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ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	Fletco Carpets A/S
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-FLE-20190014-CCC1-EN
Issue date	13.02.2019
Valid to	12.02.2024

Woven carpet tiles
pile material polyamide 6.6,
maximum total pile weight 700 g/m^2

Fletco Carpets

Institut Bauen und Umwelt e.V.

www.ibu-epd.com / https://epd-online.com

General Information

Fletco Carpets

Woven carpet tiles
pile material PA 6.6,
max. total pile weight 700 g/m²
TEXtile backing

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Owner of the declaration
Fletco Carpets A/S
Mads Clausens Vej 2
7441 Bording
Denmark

Declaration number
EPD-FLE-20190014-CCC1-EN

Declared product / declared unit
1 m² woven TEXtile carpet having a pile material of PA 6.6

This declaration is based on the product category rules:
Floor coverings, 02/2018
(PCR checked and approved by the SVR)

Scope:
The manufacturer declaration applies to a group of similar products with a maximum total pile weight of 700 g/m².
The carpet is woven at the Fletco manufacturing site Bording, Denmark. Dyeing and backing of the carpet is carried out externally.
LCA results for product groups having a lower total pile weight can be taken from the corresponding tables of the annex or can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex').
The declaration is only valid in conjunction with a valid GUT-/PRODIS/ license of the product.

Issue date
13.02.2019

Valid to
12.02.2024

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.

Verification

The standard /EN 15804/ serves as the core PCR
Independent verification of the declaration and data according to /ISO 14025:2010/
☐ internally ☒ externally

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Head of Board IBU)

Angela Schindler
(Independent verifier appointed by SVR)

Product

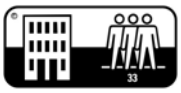
Product description / Product definition
Flat woven carpet tiles having a pile material of polyamide 6.6 (PA 6.6) and a TEXtile backing.
The declaration applies to a group of products with a maximum total pile weight of 700 g/m².

The LCA results are calculated for products with the maximum total pile weight.
LCA results for product groups having a lower total pile weight can be taken from the corresponding tables of the annex. These result tables refer to categories of total pile weights in steps of 100 g/m². The LCA results always refer to the highest total pile weight of the corresponding pile weight category. Results for similar products with any other total pile weight can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex').

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 Declaration of Performance of the products taking into consideration /EN 14041/ and the CE-marking of the products can be found on the manufacturer's technical information section.

Application

According to the use class as defined in /EN 1307/ the products can be used in all professional area which require class 33 or less.



Technical Data

Name	Value	Unit
Product Form	Tiles of several dimensions	-
Type of manufacture	Flat woven	-
Yarn type	Polyamide 6.6	-
Secondary backing	TEXtile backing with recycled content	-
Total pile weight	Max. 700	g/m²
Total carpet weight	Max. 3950	g/m²

Additional product properties in accordance with /EN 1307/ and performance data of the product in accordance with the Declaration of Performance with respect to its Essential Characteristics according to /EN 14041/ can be found on the Product Information System /PRODIS/ using the /PRODIS/ registration number of the product (www.pro-dis.info) or on the manufacturer's technical information section (www.fletco.eu)

Base materials / Ancillary materials

Name	Value	Unit
Polyamide 6.6	17.7	%
Polyethylenterephthalate (PET)	19.2	%
Mineral filler	39.0	%
Aluminium hydroxide	2.2	%
Ethyl vinyl acetate (EVA)	16.7	%
Polymer dispersion (dry substance)	4.5	%
Glass fibre	0.4	%
Additives	0.3	%

The products are registered in the GUT-/PRODIS/ Information System. The /PRODIS/ system ensures the compliance with limitations of various chemicals and Volatile Organic Compound (VOC) emissions and a ban on use of all substances that are listed as 'Substances of Very High Concern' (SVHC) under /REACH/.
This product contains substances listed in the candidate list (27.06.2018) 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 textile floor coverings strongly depends on the correct installation taking into account the declared use classification and the adherence to cleaning and maintenance instructions.
A minimum service life of 10 years can be assumed, technical service life can be considerably longer.

LCA: Calculation rules

Declared Unit

Name	Value	Unit
Declared unit	1	m²
Conversion factor to 1 kg	0.25	-
Mass reference	3.95	kg/m²

The declared unit refers to 1 m² produced textile floor covering. Output of module A5 'Assembly' is 1 m² installed textile floor covering.

System boundary

Type of EPD: Cradle-to-grave

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 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.

A4 Transport:
Transport of the packed textile floor covering from factory gate to the place of installation.

A5 Installation:
Installation of the textile 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 carpet 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.
Preparing of the floor and auxiliary materials (adhesives, fixing agents, PET connectors) are beyond the system boundaries and not taken into account.

B1 Use:
Indoor emissions during the use stage. After the first year, no product related Volatile Organic Compound (VOC) emissions are relevant due to known VOC decay curves of the product.

B2 Maintenance:
Cleaning of the textile floor covering for a period of 1 year:
Vacuum cleaning – electricity supply
Wet cleaning – electricity, water consumption, production of the cleaning agent, waste water treatment.
The declared values in this module have to be multiplied by the assumed service life of the floor covering in the building in question (see annex, chapter 'General information on use stage').

B3 - 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 carpet 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 carpet waste, waste processing (granulating).

C4 Disposal
C4-1: Impact from landfill disposal,
C4-2: The carpet waste leaves the system in module C3-2,
C4-3: The pre-processed carpet 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 carpet waste at the end-of-life,
D-2: Benefits for generated energy due to incineration of carpet 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 carpet in a cement plant at the end-of-life, transport from the reprocessing plant to the cement kiln.

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 the /GaBi database 2018/, service pack 36 and from the /ecoinvent 3.5/ 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. The indicated values refer to the declared functional unit of all products with a maximum total pile weight of 700 g/m^2.
Specific information on products having a lower total pile weight can be taken from the annex.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck, EURO 0-6 mix)	0.0066	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	85	%

Installation in the building (A5)

Name	Value	Unit
Material loss	0.12	kg

Polyethylene packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant. Cardboard packaging waste is going to be recycled
Preparation of the floor and auxiliaries (adhesives, fixing agents, PET connectors, etc.) are not taken into account.

Maintenance (B2)
The values for cleaning refer to one m^2 floor covering used in commercial areas per year (see annex, chapter 'General Information on use stage').
Depending on the application based on EN ISO 10874, the technical service life recommended by the manufacturer and the anticipated strain on the floor by customers, the case-specific useful life can be established. The effects of Module B2 need to be calculated on the basis of this useful life in order to obtain the overall environmental impacts.

Name	Value	Unit
Maintenance cycle (wet cleaning)	1.5	1/year
Maintenance cycle (vacuum cleaning)	208	1/year
Water consumption (wet cleaning)	0.004	m^3
Cleaning agent (wet cleaning)	0.09	kg
Electricity consumption	0.314	kWh

Further information on cleaning and maintenance see www.fletco.eu

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:

EOL-impact = x% impact (Scenario 1)
+ y% impact (Scenario 2)
+ z% impact (Scenario 3)

Name	Value	Unit
Collected as mixed construction waste (scenario 1 and 2)	3.95	kg
Collected separately (scenario 3)	3.95	kg
Landfilling (scenario 1)	3.95	kg
Energy recovery (scenario 2)	3.95	kg
Energy recovery (scenario 3)	2.3	kg
Recycling (scenario 3)	1.65	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 carpet is used as secondary fuel in a cement kiln. It mainly substitutes for lignite (62.2%), hard coal (27.3%) and petrol coke (10.5%).
The inorganic material is substantially integrated in the cement clinker and substitutes for original material input.

LCA: Results

The results are valid for all declared products with a maximum total pile weight of 700 g/m².
LCA results for product groups having a lower total pile weight can be taken from the corresponding tables of the annex. The LCA results always refer to the highest total pile weight of the corresponding pile weight category. Results for similar products with any other total pile weight can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex').
The declared result figures in module B2 have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration (see annex, chapter 'General Information on use stage').

Information on un-declared modules:
Modules B3 - B7 are not relevant during the service life of the carpet and are therefore not declared.
Modules C1, C3/1, C4/2 and C4/3 cause no additional impact (see "LCA: Calculation rules") and are therefore not declared. Module C2 represents the transport for scenarios 1, 2 and 3. Column D represents module D/A5.
The /CML/ characterisation factors version January 2016 are applied.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

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	MNR	MNR	MNR	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
GWP	[kg CO_2-Eq.]	1.72E+1	1.66E-1	7.78E-1	0.00E+0	3.17E-1	9.23E-3	7.82E+0	2.29E-2	2.81E-1	-4.15E-2	0.00E+0	-1.16E+0	-3.93E-1
ODP	[kg CFC11-Eq.]	7.22E-9	4.54E-15	2.11E-10	0.00E+0	1.30E-8	2.53E-16	3.12E-13	1.01E-13	7.49E-14	-8.87E-14	0.00E+0	-2.46E-12	-1.58E-13
AP	[kg SO_2-Eq.]	3.49E-2	6.82E-4	1.21E-3	0.00E+0	1.24E-3	3.81E-5	5.43E-3	6.46E-5	7.58E-4	-6.89E-5	0.00E+0	-1.91E-3	-1.40E-3
EP	[kg $(PO_4)^{3-}$-Eq.]	4.85E-3	1.74E-4	1.87E-4	0.00E+0	3.55E-4	9.73E-6	1.32E-3	6.06E-6	7.75E-4	-7.47E-6	0.00E+0	-2.07E-4	-1.46E-4
POCP	[kg ethene-Eq.]	2.88E-3	-2.83E-4	8.56E-5	6.29E-5	1.56E-4	-1.58E-5	3.35E-4	4.05E-6	8.28E-5	-5.41E-6	0.00E+0	-1.50E-4	-2.00E-4
ADPE	[kg Sb-Eq.]	4.91E-5	1.38E-8	1.45E-6	0.00E+0	1.10E-6	7.68E-10	3.15E-7	1.21E-8	6.00E-8	-1.16E-8	0.00E+0	-3.21E-7	-8.93E-8
ADPF	[MJ]	2.91E+2	2.26E+0	8.73E+0	0.00E+0	6.61E+0	1.26E-1	4.36E+0	2.42E-1	4.03E+0	-5.70E-1	0.00E+0	-1.59E+1	-5.65E+1

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 floorcovering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
PERE	[MJ]	3.87E+1	1.25E-1	1.16E+0	0.00E+0	1.13E+0	6.98E-3	6.59E-1	1.56E-1	3.11E-1	-1.38E-1	0.00E+0	-3.81E+0	-3.32E-1
PERM	[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
PERT	[MJ]	3.87E+1	1.25E-1	1.16E+0	0.00E+0	1.13E+0	6.98E-3	6.59E-1	1.56E-1	3.11E-1	-1.38E-1	0.00E+0	-3.81E+0	-3.32E-1
PENRE	[MJ]	2.51E+2	2.27E+0	9.42E+0	0.00E+0	7.88E+0	1.27E-1	6.83E+1	6.38E+1	4.18E+0	-7.22E-1	0.00E+0	-2.01E+1	-5.68E+1
PENRM	[MJ]	6.34E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-6.34E+1	-6.34E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	3.14E+2	2.27E+0	9.42E+0	0.00E+0	7.88E+0	1.27E-1	4.93E+0	4.16E-1	4.18E+0	-7.22E-1	0.00E+0	-2.01E+1	-5.68E+1
SM	[kg]	6.01E-1	0.00E+0	1.51E-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	0.00E+0	1.65E+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
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	6.34E+1
FW	[m³]	8.80E-2	2.31E-4	3.46E-3	0.00E+0	4.52E-3	1.29E-5	2.83E-2	2.13E-4	-1.07E-5	-1.88E-4	0.00E+0	-5.20E-3	-4.62E-3

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 – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
HWD	[kg]	2.31E-5	1.31E-7	6.82E-7	0.00E+0	1.26E-9	7.32E-9	2.77E-8	1.95E-10	1.78E-8	-2.94E-10	0.00E+0	-8.17E-9	3.20E-9
NHWD	[kg]	3.81E-1	1.90E-4	6.32E-2	0.00E+0	8.24E-3	1.06E-5	1.74E+0	2.93E-4	3.94E+0	-3.07E-4	0.00E+0	-8.52E-3	-4.26E-2
RWD	[kg]	9.08E-3	3.10E-6	2.73E-4	0.00E+0	3.95E-4	1.73E-7	2.24E-4	6.89E-5	5.93E-5	-6.05E-5	0.00E+0	-1.68E-3	-1.07E-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
MFR	[kg]	9.37E-2	0.00E+0	9.36E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.65E+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	2.30E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	2.22E-1	0.00E+0	0.00E+0	0.00E+0	6.44E+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	4.10E-1	0.00E+0	0.00E+0	0.00E+0	1.19E+1	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; EEE = Exported thermal energy

References

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

/PCR Part A/
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Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, V1.7 March 2018
www.bau-umwelt.de

/PCR Part B/
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Part B: Requirements on the EPD for floor coverings, V1.2, Febuary 2018

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DIN EN 1307: 2014+A1:2016: Textile floor coverings - Classification

/EN 14041/
DIN EN 14041: 2008-05: Resilient, textile and laminate floor coverings - Essential characteristics

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

/EN 13501-1/
DIN EN 13501-1:2010-01: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

/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: 2006-03: 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

/VDZ e.V./
Umweltdaten der deutschen Zementindustrie 2016

/CPR/
Construction Producs Regulation, Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

/CML/
Institute of Environmental Science (CML), University Leiden, The Netherlands

/PRODIS/
Product Information System (PRODIS) of the European Carpet Industry, Gemeinschaft umweltfreundlicher Teppichboden e.V (GUT) and European Carpet and Rug Association (ECRA), http://www.pro-dis.info

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Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency (ECHA), European Union Regulation No 1907/2006, June 2017,

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GaBi Software-System and Database for Life Cycle Engeneering, thinkstep AG, Leinfelden-Echterdingen, service pack 36, 2018

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Annex

for products with a max. total pile weight of 600 g/m²

to the

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	**Fletco Carpet Tiles A/S**
Programme holder	**Institut Bauen und Umwelt e.V. (IBU)**
Publisher	**Institut Bauen und Umwelt e.V. (IBU)**
Declaration number	**EPD-FLE-20190014-CCC1-EN**
Issue date	**13.02.2019**
Valid to	**12.02.2024**

Woven carpet tiles

pile material polyamide 6.6, kontinuous dyeing method,
maximum total pile weight 700 g/m^2

Fletco Carpet Tiles A/S

www.bau-umwelt.com / https://epd-online.com

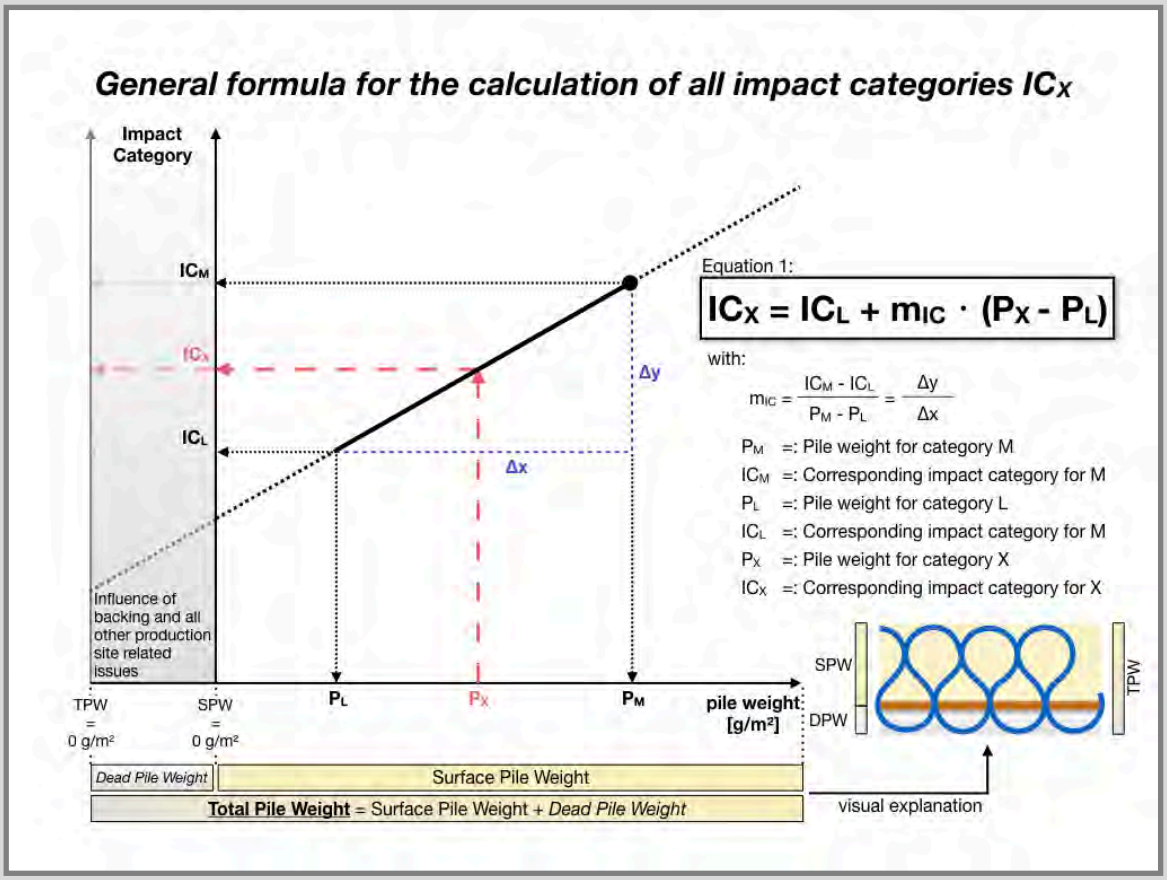
General Information on the annex

The EPD document is valid for all products with a total pile weight lower or equal to the declared maximum pile weight of 700 g/m².

This annex provides calculated LCA results for a fixed set of structurally identical products with lower total pile weights in intervals of 100 g/m².

As, for all impact categories and all modules (A-D), LCA results show a linear correlation with the total pile weight, it is also possible to calculate LCA results for any product with a total pile weight P_X different from those already mentioned in the annex.

LCA results can be calculated by using general '*equation 1'*, as shown in the graph below.



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

The following table gives the definition of pile weight categories used in this annex:

Category	L	X_1	X_2	X_n	M
max. pile weight per category	lowest pile weight, as declared in the annex	L + 100 g/m²	X_1 + 100 g/m²	X_{n-1} + 100 g/m²	max. pile weight, as declared in the EPD

General Information on use stages B1 to B7

LCA results indicate environmental impacts resulting from use stage B1 to B7.

For textile floor coverings only modules B1 (use) and B2 (maintenance) are taken into account. Modules B3 (repair), B4 (replacement), B5 (refurbishment), B6 (operational energy use) and B7 (operational water use) are not relevant during the service life of textile floor coverings.

Module B1 'use' includes emissions to the indoor air during the use stage. Relevant emissions only occur in the first year of life (see LCA: Calculation rules).

Module B2 'maintenance' includes cleaning procedures.

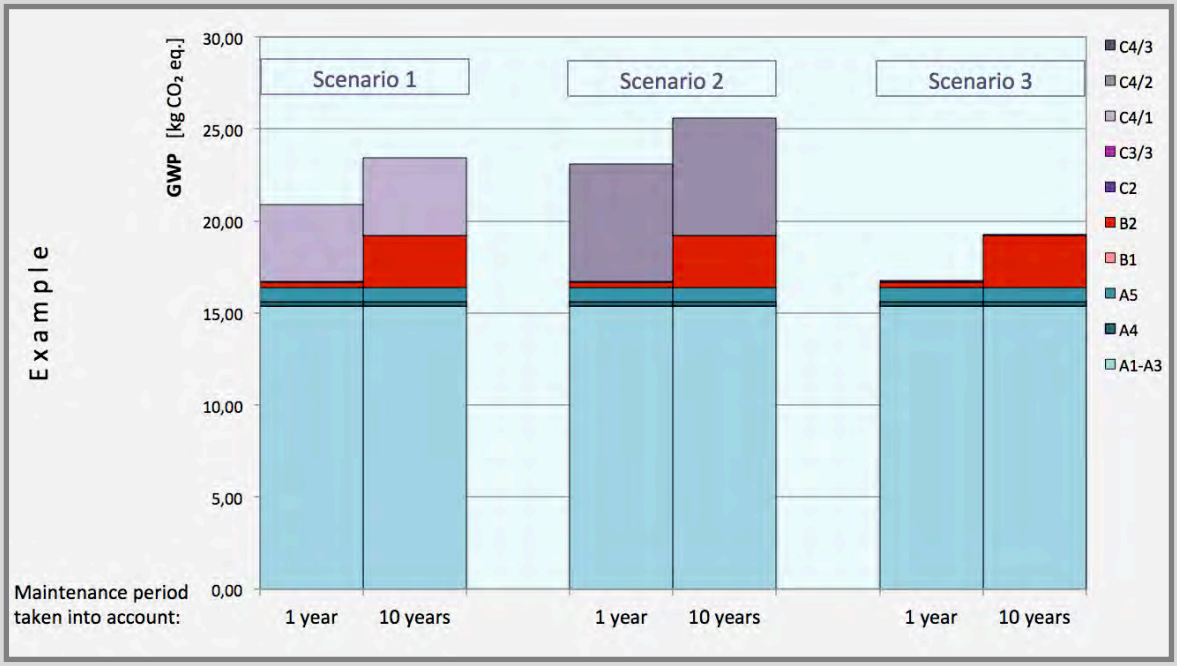
Reference service life (RSL)
The actual service life of textile floor coverings depends on a wide range of various impact factors such as the allocation of the application area to the use class, maintenance, intensity of use and most often fashion and building related aspects. Therefore, technical service life cannot be defined for textile floor coverings.

Total environmental impacts from module B2
Total environmental impacts have to be calculated by taking into account the service life of textile floor coverings. Therefore, the assumed real life (ARSL) has to be used for the calculation of total environmental impacts taking into account the expected use conditions (see RSL).
Module B2 (maintenance) is depending on the service life.
Values for module B2 given in the result tables are indicated for the period of one year. They have to be multiplied by the ARSL of the textile floor covering taking into account building related aspects.

The influence of the maintenance period on the Global Warming Potential (GWP) of the whole life cycle of a textile floor covering - differentiated for 3 end-of-life scenarios - is illustrated in the graph below.

3 end-of-life scenarios:

Scenario 1: 100 % Landfill disposal
Scenario 2: 100 % Municipal waste incineration
Scenario 3: 100 % Recycling in the cement industry



Graph 2: Global Warming Potential (GWP) - aggregation of module A to module C - taking into account a maintenance period of 1 year compared to a maintenance period of 10 years - for the three declared end-of-life scenarios.

1. Information on products with a total pile weight of max. 600 g/m²

Product description

Name	Value	Unit
Product Form	Tiles of several dimensions	-
Type of manufacture	Flat woven	-
Yarn type	Polyamide 6.6	-
Secondary backing	TEXtile backing with recycled content	-
Max. total pile weight	600	g/m²
Max. total carpet weight	3850	g/m²

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6.6 (PA6.6)	15,6	%
Polyethylenterephthalate (PET)	19,7	%
Mineral filler	40,0	%
Aluminium hydroxide	2,3	%
Ethyl vinyl acetate (EVA)	17,1	%
Polymer dispersion (dry substance)	4,6	%
Glass fibre	0,4	%
Additives	0,3	%
Recycled content out of total weight	13,0	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m²
Conversion factor to 1 kg	0,26	-
Mass reference	3,85	kg/m²

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)	0,0065	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	85	%

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,12	kg

Maintenance (B2)
Indication per m² and year

Name	Value for category	Unit
Maintenance cycle (wet cleaning)	1,5	1/year
Maintenance cycle (vacuum cleaning)	208	1/year
Water consumption (wet cleaning)	0,004	m³
Cleaning agent (wet cleaning)	0,09	kg
Electricity consumption	0,314	kWh

End of Life (C1-C4)

Name	Value for category	Unit
Collected as mixed construction waste (scenario 1 and 2)	3,85	kg/m²
Collected separately (scenario 3)	3,85	kg/m²
Landfilling (scenario 1)	3,85	kg/m²
Energy recovery (scenario 2)	3,85	kg/m²
Energy recovery (scenario 3)	2,20	kg/m²
Recycling (scenario 3)	1,65	kg/m²

LCA: Results for products with a maximum total pile weight of 600 g/m²

The declared result figures in module B2 have to be multiplied by the assumed service time (in years) of the floor covering in the building considered (see chapter: 'General Information on use stages B1 to B7').

Information on un-declared modules:
Modules B3 - B7 are not relevant during the service life of the carpet and are therefore not declared.
Modules C1, C3/1, C4/2 and C4/3 cause no additional impact and are therefore not declared.
Module C2 represents the transport for scenarios 1, 2 and 3.

Description of the system boundary

(X = Included in LCA; MDN = Module not declared)

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	X	X	MND	MND	MND	MND	MND	MND	X	X	X	X

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

Para-meter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO2-eq]	1,60E+01	1,62E-01	7,28E-01	0,00E+00	3,17E-01	9,00E-03	7,36E+00	2,23E-02	2,74E-01	-3,82E-02	0,00E+00	-1,05E+00	-3,74E-01
ODP	[kg CFC11-eq]	6,57E-09	4,43E-15	1,92E-10	0,00E+00	1,30E-08	2,47E-16	3,03E-13	9,85E-14	7,30E-14	-8,15E-14	0,00E+00	-2,22E-12	-1,51E-13
AP	[kg SO2-eq]	3,32E-02	6,65E-04	1,14E-03	0,00E+00	1,24E-03	3,71E-05	4,88E-03	6,30E-05	7,39E-04	-6,33E-05	0,00E+00	-1,72E-03	-1,33E-03
EP	[kg PO4)3-eq]	4,47E-03	1,70E-04	1,72E-04	0,00E+00	3,55E-04	9,48E-06	1,18E-03	5,91E-06	7,55E-04	-6,87E-06	0,00E+00	-1,87E-04	-1,39E-04
POCP	[kg ethen-eq]	2,68E-03	-2,76E-04	7,89E-05	6,29E-05	1,56E-04	-1,54E-05	3,03E-04	3,95E-06	8,07E-05	-4,98E-06	0,00E+00	-1,36E-04	-1,91E-04
ADPE	[kg Sb-eq]	4,87E-05	1,34E-08	1,44E-06	0,00E+00	1,10E-06	7,49E-10	3,10E-07	1,18E-08	5,85E-08	-1,07E-08	0,00E+00	-2,90E-07	-8,71E-08
ADPF	[MJ]	2,72E+02	2,20E+00	8,15E+00	0,00E+00	6,61E+00	1,23E-01	4,16E+00	2,36E-01	3,93E+00	-5,25E-01	0,00E+00	-1,44E+01	-5,37E+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

Para-meter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
PERE	[MJ]	3,73E+01	1,22E-01	1,12E+00	0,00E+00	1,13E+00	6,80E-03	6,40E-01	1,52E-01	3,03E-01	-1,27E-01	0,00E+00	-3,44E+00	-3,17E-01
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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,73E+01	1,22E-01	1,12E+00	0,00E+00	1,13E+00	6,80E-03	6,40E-01	1,52E-01	3,03E-01	-1,27E-01	0,00E+00	-3,44E+00	-3,17E-01
PENRE	[MJ]	2,34E+02	2,21E+00	8,80E+00	0,00E+00	7,88E+00	1,24E-01	6,49E+01	6,06E+01	4,07E+00	-6,64E-01	0,00E+00	-1,82E+01	-5,39E+01
PENRM	[MJ]	6,02E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,02E+01	-6,02E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	2,93E+02	2,21E+00	8,80E+00	0,00E+00	7,88E+00	1,24E-01	4,71E+00	4,05E-01	4,07E+00	-6,64E-01	0,00E+00	-1,82E+01	-5,39E+01
SM	[kg]	6,01E-01	0,00E+00	1,51E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,65E+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	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	0,00E+00	6,02E+01
FW	[m³]	8,32E-02	2,25E-04	3,29E-03	0,00E+00	4,52E-03	1,26E-05	2,72E-02	2,08E-04	-1,04E-05	-1,73E-04	0,00E+00	-4,69E-03	-4,39E-03

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 - Output flows and waste categories: 1 m² floor covering

Para-meter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
HWD	[kg]	2,12E-05	1,28E-07	6,24E-07	0,00E+00	1,26E-09	7,13E-09	2,76E-08	1,90E-10	1,74E-08	-2,70E-10	0,00E+00	-7,38E-09	3,47E-09
NHWD	[kg]	3,68E-01	1,85E-04	6,28E-02	0,00E+00	8,24E-03	1,03E-05	1,74E+00	2,86E-04	3,84E+00	-2,82E-04	0,00E+00	-7,69E-03	-4,26E-02
RWD	[kg]	8,61E-03	3,02E-06	2,59E-04	0,00E+00	3,95E-04	1,69E-07	2,17E-04	6,71E-05	5,78E-05	-5,56E-05	0,00E+00	-1,51E-03	-1,02E-04
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	0,00E+00	0,00E+00
MFR	[kg]	8,40E-02	0,00E+00	9,33E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,65E+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	2,20E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	2,08E-01	0,00E+00	0,00E+00	0,00E+00	5,97E+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	3,85E-01	0,00E+00	0,00E+00	0,00E+00	1,11E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+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; **EEE** = Exported thermal energy