as the associated carbon dioxide uptake from the air during the growth of the plants

A4 Transport:

Transport of the packed product from factory gate to the place of installation.

A5 Installation:

Installation of the floor covering, processing of installation waste and packaging waste up to the landfill disposal of residual waste (except radioactive waste), the production of the amount of underlay mat that occurs as installation waste including its transport to the place of installation.

Generated electricity and steam due to the incineration of waste are listed in the result table as exported energy. Biogenic carbon that is stored in renewable materials the polyurethane layer and in packaging paper is released as carbon dioxide emissions into the air at the end of life in module A5.

B1 - B7:

The modules are not relevant and therefore not declared.

C1 De-construction:

The floor covering is de-constructed manually and no additional environmental impact is caused.

C2 Transport:

Transport of the underlay mat waste to a landfill, to the municipal waste incineration plant (MWI) or to the waste collection facility for recycling.

C3 Waste processing:

C3-1: Landfill disposal needs no waste processing.
 C3-2: Impact from waste incineration (plant with $R1 > 0.6$), generated electricity and steam are listed in the result table as exported energy.
 C3-3: Collection of the underlay mat waste for recovery in the cement industry, waste processing (granulating), transport to the cement plant, emissions from the incineration. The biogenic carbon that is stored in the renewable materials of the floor covering is released into the air as carbon dioxide emissions.

C4 Disposal

C4-1: Impact from landfill disposal,
 C4-2: The underlay mat waste leaves the system in module C3-2,
 C4-3: The pre-processed underlay mat waste leaves the system in module C3-3.

D Recycling potential:

Calculated benefits result from materials exclusive secondary materials (net materials).

D-A5: Benefits for generated energy due to incineration of packaging and installation waste (incineration plant with $R1 > 0.6$),

D-1: Benefits for generated energy due to landfill disposal of underlay mat waste at the end-of-life,

D-2: Benefits for generated energy due to incineration of underlay mat waste at the end-of-life (incineration plant with $R1 > 0.6$),

D-3: Benefits for saved fossil energy and saved inorganic material due to recovery of the underlay mat in a cement plant.

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

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. Background data are taken from GaBi database 2021. Remaining data gaps are covered by the ecoinvent 3.7 database.

LCA: Scenarios and additional technical information

The following information refer to the declared modules and are the basis for calculations or can be used for further calculations.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck, EURO 0-6 mix)	0.0094	l/100km
Transport distance	870	km
Capacity utilisation (including empty runs)	55	%

Installation in the building (A5)

Name	Value	Unit
Material loss	0.36	kg

Polyethylene packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant. Cardboard is going to be recycled.

End of Life (C1-C4)

Three different end-of-life scenarios are declared and the results are indicated separately in module C. Each scenario is calculated as a 100 % scenario.

Scenario 1: 100 % landfill disposal

Scenario 2: 100 % municipal waste incineration (MWI) with $R1 > 0.6$

Scenario 3: 100 % recycling in the cement industry

If combinations of these scenarios have to be calculated this

should be done according to the following scheme:

$$\begin{aligned} \text{EOL-impact} &= x \% \text{ impact (Scenario 1)} \\ &+ y \% \text{ impact (Scenario 2)} \\ &+ z \% \text{ impact (Scenario 3)} \\ &\text{with } x \% + y \% + z \% = 100 \% \end{aligned}$$

Name	Value	Unit
Collected as mixed construction waste (scenario 1 and 2)	4	kg
Landfilling (scenario 1)	4	kg
Energy recovery (scenario 2)	4	kg
Collected separately (scenario 3)	4	kg
Energy recovery (scenario 3)	0,941	kg
Recycling (scenario 3)	3.059	kg

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

Recovery or recycling potentials due to the three end-of-life scenarios (module C) are indicated separately.

Recycling in the cement industry (scenario 3)
 VDZ e. V.

The organic material of the underlay mat is used as secondary fuel in a cement kiln. It mainly substitutes for lignite (65.5 %), hard coal (26.2 %) and petrol coke (8.6 %).

The inorganic material is substantially integrated into the cement clinker and substitutes for original material input.

LCA: Results

The LCA results refer to all declared products with a maximum weight of 4000 g/m². LCA results for products with lower weights can be taken from the corresponding tables of the annexe. Results for specific products with weights between 1 kg/m² and 4 kg/m² can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe'). Information on non-relevant modules: Modules B1 - B7 are not relevant during the service life of the underlay mat. Modules C1, C3/1, C4/2 and C4/3 cause no additional impact (see chapter "LCA: Calculation rules" in this document). All these modules are declared and marked as 'modules not relevant/declared'. Module C2 represents the transport for scenarios 1, 2 and 3. Column D represents module D/A5. The calculations are based on the CML characterization factors (version August 2016).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE 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	MND	MND	MNR	MNR	MNR	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
GWP	kg CO ₂ eq	8.42E-01	2.91E-01	4.96E-01	1.33E-02	4.1E+00	4.15E+00	1.79E+00	-6.52E-02	0	-6.23E-01	-2.41E-01
ODP	kg CFC11 eq	1.59E-08	5.08E-17	1.43E-09	2.32E-18	1.83E-15	2.54E-15	9.22E-16	-9.56E-16	0	-9.05E-15	-1.12E-15
AP	kg SO ₂ eq	1.86E-02	1.2E-03	1.9E-03	5.49E-05	1.17E-03	1.35E-03	7.05E-04	-7.36E-05	0	-6.99E-04	-5.29E-04
EP	kg PO ₄ ³⁻ eq	1.63E-02	3.06E-04	1.52E-03	1.4E-05	2.73E-04	3.13E-04	7.65E-04	-1.02E-05	0	-9.71E-05	-9.45E-05
POCP	kg Ethen eq	2.89E-04	-5.15E-04	-1.5E-05	-2.35E-05	7.96E-05	2.39E-05	6.34E-05	-6.84E-06	0	-6.52E-05	-6.99E-05
ADPE	kg Sb eq	4.12E-06	2.58E-08	3.89E-07	1.18E-09	1.85E-07	1.95E-07	5.21E-08	-1.19E-08	0	-1.13E-07	-2.85E-08
ADPF	MJ	4.37E+01	3.96E+00	4.51E+00	1.81E-01	2.28E+00	2.97E+00	4.06E+00	-9.44E-01	0	-9.04E+00	-2.47E+01

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

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
PERE	MJ	2.69E+01	2.22E-01	2.56E+00	1.01E-02	4.43E-01	6.49E-01	3.03E-01	-2.47E-01	0	-2.33E+00	-2.57E-01
PERM	MJ	7.4E-02	0	-7.4E-02	0	0	0	0	0	0	0	0
PERT	MJ	2.7E+01	2.22E-01	2.49E+00	1.01E-02	4.43E-01	6.49E-01	3.03E-01	-2.47E-01	0	-2.33E+00	-2.57E-01
PENRE	MJ	1.84E+01	3.97E+00	4.9E+00	1.81E-01	2.87E+01	2.96E+01	4.18E+00	-1.14E+00	0	-1.09E+01	-2.48E+01
PENRM	MJ	2.64E+01	0	-2.58E-01	0	-2.62E+01	-2.62E+01	0	0	0	0	0
PENRT	MJ	4.49E+01	3.97E+00	4.64E+00	1.81E-01	2.53E+00	3.38E+00	4.18E+00	-1.14E+00	0	-1.09E+01	-2.48E+01
SM	kg	2.15E-02	0	1.94E-03	0	0	0	0	0	0	0	2.67E+00
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	2.19E+00	2.54E-04	1.98E-01	1.16E-05	1.33E-02	1.35E-02	3.85E-05	-2.41E-04	0	-2.28E-03	-1.95E-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 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+A1:

1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
HWD	kg	2.77E-05	2E-10	2.5E-06	9.14E-12	4.19E-10	5.46E-10	7.52E-10	-2.55E-10	0	-2.43E-09	-5.22E-10
NHWD	kg	9.76E-02	5.9E-04	1.35E-01	2.69E-05	1.41E+00	1.41E+00	3.98E+00	-5.24E-04	0	-4.99E-03	-1.06E-03
RWD	kg	4.26E-04	4.81E-06	4.8E-05	2.19E-07	1.01E-04	1.6E-04	4.85E-05	-7.93E-05	0	-7.5E-04	-4.8E-05
CRU	kg	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	2.47E-02	0	0	2.67E+00	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	2.7E-01	0	2.56E+00	0	0	0	0	0	0
EET	MJ	0	0	5.36E-01	0	5.17E+00	0	0	0	0	0	0

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

References

EN 13501-1

DIN
EN 13501-1:2019-05: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN 14041

DIN EN 14041: 2018-05: Resilient, textile and laminate floor coverings - Essential characteristics

EN 15804

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15804:2012-04+A1 2013/, Sustainability of construction works
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Environmental Product Declarations — Core rules for the product category of construction products

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EN 16810

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EN 16810: 2017-08: Resilient, textile and laminate floor coverings –
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ISO 10874

DIN EN ISO 10874: 2012+A1:2021-04: Resilient, textile and laminate floor coverings - Classification

ISO 14025

DIN
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ISO 14040

DIN EN ISO 14040:2006+A1:2020 Environmental management - Life cycle assessment - Principles and framework

ISO 14044

DIN EN ISO 14044:2006+A1:2018+A2:2020 Environmental management - Life cycle assessment - Requirements and guidelines

ISO 15686

ISO 15686: Buildings and constructed assets - Service life planning
ISO 15686-1: 2011-05: Part 1: General principles and framework
ISO 15686-2: 2012-05: Part 2: Service life prediction procedures
ISO 15686-7: 2017-04: Part 7: Performance evaluation for feedback of service life data from practice
ISO 15686-8: 2008-06: Part 8: Reference service life and service-life estimation

Regulation (EU) No. 305/2011

Regulation
No. 305/2011 Construction Products Regulation (CPR) of the European Council and of the European Parliament, April 2011

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ECHA candidate list

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GaBi database 2021

GaBi Software-System and Database for Life Cycle Engineering, thinkstep AG, Leinfelden-Echterdingen, 2021-2

IBU 2021

IBU
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PCR Part A

Product
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PCR Part B

Product
Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for floor coverings, V1, Berlin: Institut Bauen und Umwelt e.V. (IBU), April 2023

REACH

Regulation
(EC) 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). Last update: 27.02.2020 (Status: 27.06.2018)

VDZ e.V.

Association of German Cement Works, Ed. Environmental Data of the German Cement Industry 2019

**Publisher**

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

**Author of the Life Cycle Assessment**

Gemeinschaft umweltfreundlicher Teppichboden
(GUT) e.V.
Schönebergstraße 2
52068 Aachen
Germany

+49 (0)241 96843 410
mail@gut-ev.de
www.gut-ev.org

**Wallmann****Owner of the Declaration**

Wallmann A/S
Sabroesvej 20B
8600 Silkeborg
Denmark

+4587700900
info@wallmann.dk
www.wallmann.dk

Annexe

For a product with a total weight of 2800 g/m²

to the

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	Wallmann A/S
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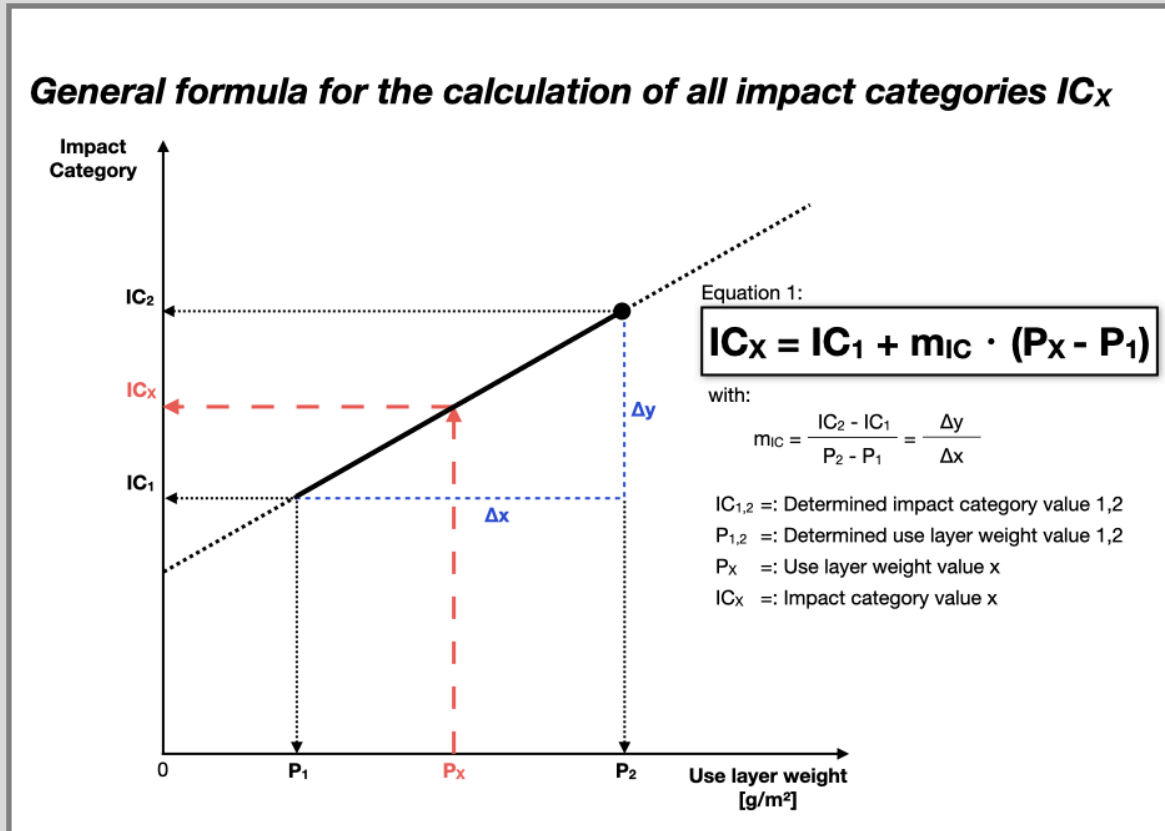
www.bau-umwelt.com / <https://epd-online.com>



General Information on the annexe

The EPD document is valid for all products with a total product weight lower or equal to the declared maximum product weight of 4000 g/m².

LCA results show a linear correlation with the total polyurethane weight for all impact categories (IC) and all modules (A-D). It is possible to calculate specific LCA results (IC_x) for every underlay mat (x) within the declared group of products in relation to its total weight of the polyurethane layer (P_x).



Graph 1: General formula for the calculation of all impact categories IC_x.

1. Information on the product with a total product weight of 2800 g/m²

Complementary technical data

Base materials / Ancillary materials

Name	Value for category	Unit
Polyurethane with renewable plant oil	18,0	%
Inorganic Filler	74,7	%
Organic material	6,9	%
Additives	0,5	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m ²
Conversion factor to 1 kg	2,80	kg/m ²

LCA: Scenarios and additional technical information

All indicated values refer to the declared functional unit

Transport to the construction site (A4)

Name	Value for category	Unit
Litres of fuel (truck, EURO 0-6 mix)	0,0066	l/100km
Transport distance	270	km
Capacity utilisation (including empty runs)	55	%

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,25	kg

End of Life (C1-C4)

Name	Value for category	Unit
Collected as mixed construction waste (scenario 1 and 2)	2,80	kg/m ²
Collected separately (scenario 3)	2,80	kg/m ²
Landfilling (scenario 1)	2,80	kg/m ²
Energy recovery (scenario 2)	2,80	kg/m ²
Energy recovery (scenario 3)	0,66	kg/m ²
Recycling (scenario 3)	1,94	kg/m ²

LCA: Results for the product with a total product weight of 2800 g/m²

Information on non-relevant modules:

Modules B1 - B5 are not relevant during the service life of the product.

Modules B6, B7, C1, C3/1, C4/2 and C4/3 cause no additional impact and are therefore not relevant.

Module C2 represents the transport for scenarios 1, 2 and 3.

Description of the system boundary

(X = Included in LCA; MNR = Module not relevant)

State of production			State of construction phase		State of use							End of life state				Credits and loads after life
raw material supply	transport	manufacturing	delivery	installation	use	maintenance	repair	replacement	renewal	energy use	water use	stop of use / demolition	transport	waste management	disposal	reuse, 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	MNR	MNR	MNR	MNR	MNR	MNR	MNR	MNR	X	X	X	X

Results of the LCA - Environmental impact: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO ₂ -eq]	6,98E-01	2,04E-01	3,72E-01	9,31E-03	2,96E+00	2,99E+00	1,25E+00	-5,21E-02	0,00E+00	-4,77E-01	-1,76E-01
ODP	[kg CFC11-eq]	1,09E-08	3,57E-17	9,83E-10	1,62E-18	1,28E-15	1,77E-15	6,45E-16	-7,70E-16	0,00E+00	-6,98E-15	-8,09E-16
AP	[kg SO ₂ -eq]	1,30E-02	8,43E-04	1,33E-03	3,84E-05	8,20E-04	9,46E-04	4,93E-04	-5,91E-05	0,00E+00	-5,37E-04	-3,91E-04
EP	[kg PO ₄) ₃ -eq]	1,12E-02	2,15E-04	1,05E-03	9,80E-06	1,91E-04	2,19E-04	5,35E-04	-8,17E-06	0,00E+00	-7,46E-05	-6,93E-05
POCP	[kg ethen-eq]	2,33E-04	-3,62E-04	-7,78E-06	-1,65E-05	5,59E-05	1,69E-05	4,44E-05	-5,48E-06	0,00E+00	-5,00E-05	-5,19E-05
ADPE	[kg Sb-eq]	2,96E-06	1,81E-08	2,79E-07	8,26E-10	1,29E-07	1,36E-07	3,65E-08	-9,55E-09	0,00E+00	-8,69E-08	-2,07E-08
ADPF	[MJ]	3,41E+01	2,78E+00	3,48E+00	1,27E-01	1,59E+00	2,07E+00	2,84E+00	-7,53E-01	0,00E+00	-6,92E+00	-1,86E+01

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

Results of the LCA - Resource use: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
PERE	[MJ]	1,91E+01	1,56E-01	1,84E+00	7,07E-03	3,09E-01	4,53E-01	2,12E-01	-1,99E-01	0,00E+00	-1,80E+00	-1,87E-01
PERM	[MJ]	7,40E-02	0,00E+00	-7,40E-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
PERT	[MJ]	1,92E+01	1,56E-01	1,77E+00	7,07E-03	3,09E-01	4,53E-01	2,12E-01	-1,99E-01	0,00E+00	-1,80E+00	-1,87E-01
PENRE	[MJ]	1,50E+01	2,79E+00	3,84E+00	1,27E-01	2,16E+01	2,22E+01	2,93E+00	-9,11E-01	0,00E+00	-8,35E+00	-1,87E+01
PENRM	[MJ]	2,00E+01	0,00E+00	-2,58E-01	0,00E+00	-1,98E+01	-1,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	3,51E+01	2,79E+00	3,58E+00	1,27E-01	1,76E+00	2,36E+00	2,93E+00	-9,11E-01	0,00E+00	-8,35E+00	-1,87E+01
SM	[kg]	2,15E-02	0,00E+00	1,94E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,83E+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	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	0,00E+00	0,00E+00
FW	[m ³]	1,51E+00	1,78E-04	1,36E-01	8,12E-06	9,41E-03	9,55E-03	2,70E-05	-1,94E-04	0,00E+00	-1,76E-03	-1,47E-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 material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water

Results of the LCA - Output flows and waste categories: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
HWD	[kg]	2,77E-05	1,40E-10	2,50E-06	6,40E-12	2,92E-10	3,81E-10	5,26E-10	-2,04E-10	0,00E+00	-1,86E-09	-3,68E-10
NHWD	[kg]	6,85E-02	4,14E-04	9,33E-02	1,88E-05	9,72E-01	9,72E-01	2,79E+00	-4,20E-04	0,00E+00	-3,83E-03	-7,65E-04
RWD	[kg]	3,45E-04	3,38E-06	3,79E-05	1,53E-07	7,06E-05	1,12E-04	3,39E-05	-6,38E-05	0,00E+00	-5,78E-04	-3,55E-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	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	2,47E-02	0,00E+00	0,00E+00	1,83E+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	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	2,18E-01	0,00E+00	1,97E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	4,25E-01	0,00E+00	3,94E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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