

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

Owner of the Declaration	Milliken Industrials Ltd.
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-MIL-20210143-CBA1-EN
Issue date	08/07/2021
Valid to	07/07/2026

Tufted carpet tiles

pile material polyamide 6 with 100% recycled content, total pile weight 490 g/m², print design, Comfort Lite[®] recycled cushion back

Milliken

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



General Information

<p>Milliken</p> <hr/> <p>Programme holder IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-MIL-20210143-CBA1-EN</p> <hr/> <p>This declaration is based on the product category rules: Floor coverings, 02/2018 (PCR checked and approved by the SVR)</p> <hr/> <p>Issue date 08/07/2021</p> <hr/> <p>Valid to 07/07/2026</p> <hr/> <p></p> <hr/> <p>Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.)</p>	<p>Tufted carpet tiles pile material 100% recycled PA 6, max. total pile weight 490 g/m², Comfort Lite® recycled cushion back</p> <hr/> <p>Owner of the declaration Milliken Industrials Ltd. Beech Hill Plant, Gidlow Lane Wigan WN6 8RN United Kingdom</p> <hr/> <p>Declared product / declared unit 1 m² tufted carpet tiles having a pile material of 100% recycled polyamide 6 and a Comfort Lite® recycled cushion back</p> <hr/> <p>Scope: The manufacturer declaration applies to products with a maximum total pile weight of 490 g/m². The carpet is manufactured at the Milliken production site in Wigan, United Kingdom. The declaration is only valid in conjunction with a valid GUT-PRODIS license of the product.</p> <p>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.</p> <hr/> <p>Verification</p> <table border="1"> <tr> <td colspan="2">The standard EN 15804 serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to ISO 14025:2010</td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Angela Schindler (Independent verifier)</p>	The standard EN 15804 serves as the core PCR		Independent verification of the declaration and data according to ISO 14025:2010		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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Product

Product description/Product definition

Tufted carpet tiles having a pile material of polyamide 6 with 100% recycled content, a polyester primary backing and a Comfort Lite® recycled cushion back.

The injection printing system Millitron® allows the creation of various designs.

The declaration applies to a group of products with a maximum total pile weight of 490 g/m².

Comfort Lite® recycled cushion back

The bitumen based heavy backing with recycled filler includes a glass fibre reinforcement, a 90% recycled polyurethane cushion and it is covered by a felt backing.

Based on the total weight of 3,93 kg/m² the recycled content amounts to 69%.

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 Construction Product Regulation (CPR) applies. The product needs a Declaration of Performance (DoP) taking into consideration EN 14041-2018-05, Resilient, textile and laminate floor coverings - Essential characteristics and the CE-marking. The DoP of the product can be found on the manufacturer's technical information section. For the application and use of the product the respective national provisions apply.

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 50cm x 50 cm planks 25cm x 100 cm	-
Type of manufacture	Tufted carpet	-
Yarn type	Polyamide 6 with 100% recycled content	-
Secondary backing	Comfort Lite® recycled cushion back	-
Total pile weight	490	g/m ²
Total carpet weight	3930	g/m ²

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14041: 2018-05*, Resilient, textile and laminate floor coverings - Essential characteristics. Additional product properties in accordance with *EN 1307* can be found on the Product Information System *PRODIS* using the *PRODIS* registration number of the product (www.prodis.info) or on the manufacturer's technical information section (www.millikencarpet.com).

Base materials/Ancillary materials

Name	Value	Unit
Polyamide 6	12.5	%
Polyester	5.5	%
Polypropylene	1.3	%
Limestone	44.5	%
Bitumen	12.9	%
Aluminiumhydroxide	7.7	%
Vinyl acetate-ethylene	3.1	%
Glass fibre	1.1	%
Polyurethane	10.9	%
Additives	0.5	%

This product contains substances listed in the *ECHA candidate list* (16.01.2020) 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
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 the use of all substances that are listed as 'Substances of Very High Concern' (SVHC) under *REACH*.

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	m ²
Conversion factor to 1 kg	3.93	kg/m ²

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. Biogenic carbon that is stored in renewable material (packaging paper) is taken into account as well as the associated carbon dioxide uptake from the air from which this biogenic carbon originates.

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.

Biogenic carbon that is stored in renewable materials in packaging paper is released as carbon dioxide emissions into the air at the end of life in module A5. 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 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.

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 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 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:

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.

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 2021-1*. Remaining data gaps are covered by the *ecoinvent 3.6 database 2019*.

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)	0.0092	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	55	%

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 1 m² floor covering used in commercial areas per year. Depending on the application based on *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. Based on this useful life the effects of Module B2 need to be calculated 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.millikencarpet.com

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)
 with x% + y% + z% = 100%

Name	Value	Unit
Collected as mixed construction waste (scenario 1 and 2)	3.93	kg
Collected separately (scenario 3)	3.93	kg
Landfilling (scenario 1)	3.93	kg
Energy recovery (scenario 2)	3.93	kg
Energy recovery (scenario 3)	1.83	kg
Recycling (scenario 3)	1.1	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 (64.5%), hard coal (26.5%) and petrol coke (9.0%).

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

LCA: Results

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.

Information on non-relevant modules: Modules B3 - B7 are not relevant during the service life of the carpet. 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-contruction 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 according to EN 15804+A1: 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.]	4.36E+0	2.40E-1	2.87E-1	0.00E+0	2.91E-1	1.30E-2	4.41E+0	4.46E+0	2.67E-1	-1.99E-2	0.00E+0	-4.08E-1	-2.67E-1
ODP	[kg CFC11-Eq.]	8.02E-9	4.19E-17	2.41E-10	0.00E+0	1.21E-8	2.28E-18	1.76E-15	2.46E-15	9.06E-16	-3.04E-16	0.00E+0	-6.18E-15	-1.49E-15
AP	[kg SO ₂ -Eq.]	1.01E-2	9.92E-4	4.07E-4	0.00E+0	1.14E-3	5.39E-5	2.39E-3	2.56E-3	6.92E-4	-2.30E-5	0.00E+0	-4.70E-4	-8.99E-4
EP	[kg (PO ₄) ³ -Eq.]	2.10E-3	2.53E-4	8.89E-5	0.00E+0	3.17E-4	1.37E-5	5.80E-4	6.19E-4	7.51E-4	-3.16E-6	0.00E+0	-6.47E-5	-1.22E-4
POCP	[kg ethene-Eq.]	8.52E-4	-4.25E-4	1.61E-5	6.29E-5	1.47E-4	-2.31E-5	1.49E-4	9.43E-5	6.23E-5	-2.11E-6	0.00E+0	-4.33E-5	-9.00E-5
ADPE	[kg Sb-Eq.]	1.02E-5	2.13E-8	3.12E-7	0.00E+0	4.43E-6	1.16E-9	1.67E-7	1.77E-7	5.12E-8	-3.73E-9	0.00E+0	-7.61E-8	-1.74E-7
ADPF	[MJ]	1.03E+2	3.27E+0	3.28E+0	0.00E+0	6.77E+0	1.78E-1	2.43E+0	3.11E+0	3.99E+0	-2.85E-1	0.00E+0	-5.88E+0	-2.70E+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 - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 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]	7.36E+1	1.83E-1	2.84E+0	0.00E+0	1.24E+0	9.93E-3	4.19E-1	6.21E-1	2.98E-1	-7.83E-2	0.00E+0	-1.59E+0	-3.51E-1
PERM	[MJ]	5.91E-1	0.00E+0	-5.91E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	7.42E+1	1.83E-1	2.25E+0	0.00E+0	1.24E+0	9.93E-3	4.19E-1	6.21E-1	2.98E-1	-7.83E-2	0.00E+0	-1.59E+0	-3.51E-1
PENRE	[MJ]	7.79E+1	3.28E+0	3.62E+0	0.00E+0	7.86E+0	1.78E-1	3.17E+1	3.25E+1	4.11E+0	-3.49E-1	0.00E+0	-7.17E+0	-2.73E+1
PENRM	[MJ]	2.92E+1	0.00E+0	-2.15E-1	0.00E+0	0.00E+0	0.00E+0	-2.90E+1	-2.90E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	1.07E+2	3.28E+0	3.40E+0	0.00E+0	7.86E+0	1.78E-1	2.68E+0	3.51E+0	4.11E+0	-3.49E-1	0.00E+0	-7.17E+0	-2.73E+1
SM	[kg]	2.93E+0	0.00E+0	8.79E-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	2.40E-1
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	0.00E+0
FW	[m ³]	7.53E-2	2.09E-4	2.74E-3	0.00E+0	4.13E-3	1.14E-5	1.46E-2	1.48E-2	3.79E-5	-7.64E-5	0.00E+0	-1.56E-3	-2.47E-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 - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 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]	1.37E-3	1.65E-10	4.12E-5	0.00E+0	5.90E-10	8.98E-12	1.19E-8	1.21E-8	7.39E-10	-7.82E-11	0.00E+0	-1.61E-9	-1.52E-9
NHWD	[kg]	4.20E-1	4.87E-4	4.47E-2	0.00E+0	5.62E-3	2.65E-5	1.07E+0	1.07E+0	3.91E+0	-1.63E-4	0.00E+0	-3.34E-3	-1.43E-1
RWD	[kg]	1.45E-3	3.97E-6	4.67E-5	0.00E+0	3.32E-4	2.16E-7	1.01E-4	1.59E-4	4.77E-5	-2.52E-5	0.00E+0	-5.13E-4	-9.02E-5
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]	0.00E+0	0.00E+0	1.97E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.22E+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	6.57E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	1.90E-1	0.00E+0	0.00E+0	0.00E+0	5.22E+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	3.54E-1	0.00E+0	0.00E+0	0.00E+0	9.81E+0	5.70E+1	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

Not all of the life cycle inventories applied in this study support the methodological approach for the waste and water indicators. The data are based on publications of industry. The indicators for waste and water of the system are evaluated, but contain a higher degree of uncertainty.

References

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PCR Part B

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PRODIS

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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). 01.06.2007, Last update: 27.02.2020

VDZ e.V.

Association of German Cement Works, Ed. Environmental Data of the German Cement Industry 2018

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