ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-GUT-20130205-CBC1-EN
Issue date	17.01.2014
Valid to	16.01.2019

Tufted carpet tiles

Pile material 700-800 g/m² polyamide 6,
aqueous dyeing process,
heavy-duty polyolefin layer with recycled material
fleece fabric backing from 100% recycled material

Vorwerk Teppichwerke

Institut Bauen
und Umwelt e.V.

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

General Information

Vorwerk

Tufted carpet tiles
Pile material 700-800 g/m² PA 6, aqueous dyeing process, heavy-duty polyolefin layer, fleece fabric backing

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
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Owner of the Declaration
Vorwerk und Co GmbH & Co.KG
Kuhlmannstraße 11
D-31785 Hameln
Germany

Declaration number
EPD-GUT-20130205-CBC1-EN

Declared product / Declared unit
1 m² tufted carpet tiles having a surface pile of polyamide 6, dyed with aqueous processes and covered with a heavy backing with a covering fleece out of recycled polyester

This Declaration is based on the Product Category Rules:
Floor coverings, 07-2012
(PCR tested and approved by the independent expert committee)

Scope:
The declaration applies for a group of similar products with a total pile material input of 700-800 g/m².
It is only valid in conjunction with a valid PRODIS licence.
The carpet is produced in the Vorwerk manufacturing site Hameln, Germany.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Issue date
17.01.2014

Valid to
16.01.2019

Verification

The CEN Norm EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025
☐ internally ☒ externally

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

Dr. Burkhart Lehmann
(Chairman of SVA)

Dr. Eva Schmincke
(Independent tester appointed by SVA)

Product

Product description
Tufted carpet tiles having a surface pile of polyamide 6, dyed with aqueous processes.
The tiles are covered with a CoaTex heavy duty polyolefin layer with recycled material. It includes a multi-axial glass fabric reinforcement and it is covered with a fleece fabric backing from 100% recycled polyester.
The declaration applies for a group of products with a total pile-material input of 700-800 g/m2.
The calculations refer to the average pile-material input of 750 g.
Recycled content out of total weight: 50,2%.

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

of the average product according to EN 1307

Name	Value	Unit
Product Form	Tiles	-
Type of manufacture	Tufted, aqueous dyeing	-
Yarn type	100% PA 6	-
Secondary backing	CoaTex heavy duty backing	-
Total pile weight	700-800	g/m²
Total carpet weight	3735 - 3835	g/m²

Additional product properties and performance ratings according to EN 1307 can be found on the Product Information System (PRODIS) using the PRODIS registration number of the product (www.pro-dis.info) or on the technical information of the declared product by the manufacturer Vorwerk (www.vorwerk-teppich.com)

Base materials / Ancillary materials

Name	Value	Unit
Polyamide 6	19,8	%
Polyester	16,4	%
Aluminiumhydroxide	6,9	%
SBR-latex	3,4	%
Ferric oxide (FeO)	37,0	%
Ethyl vinyl acetate (EVA)	15,8	%
Glass fibre	0,4	%
Additives	0,3	

Reference service life
The service life of textile floorcoverings strongly depends on the correct installation taking into account the declared use classification and the adherence of cleaning and maintenance instructions.
A minimum service life of 10 years could be assumed, technical service life can be considerably longer.

LCA: Calculation rules

Declared Unit

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	0.26	-
Mass reference	3,785	kg/m^2

System boundary

Type of the EPD: Cradle to grave

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

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 of residual waste (except radioactive waste). Credits for electricity and steam from the incineration of production waste are aggregated.

A4 Transport:
Transport of the packed textile floorcovering from manufacturing gate to the place of installation.

A5 Installation:
Installation of the textile floorcovering, production and transport of auxiliary material, waste processing up to the landfill of residual waste (except radioactive waste), the production of the amount of carpet that occurs as installation waste incl. its transport to the place of installation.
Credits for electricity and steam from the incineration of packaging and installation waste leave the product system.

B1 Use:
Indoor emissions during the use stage. Due to known VOC-decay curves of the product after the first year no product related VOC-emissions are relevant.

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 with the assumed service life of the floor covering in the building considered.

B3 - B7:
The modules are not relevant and therefore not declared.

C1 De-construction:
De-construction of the floorcovering is made by handcraft and causes no additional impacts.

C2 Transport:
Transport of the carpet waste to landfill, to the municipal waste incineration (MWI) or to the waste collection for recycling.

C3 Waste processing:
C3-0, C3-1: Landfill and waste incineration need no waste processing.
C3-2: Collection of the carpet waste, waste processing (granulating).

C4 Disposal
C4-0, C4-1: Impacts from landfill or from waste incineration (credits leave the system boundaries),
C4-2: The processed carpet waste leaves the system and need no disposal.

D Recycling potential:
D-0, D-1: Energy credits from landfill and from waste incineration (processing with < 60% efficiency),
D-2: Transport from the reprocessing plant to the cement plant, substitution of material and fuel input in the cement kiln (substantial and energetic credits).

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.

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. All indicated values refer to the declared functional unit.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck, EURO 0-5 mix)	29.4	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	525	kg/m³

Installation in the building (A5)

Name	Value	Unit
Auxiliary	0.2	kg
Material loss	0.11	kg

Cardboard waste (packaging material) leaves the system for recycling. PE-foil (packaging material) and installation waste are considered to be incinerated in a municipal waste incineration plant.

Maintenance (B2)

Name	Value	Unit
Maintenance cycle (wet cleaning)	1,5	1/year
Maintenance cycle (vacuum cleaning)	208	1/year
Water consumption (wet cleaning)	0.003	m³
Cleaning agent (wet cleaning)	0,06	kg
Electricity consumption	0.314	kWh

Further information on cleaning and maintenance see www.vorwerk-teppich.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 0: 100% landfill
Scenario 1: 100% municipal waste incineration (MWI)
Scenario 2: 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 0)
+ y% impact (Scenario 1)
+ z% impact (Scenario 2)

Name	Value	Unit
Collected as mixed construction waste (scenario 0 and 1)	3.8	kg
Collected separately (scenario 2)	3.8	kg
Landfilling (scenario 0)	3.8	kg
Energy recovery (scenario 1)	3.8	kg
Energy recovery (scenario 2)	2,1	kg
Recycling (scenario 2)	1.7	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information
The recovery or recycling potentials due to the three end-of-life scenarios (module C) are indicated separately.

Recycling in the cement industry (scenario 2)
/VDZ e.V./
The organic material of the carpet is used as secondary fuel in a cement kiln. It substitutes mainly lignite (62,7%), hard coal (27,3%) and petrol coke (10,0%).
The inorganic material is substantially integrated in the cement clinker and substitutes original material input.

LCA: Results

Information on not declared modules:
The modules B3 - B7 are not relevant during the service life of the carpet and are therefore not declared.
Module C1 causes no additional impact (see "LCA: Calculation rules", "C1 De-construction") and is therefore not declared.
Module C2 represents the transport for scenario 0, 1 and 2.

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 BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	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	MND	MND	MND	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	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
GWP	[kg CO_2-Eq.]	14	0.158	0.773	0.003	0.29	0.009	0	0	0.025	8.45	7.14	0	-0.214	-2.2	-2.39
ODP	[kg CFC11-Eq.]	5.3E-8	2.8E-12	1.65E-8	0.0E+0	6.5E-9	1.5E-13	0.0E+0	0.0E+0	2.3E-11	1.0E-10	6.2E-10	0.0E+0	-1.9E-10	-4.6E-10	-8.57E-8
AP	[kg SO_2-Eq.]	3.11E-2	7.22E-4	1.88E-3	0.0E+0	1.37E-3	4.03E-5	0.0E+0	0.0E+0	1.2E-4	1.04E-3	4.7E-3	0.0E+0	-1.01E-3	-3.59E-3	-7.27E-3
EP	[kg $(PO_4)^{3-}$- Eq.]	4.57E-3	1.67E-4	5.17E-4	0.0E+0	1.99E-4	9.3E-6	0.0E+0	0.0E+0	6.32E-6	4.86E-3	1.24E-3	0.0E+0	-5.33E-5	-2.97E-4	-1.03E-3
POCP	[kg Ethen Eq.]	4.18E-3	-2.61E-4	2.33E-4	1.11E-4	1.79E-4	-1.46E-5	0.0E+0	0.0E+0	7.06E-6	1.25E-3	3.36E-4	0.0E+0	-5.96E-5	-3.79E-4	-1.11E-3
ADPE	[kg Sb Eq.]	4.06E-4	5.9E-9	1.26E-5	0.0E+0	5.44E-7	3.3E-10	0.0E+0	0.0E+0	3.49E-9	3.92E-8	1.35E-6	0.0E+0	-2.94E-8	-1.3E-7	-4.37E-6
ADPF	[MJ]	279	2.19	12.3	0	6.55	0.122	0	0	0.446	2.89	6.13	0	-3.76	-36.6	-93.6

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	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PERE	[MJ]	14.7	0.086	1.95	0	0.5	0.005	0	0	0.074	0.14	0.276	0	-0.627	-1.47	-3.83
PERM	[MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	[MJ]	14.7	0.086	1.95	0	0.5	0.005	0	0	0.074	0.14	0.276	0	-0.627	-1.47	-3.83
PENRE	[MJ]	227.937	2.19	12.3	0	6.55	0.122	0	0	0.447	2.9	6.13	0	-3.77	-36.6	-93.6
PENRM	[MJ]	51.063	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	[MJ]	279	2.19	12.3	0	6.55	0.122	0	0	0.447	2.9	6.13	0	-3.77	-36.6	-93.6
SM	[kg]	1.55	0	0.042	0	0	0	0	0	0	0	0	0	0	0	0
RSF	[MJ]	8.88E-3	1.39E-5	3.2E-4	0.0E+0	2.03E-4	7.73E-7	0.0E+0	0.0E+0	9.12E-6	2.32E-3	1.67E-4	0.0E+0	-7.69E-5	-4.24E-4	-3.06E-2
NRSF	[MJ]	9.29E-2	1.45E-4	3.34E-3	0.0E+0	2.13E-3	8.09E-6	0.0E+0	0.0E+0	9.55E-5	5.53E-3	1.74E-3	0.0E+0	-8.05E-4	-4.45E-3	-3.21E-1
FW	[m^3]	2.05E+1	8.57E-3	1.08E+0	0.0E+0	8.49E-1	4.77E-4	0.0E+0	0.0E+0	9.67E-2	1.07E-1	2.92E-1	0.0E+0	-8.16E-1	-1.91E+0	-3.55E+0

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	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
HWD	[kg]	0.015	0	0.016	0	0	0	0	0	0	0	0.505	0	0	0	0
NHWD	[kg]	1.83E+1	7.81E-3	7.052E-1	0.0E+0	6.2E-1	4.35E-4	0.0E+0	0.0E+0	1.01E-1	2.88E+0	6.92E-1	0.0E+0	-8.52E-1	-2.0E+0	-5.3E+1
RWD	[kg]	9.53E-3	3.05E-6	3.58E-4	0.0E+0	3.95E-4	1.7E-7	0.0E+0	0.0E+0	6.57E-5	5.31E-5	1.84E-4	0.0E+0	-5.54E-4	-1.29E-3	-2.22E-3
CRU	[kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	[kg]	0.109	0	0.091	0	0	0	0	0	0	0	0	1.69	0	0	0
MER	[kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	[MJ]	0	0	0.127	0	0	0	0	0	0	1.6	3.39	0	0	0	0
EET	[MJ]	0	0	0.766	0	0	0	0	0	0	0	23.1	0	0	0	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

The declared values in module B2 have to be multiplied with the assumed service time (in years) of the floor covering in the building considered.

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