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Annex

For products in LC 1 with a max. total pile weight of 700 g/m²

to the

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	Interface
Declaration number	EPD-INT-20170101-CBC1-EN
Issue date	19.06.2017
Valid to	18.06.2022

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

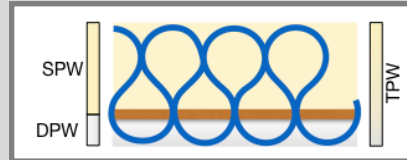


General Information on the annex

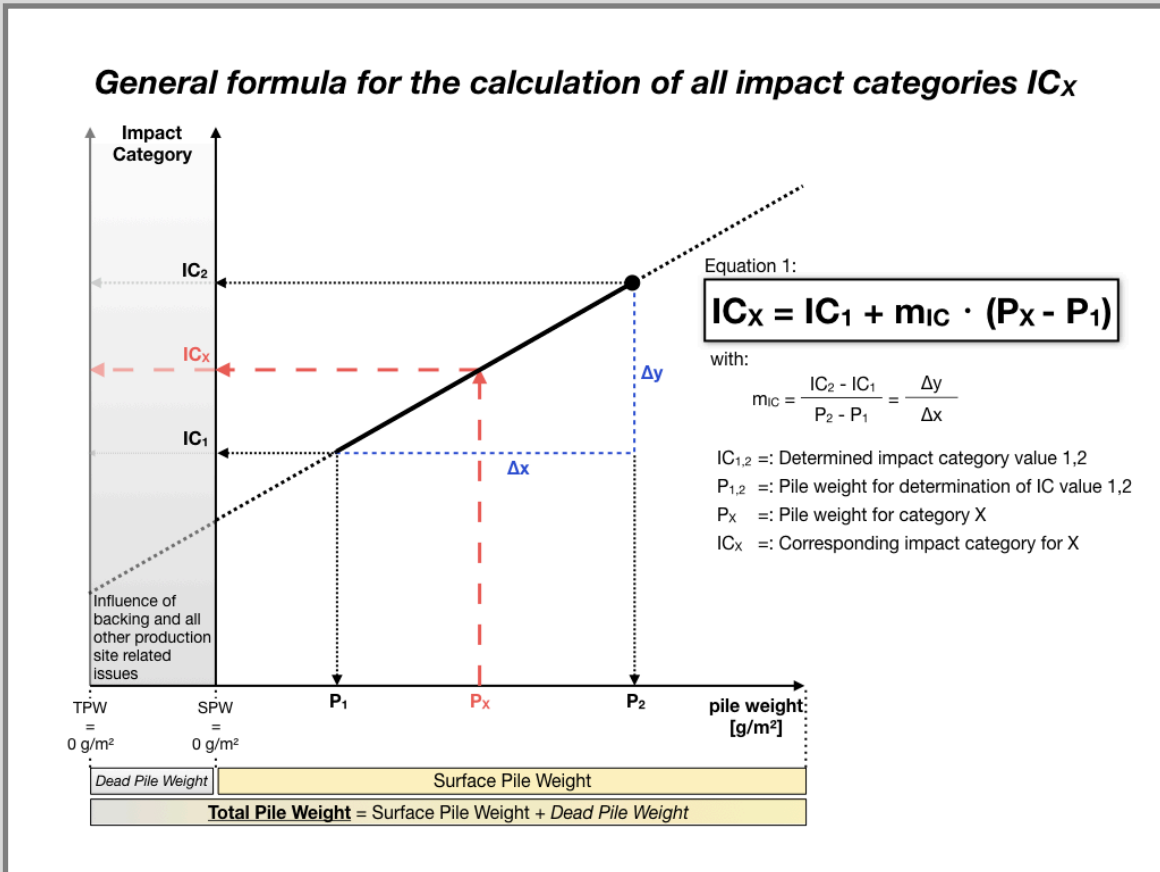
The EPD document is valid for all products with a total pile weight lower or equal to the declared maximum pile weight of 1100 g/m².

LCA results show a linear correlation with the total pile weight for all impact categories (IC) and all modules (A-D). It is possible to calculate specific LCA results (IC_x) for every carpet (x) within the declared group of products in relation to its total pile weight (P_x). The total pile weight (TPW) is the sum of surface pile weight (SPW) and dead pile weight (DPW):

$$TPW = SPW + DPW$$



The surface pile weight is the technical relevant value according to EN 1307 and has to be mentioned in technical specification. As shown in the figure below alternatively to the total pile weight the surface pile weight can be used to calculate LCA results (IC_x).



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

In this annex, the products are divided into luxury classes (LCs) by their surface pile weight as shown in the table below.

Luxury Class	LC 1	LC 2	LC 3	LC 4	LC 5
SPW [g/m ²]	< 400	400-600	600-800	800-1000	> 1000

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).

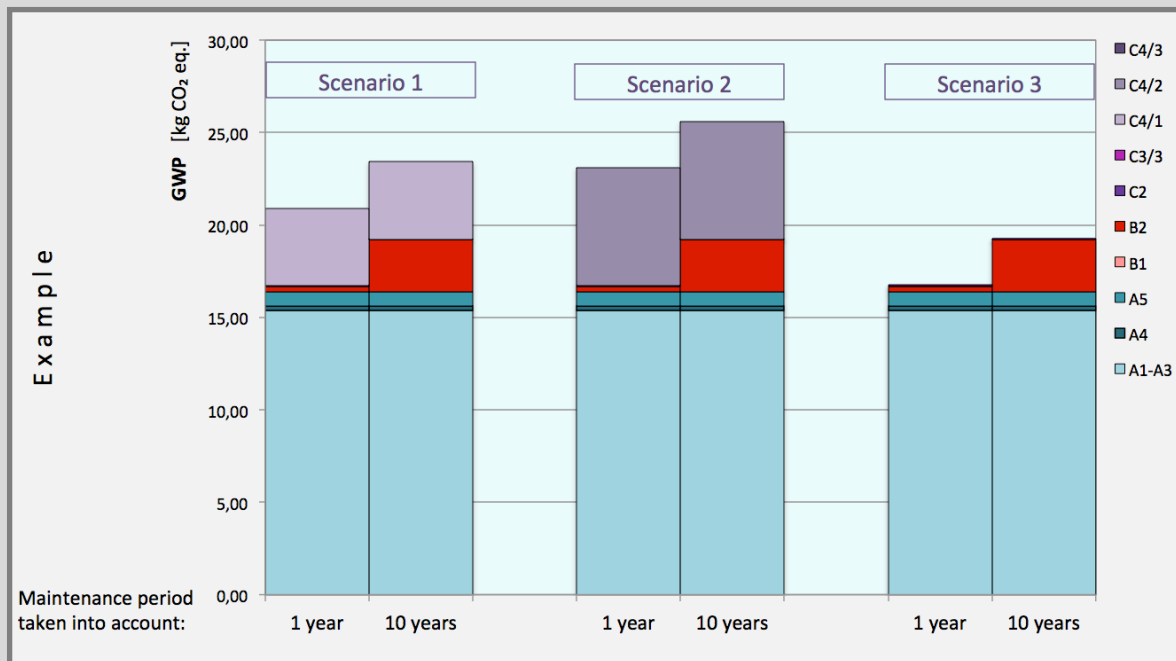
Module B2 (maintenance) is depending on the service life.

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 in LC 1 with a total pile weight of max. 700 g/m²

Complementary technical data

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6.6	15,9	%
Polyester	2,7	%
Polypropylene	1,1	%
Limestone	46,1	%
Aluminiumhydroxide	4,3	%
SBS-Copolymer	12,3	%
Bitumen	15,4	%
Glass fibre	0,8	%
Additives	1,3	%
Recycled content out of total weight	56	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m ²
Conversion factor to 1 kg	0,23	m ² /kg
Mass reference	4,40	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 0-5 mix)	0,0088	m ²
Transport distance	700	m ² /kg
Capacity utilisation (including empty runs)	85	kg/m ²

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,13	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	m ³
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)	4,40	kg/m ²
Collected separately (scenario 3)	4,40	kg/m ²
Landfilling (scenario 1)	4,40	kg/m ²
Energy recovery (scenario 2)	4,40	kg/m ²
Energy recovery (scenario 3)	2,15	kg/m ²
Recycling (scenario 3)	2,25	kg/m ²

LCA: Results for products in LC 1 with a maximum total pile weight of 700 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	MDN	MDN	MDN	MDN	MDN	MDN	X	X	X	X

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

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO ₂ -eq]	7,40E+00	1,86E-01	6,87E-01	0,00E+00	3,32E-01	1,02E-02	5,22E+00	2,71E-02	3,15E-01	-1,79E-01	0,00E+00	-2,30E+00	-5,49E-01
ODP	[kg CFC11-eq]	4,03E-09	6,26E-14	1,16E-10	0,00E+00	1,26E-08	3,43E-15	1,81E-12	1,20E-12	7,74E-13	-3,35E-12	0,00E+00	-4,28E-11	-1,05E-11
AP	[kg SO ₂ -eq]	1,81E-02	7,84E-04	6,85E-04	0,00E+00	1,34E-03	4,30E-05	2,77E-03	7,75E-05	8,71E-04	-2,77E-04	0,00E+00	-3,55E-03	-2,09E-03
EP	[kg PO ₄) ₃ -eq]	2,83E-03	1,96E-04	1,19E-04	0,00E+00	3,21E-04	1,07E-05	6,71E-04	7,02E-06	8,63E-04	-2,93E-05	0,00E+00	-3,76E-04	-2,18E-04
POCP	[kg ethen-eq]	1,74E-03	-3,20E-04	4,90E-05	6,29E-05	1,62E-04	-1,75E-05	1,80E-04	4,95E-06	9,91E-05	-2,64E-05	0,00E+00	-3,40E-04	-2,70E-04
ADPE	[kg Sb-eq]	9,64E-06	1,50E-08	2,89E-07	0,00E+00	1,14E-06	8,22E-10	2,01E-07	1,08E-08	6,52E-08	-3,42E-08	0,00E+00	-4,39E-07	-1,61E-07
ADPF	[MJ]	1,66E+02	2,58E+00	5,00E+00	0,00E+00	6,89E+00	1,41E-01	2,52E+00	2,90E-01	4,52E+00	-2,50E+00	0,00E+00	-3,23E+01	-8,19E+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	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
PERE	[MJ]	2,57E+01	1,30E-01	7,67E-01	0,00E+00	9,87E-01	7,10E-03	3,66E-01	1,62E-01	3,45E-01	-4,52E-01	0,00E+00	-5,77E+00	-5,17E-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]	2,57E+01	1,30E-01	7,67E-01	0,00E+00	9,87E-01	7,10E-03	3,66E-01	1,62E-01	3,45E-01	-4,52E-01	0,00E+00	-5,77E+00	-5,17E-01
PENRE	[MJ]	1,10E+02	2,59E+00	5,31E+00	0,00E+00	8,05E+00	1,42E-01	6,88E+01	6,64E+01	4,70E+00	-3,02E+00	0,00E+00	-3,89E+01	-8,24E+01
PENRM	[MJ]	6,59E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,59E+01	-6,59E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,76E+02	2,59E+00	5,31E+00	0,00E+00	8,05E+00	1,42E-01	2,84E+00	4,76E-01	4,70E+00	-3,02E+00	0,00E+00	-3,89E+01	-8,24E+01
SM	[kg]	2,47E+00	0,00E+00	7,12E-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	2,26E+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	7,96E+01
FW	[m ³]	3,29E-02	2,40E-04	2,28E-03	0,00E+00	4,25E-03	1,32E-05	1,81E-02	2,31E-04	1,13E-05	-6,45E-04	0,00E+00	-8,23E-03	-7,31E-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

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
HWD	[kg]	1,48E-05	1,36E-07	4,31E-07	0,00E+00	1,13E-09	7,44E-09	1,68E-08	1,93E-10	1,81E-08	-7,31E-10	0,00E+00	-9,38E-09	-4,28E-09
NHWD	[kg]	2,80E-01	1,98E-04	4,72E-02	0,00E+00	8,17E-03	1,08E-05	1,09E+00	3,13E-04	4,39E+00	-1,07E-03	0,00E+00	-1,37E-02	-9,10E-02
RWD	[kg]	3,91E-03	3,52E-06	1,21E-04	0,00E+00	3,81E-04	1,93E-07	1,28E-04	7,40E-05	7,11E-05	-2,07E-04	0,00E+00	-2,64E-03	-1,68E-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]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,26E+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	2,15E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	5,92E-01	0,00E+00	0,00E+00	0,00E+00	7,55E+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	1,41E+00	0,00E+00	0,00E+00	0,00E+00	1,82E+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; EET = Exported thermal energy

Annex

For products in LC 2 with a max. total pile weight of 900 g/m²

to the

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	Interface
Declaration number	EPD-INT-20170101-CBC1-EN
Issue date	19.06.2017
Valid to	18.06.2022

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

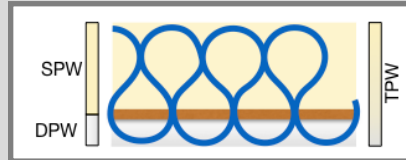


General Information on the annex

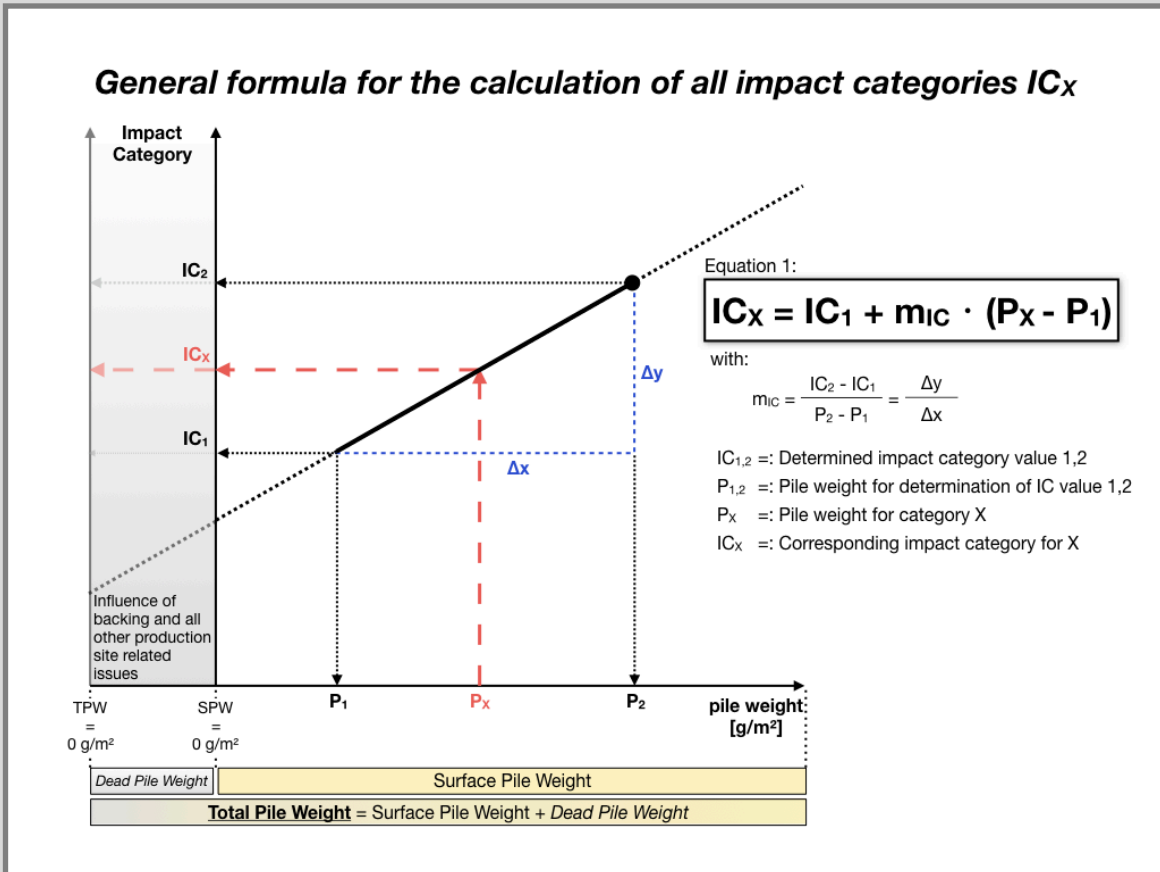
The EPD document is valid for all products with a total pile weight lower or equal to the declared maximum pile weight of 1100 g/m².

LCA results show a linear correlation with the total pile weight for all impact categories (IC) and all modules (A-D). It is possible to calculate specific LCA results (IC_x) for every carpet (x) within the declared group of products in relation to its total pile weight (P_x). The total pile weight (TPW) is the sum of surface pile weight (SPW) and dead pile weight (DPW):

$$TPW = SPW + DPW$$



The surface pile weight is the technical relevant value according to EN 1307 and has to be mentioned in technical specification. As shown in the figure below alternatively to the total pile weight the surface pile weight can be used to calculate LCA results (IC_x).



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

In this annex, the products are divided into luxury classes (LCs) by their surface pile weight as shown in the table below.

Luxury Class	LC 1	LC 2	LC 3	LC 4	LC 5
SPW [g/m ²]	< 400	400-600	600-800	800-1000	> 1000

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).

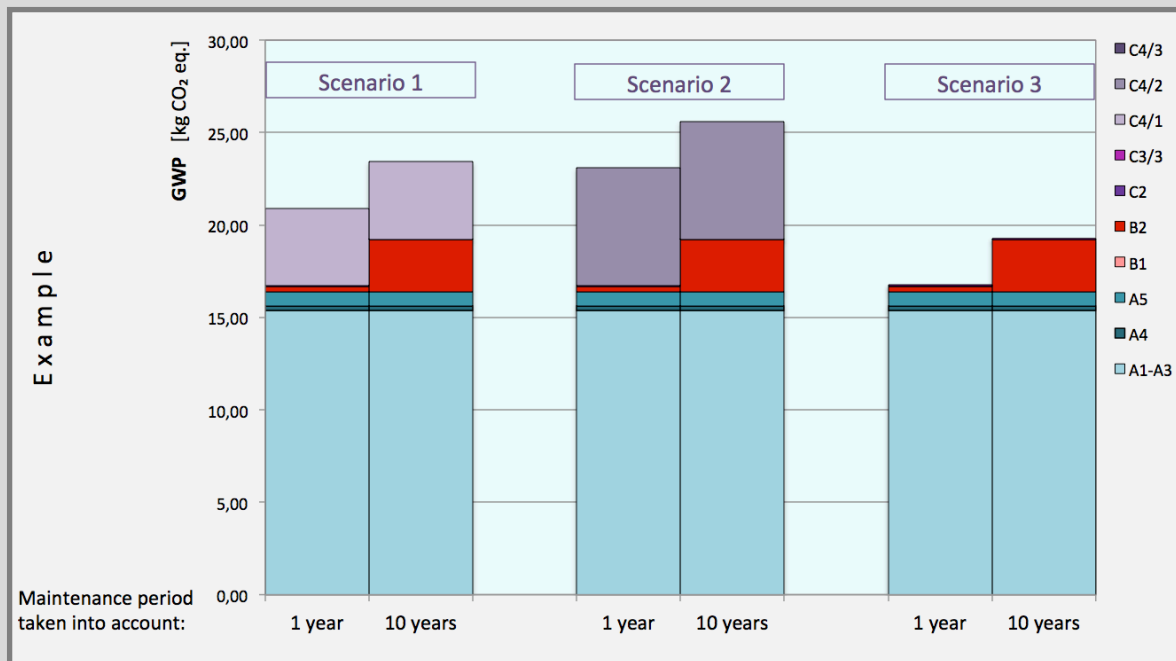
Module B2 (maintenance) is depending on the service life.

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 in LC 2 with a total pile weight of max. 900 g/m²

Complementary technical data

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6.6	19,6	%
Polyester	2,6	%
Polypropylene	1,1	%
Limestone	44,1	%
Aluminiumhydroxide	4,1	%
SBS-Copolymer	11,8	%
Bitumen	14,7	%
Glass fibre	0,7	%
Additives	1,2	%
Recycled content out of total weight	56	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m ²
Conversion factor to 1 kg	0,22	m ² /kg
Mass reference	4,60	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 0-5 mix)	0,0092	m ²
Transport distance	700	m ² /kg
Capacity utilisation (including empty runs)	85	kg/m ²

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,14	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	m ³
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)	4,60	kg/m ²
Collected separately (scenario 3)	4,60	kg/m ²
Landfilling (scenario 1)	4,60	kg/m ²
Energy recovery (scenario 2)	4,60	kg/m ²
Energy recovery (scenario 3)	2,35	kg/m ²
Recycling (scenario 3)	2,25	kg/m ²

LCA: Results for products in LC 2 with a maximum total pile weight of 900 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	MDN	MDN	MDN	MDN	MDN	MDN	X	X	X	X

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

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO ₂ -eq]	8,61E+00	1,95E-01	7,37E-01	0,00E+00	3,32E-01	1,06E-02	5,68E+00	2,83E-02	3,30E-01	-1,87E-01	0,00E+00	-2,55E+00	-5,88E-01
ODP	[kg CFC11-eq]	4,08E-09	6,53E-14	1,18E-10	0,00E+00	1,26E-08	3,59E-15	1,89E-12	1,26E-12	8,09E-13	-3,49E-12	0,00E+00	-4,75E-11	-1,06E-11
AP	[kg SO ₂ -eq]	2,09E-02	8,18E-04	7,83E-04	0,00E+00	1,34E-03	4,50E-05	3,32E-03	8,11E-05	9,10E-04	-2,89E-04	0,00E+00	-3,93E-03	-2,23E-03
EP	[kg PO ₄) ₃ -eq]	3,32E-03	2,04E-04	1,37E-04	0,00E+00	3,21E-04	1,12E-05	8,14E-04	7,33E-06	9,02E-04	-3,05E-05	0,00E+00	-4,16E-04	-2,32E-04
POCP	[kg ethen-eq]	1,99E-03	-3,34E-04	5,66E-05	6,29E-05	1,62E-04	-1,83E-05	2,13E-04	5,17E-06	1,04E-04	-2,75E-05	0,00E+00	-3,76E-04	-2,89E-04
ADPE	[kg Sb-eq]	1,09E-05	1,56E-08	3,26E-07	0,00E+00	1,14E-06	8,59E-10	2,05E-07	1,13E-08	6,82E-08	-3,57E-08	0,00E+00	-4,86E-07	-1,66E-07
ADPF	[MJ]	1,84E+02	2,69E+00	5,53E+00	0,00E+00	6,89E+00	1,48E-01	2,72E+00	3,03E-01	4,72E+00	-2,61E+00	0,00E+00	-3,57E+01	-8,85E+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	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
PERE	[MJ]	2,71E+01	1,35E-01	8,10E-01	0,00E+00	9,87E-01	7,43E-03	3,83E-01	1,70E-01	3,60E-01	-4,70E-01	0,00E+00	-6,40E+00	-5,49E-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]	2,71E+01	1,35E-01	8,10E-01	0,00E+00	9,87E-01	7,43E-03	3,83E-01	1,70E-01	3,60E-01	-4,70E-01	0,00E+00	-6,40E+00	-5,49E-01
PENRE	[MJ]	1,27E+02	2,70E+00	5,90E+00	0,00E+00	8,05E+00	1,48E-01	7,16E+01	6,91E+01	4,92E+00	-3,15E+00	0,00E+00	-4,30E+01	-8,89E+01
PENRM	[MJ]	6,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,86E+01	-6,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,95E+02	2,70E+00	5,90E+00	0,00E+00	8,05E+00	1,48E-01	3,06E+00	4,97E-01	4,92E+00	-3,15E+00	0,00E+00	-4,30E+01	-8,89E+01
SM	[kg]	2,59E+00	0,00E+00	7,47E-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	2,26E+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	8,60E+01
FW	[m ³]	3,84E-02	2,50E-04	2,48E-03	0,00E+00	4,25E-03	1,38E-05	1,92E-02	2,42E-04	1,18E-05	-6,72E-04	0,00E+00	-9,12E-03	-7,88E-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

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
HWD	[kg]	1,48E-05	1,42E-07	4,33E-07	0,00E+00	1,13E-09	7,77E-09	1,68E-08	2,01E-10	1,90E-08	-7,61E-10	0,00E+00	-1,04E-08	-4,81E-09
NHWD	[kg]	3,08E-01	2,06E-04	4,81E-02	0,00E+00	8,17E-03	1,13E-05	1,09E+00	3,28E-04	4,59E+00	-1,12E-03	0,00E+00	-1,52E-02	-9,11E-02
RWD	[kg]	4,63E-03	3,68E-06	1,43E-04	0,00E+00	3,81E-04	2,02E-07	1,35E-04	7,73E-05	7,44E-05	-2,15E-04	0,00E+00	-2,92E-03	-1,78E-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]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,26E+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	2,35E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	6,16E-01	0,00E+00	0,00E+00	0,00E+00	8,37E+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	1,46E+00	0,00E+00	0,00E+00	0,00E+00	2,00E+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; EET = Exported thermal energy

Annex

For products in LC 3 with a max. total pile weight of 1100 g/m²

to the

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	Interface
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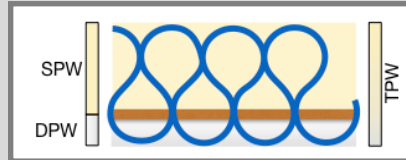


General Information on the annex

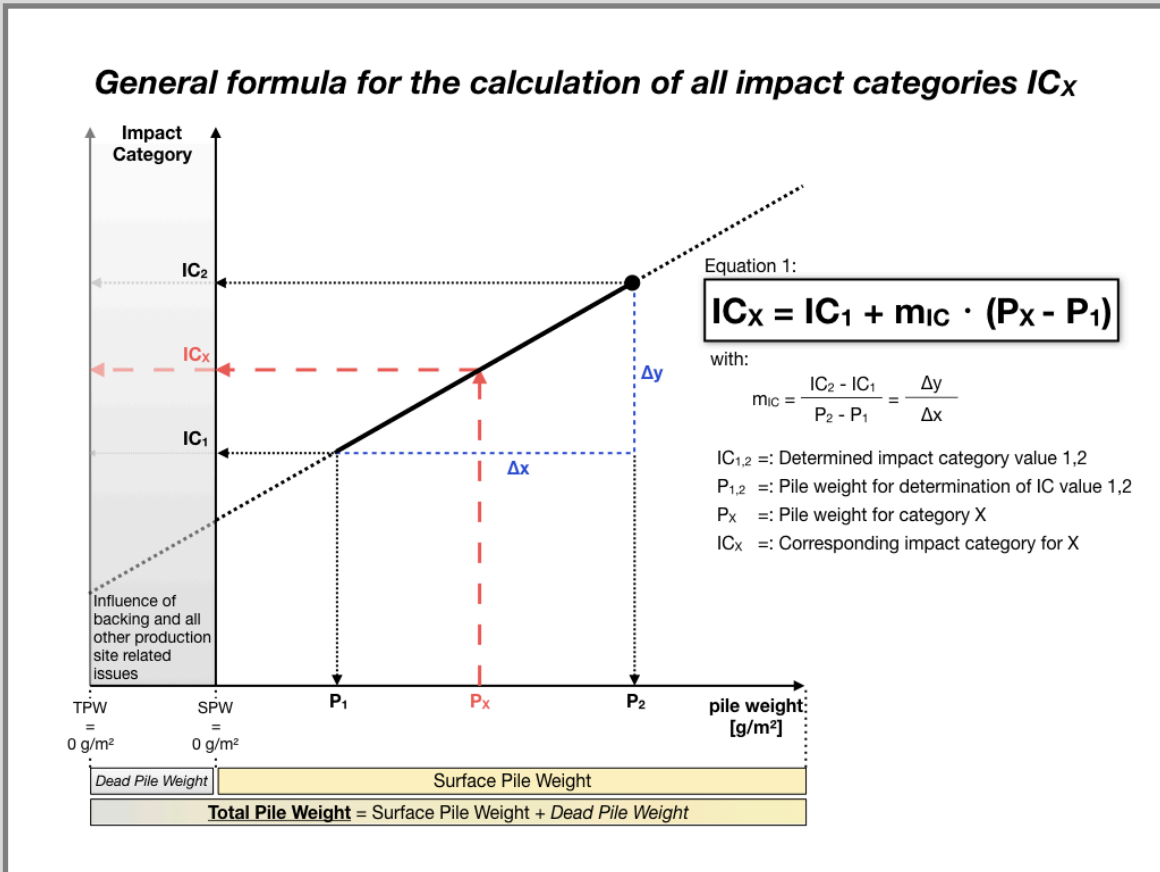
The EPD document is valid for all products with a total pile weight lower or equal to the declared maximum pile weight of 1100 g/m².

LCA results show a linear correlation with the total pile weight for all impact categories (IC) and all modules (A-D). It is possible to calculate specific LCA results (IC_x) for every carpet (x) within the declared group of products in relation to its total pile weight (P_x). The total pile weight (TPW) is the sum of surface pile weight (SPW) and dead pile weight (DPW):

$$TPW = SPW + DPW$$



The surface pile weight is the technical relevant value according to EN 1307 and has to be mentioned in technical specification. As shown in the figure below alternatively to the total pile weight the surface pile weight can be used to calculate LCA results (IC_x).



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

In this annex, the products are divided into luxury classes (LCs) by their surface pile weight as shown in the table below.

Luxury Class	LC 1	LC 2	LC 3	LC 4	LC 5
SPW [g/m ²]	< 400	400-600	600-800	800-1000	> 1000

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

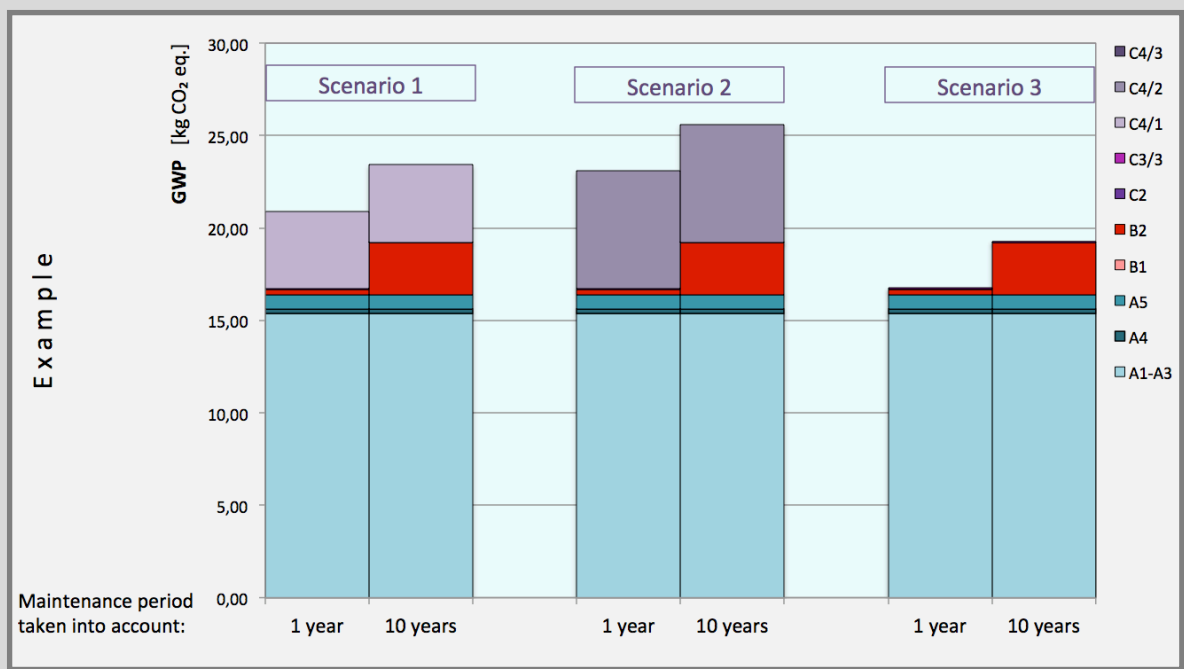
Total environmental impacts have to be calculated by taking into account the service life of textile floor coverings. Therefore, the assumed real life (ARSL) has to be used for the calculation of total environmental impacts taking into account the expected use conditions (see RSL).

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 in LC 3 with a total pile weight of max. 1100g/m²

Complementary technical data

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6.6	22,9	%
Polyester	2,5	%
Polypropylene	1,0	%
Limestone	42,3	%
Aluminiumhydroxide	4,0	%
SBS-Copolymer	11,3	%
Bitumen	14,1	%
Glass fibre	0,7	%
Additives	1,2	%
Recycled content out of total weight	56	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m ²
Conversion factor to 1 kg	0,21	m ² /kg
Mass reference	4,80	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 0-5 mix)	0,0096	m ²
Transport distance	700	m ² /kg
Capacity utilisation (including empty runs)	85	kg/m ²

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,14	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	m ³
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)	4,80	kg/m ²
Collected separately (scenario 3)	4,80	kg/m ²
Landfilling (scenario 1)	4,80	kg/m ²
Energy recovery (scenario 2)	4,80	kg/m ²
Energy recovery (scenario 3)	2,55	kg/m ²
Recycling (scenario 3)	2,25	kg/m ²

LCA: Results for products in LC 3 with a maximum total pile weight of 1100 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	MDN	MDN	MDN	MDN	MDN	MDN	X	X	X	X

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

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO ₂ -eq]	9,83E+00	2,03E-01	7,86E-01	0,00E+00	3,32E-01	1,11E-02	6,13E+00	2,96E-02	3,44E-01	-1,94E-01	0,00E+00	-2,79E+00	-6,27E-01
ODP	[kg CFC11-eq]	4,14E-09	6,80E-14	1,20E-10	0,00E+00	1,26E-08	3,74E-15	1,98E-12	1,31E-12	8,44E-13	-3,63E-12	0,00E+00	-5,21E-11	-1,08E-11
AP	[kg SO ₂ -eq]	2,37E-02	8,52E-04	8,82E-04	0,00E+00	1,34E-03	4,69E-05	3,87E-03	8,46E-05	9,50E-04	-3,00E-04	0,00E+00	-4,31E-03	-2,37E-03
EP	[kg PO ₄) ₃ -eq]	3,80E-03	2,13E-04	1,56E-04	0,00E+00	3,21E-04	1,17E-05	9,57E-04	7,65E-06	9,41E-04	-3,17E-05	0,00E+00	-4,56E-04	-2,47E-04
POCP	[kg ethen-eq]	2,23E-03	-3,48E-04	6,42E-05	6,29E-05	1,62E-04	-1,91E-05	2,46E-04	5,40E-06	1,08E-04	-2,86E-05	0,00E+00	-4,12E-04	-3,07E-04
ADPE	[kg Sb-eq]	1,22E-05	1,63E-08	3,63E-07	0,00E+00	1,14E-06	8,96E-10	2,10E-07	1,18E-08	7,11E-08	-3,71E-08	0,00E+00	-5,33E-07	-1,70E-07
ADPF	[MJ]	2,02E+02	2,80E+00	6,07E+00	0,00E+00	6,89E+00	1,54E-01	2,93E+00	3,16E-01	4,93E+00	-2,71E+00	0,00E+00	-3,91E+01	-9,50E+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

