

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

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|--------------------------|---------------------------------------|
| Owner of the Declaration | Carpet Institute of Australia Limited |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
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Tufted broadloom carpet
total pile material max. 745 g/m² polyamide 6,
textile backing

**New Zealand carpet manufacturers &
Carpet Institute of Australia Limited**

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



General Information

New Zealand carpet manufacturers

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number

EPD-CIA-20210316-CBH1-EN

This declaration is based on the product category rules:

Floor coverings, 02/2018
(PCR checked and approved by the SVR)

Issue date

26.01.2022

Valid to

25.01.2027



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Tufted broadloom carpet, total pile material max. 745 g/m² polyamide 6, textile backing

Owner of the declaration

New Zealand carpet manufacturers & Carpet Institute of Australia Limited (CIAL)

Declared product / declared unit

1 m² tufted broadloom carpet with a pile material made of PA 6 and a textile backing.

Scope:

The declaration applies to a group of similar products with a max. total pile material of 745 g/m². Average construction elements and data for the production processes are based on data provided by carpet manufacturers from New Zealand. The declared products represent a group of products having the characteristics as described in the EPD. The product will be distributed only in Australia and New Zealand. LCA results for products with a maximum total pile weight of 300 g/m² can be taken from the corresponding tables of the annexe. Specific data for every product within the declared group of products in relation to its total pile weight can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe').

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR

Independent verification of the declaration and data according to *ISO 14025:2010*

☐ internally ☒ externally



Angela Schindler
(Independent verifier)

Product

Product description/Product definition

Tufted broadloom carpet having a surface pile of solution-dyed polyamide 6 and a textile backing. The calculations refer to average construction data based on data provided by manufacturers from New Zealand. The data represent a significant market share. The declaration applies to products with a maximum total pile weight of 745 g/m².

The LCA results are calculated for products with the maximum total pile weight of 745 g/m². LCA results for products with a maximum total pile weight of 300 g/m² can be taken from the corresponding tables of the

annexe. Results for specific products with any other total pile weight can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information in the annexe').

For the use and application of the product the respective national provisions at the place of use apply. There are no mandatory regional requirements to place a carpet on the market in Australia and New Zealand. The product will not be distributed in the EU.

Application

According to the Australian Carpet Classification Scheme (ACCS) the products can be used in the

contract market. Carpet qualities are classified under the ACCS labelling system according to their ability to perform to expected traffic loadings in standard site conditions. For the contract market the highest rating is 4 stars. *CIAL*

Technical Data

| Name | Value | Unit |
|---------------------|---|------------------|
| Product Form | Broadloom carpet | - |
| Type of manufacture | Tufting | - |
| Yarn type | Polyamide 6 | - |
| Primary backing | Polypropylene | |
| Secondary backing | Woven textile backing made of polypropylene | - |
| Total pile weight | 745 | g/m ² |
| Total carpet weight | 1970 | g/m ² |

The Australian Carpet Classification Scheme (ACCS), is a national carpet grading scheme covering all types of carpet and all carpet fibres. ACCS carpets are independently tested according to established procedures and internationally recognised tests (see <http://carpetinstitute.com.au>).

Additional product properties in accordance to the Australian Carpet Classification Scheme can be found in the manufacturer's technical information section.

Base materials/Ancillary materials

| Name | Value | Unit |
|---------------|-------|------|
| Polyamide 6 | 37,8 | % |
| Polypropylene | 10,2 | % |
| SBR-latex | 9,8 | % |

| | | |
|------------------------|------|---|
| Limestone | 24,5 | % |
| Aluminium trihydroxide | 16,1 | % |
| Additives | 1,6 | % |

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 ACCS system. This system ensures the compliance with limitations of various chemicals and Volatile Organic Compound 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 [Mass/Declared Unit] | 1.97 | - |

The declared unit refers to 1 m² produced textile floor covering. The 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 comes.

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. Preparation 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.

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.

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.

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 2021-2*. Remaining data gaps are covered by the *ecoinvent 3.7* database.

LCA: Scenarios and additional technical information

The following information refer to the declared modules and are the basis for calculations or can be used for further calculations. The indicated values refer to the declared functional unit of all products with a total pile weight of 745 g/m².

Transport to the construction site (A4)

| Name | Value | Unit |
|---|-------|---------|
| Litres of fuel (truck, EURO 0-6 mix) | 0.005 | l/100km |
| Transport distance | 1600 | km |
| Capacity utilisation (including empty runs) | 55 | % |

Installation in the building (A5)

| Name | Value | Unit |
|---------------|-------|------|
| Material loss | 0.18 | kg |

Plastic packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant. Cardboard 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) | 2 | 1/year |
| Maintenance cycle (vacuum cleaning) | 104 | 1/year |
| Water consumption (wet cleaning) | 0.012 | m ³ |
| Cleaning agent (wet cleaning) | 0.18 | kg |
| Electricity consumption | 0.533 | kWh |

Further information on cleaning and maintenance see standard AS/NZS 3733:1995 AS/NZS 3733:1995

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) | 1.97 | kg |
| Collected separately (scenario 3) | 1.97 | kg |
| Landfilling (scenario 1) | 1.97 | kg |
| Energy recovery (scenario 2) | 1.97 | kg |
| Energy recovery (scenario 3) | 1,17 | kg |
| Recycling (scenario 3) | 0.8 | 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 (65.5 %), hard coal (26.2 %) and petroleum coke (8.6 %).

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

LCA: Results

The LCA results refer to all declared products with a maximum total pile weight of 745 g/m². LCA results for products with a total pile weight of 300 g/m² can be taken from the corresponding tables of the annexe. Results for specific products with any other total pile weight can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe'). 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)

| CONSTRUCTION MODEL - NOT READY | | | | | | | | | | | | | | | | |
|--------------------------------|-----------|---------------|-------------------------------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|---|
| 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 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.] | 8.96E+0 | 2.79E-1 | 1.10E+0 | 0.00E+0 | 3.69E-1 | 1.72E-2 | 2.86E+0 | 2.89E+0 | 1.34E-1 | -1.03E-1 | 0.00E+0 | -1.13E+0 | -3.20E-1 |
| ODP | [kg CFC11-Eq.] | 7.87E-11 | 5.56E-17 | 7.09E-12 | 0.00E+0 | 2.19E-8 | 3.43E-18 | 9.52E-16 | 1.30E-15 | 4.54E-16 | -1.58E-15 | 0.00E+0 | -1.73E-14 | -1.79E-15 |
| AP | [kg SO ₂ -Eq.] | 1.59E-2 | 1.16E-3 | 1.74E-3 | 0.00E+0 | 2.01E-3 | 7.16E-5 | 2.30E-3 | 2.39E-3 | 3.47E-4 | -1.20E-4 | 0.00E+0 | -1.31E-3 | -1.05E-3 |
| EP | [kg (PO ₄) ³ -Eq.] | 2.36E-3 | 2.83E-4 | 2.91E-4 | 0.00E+0 | 5.79E-4 | 1.75E-5 | 5.87E-4 | 6.07E-4 | 3.77E-4 | -1.64E-5 | 0.00E+0 | -1.80E-4 | -1.47E-4 |
| POCP | [kg ethene-Eq.] | 2.41E-3 | 4.70E-4 | 1.86E-4 | 0.00E+0 | 2.62E-4 | -2.90E-5 | 1.40E-4 | 1.12E-4 | 3.12E-5 | -1.10E-5 | 0.00E+0 | -1.20E-4 | -1.10E-4 |
| ADPE | [kg Sb-Eq.] | 2.60E-6 | 4.48E-9 | 2.41E-7 | 0.00E+0 | 5.50E-6 | 2.77E-10 | 7.41E-8 | 7.81E-8 | 2.57E-8 | -1.94E-8 | 0.00E+0 | -2.12E-7 | -1.86E-7 |
| ADPF | [MJ] | 1.74E+2 | 3.76E+0 | 1.61E+1 | 0.00E+0 | 1.12E+1 | 2.32E-1 | 1.48E+0 | 1.84E+0 | 2.00E+0 | -1.48E+0 | 0.00E+0 | -1.62E+1 | -3.45E+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] | 1.49E+1 | 1.83E-2 | 1.77E+0 | 0.00E+0 | 1.40E+0 | 1.13E-3 | 2.21E-1 | 3.11E-1 | 1.49E-1 | -4.07E-1 | 0.00E+0 | -4.46E+0 | -4.24E-1 |
| PERM | [MJ] | 3.75E-1 | 0.00E+0 | -3.75E-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] | 1.53E+1 | 1.83E-2 | 1.40E+0 | 0.00E+0 | 1.40E+0 | 1.13E-3 | 2.21E-1 | 3.11E-1 | 1.49E-1 | -4.07E-1 | 0.00E+0 | -4.46E+0 | -4.24E-1 |
| PENRE | [MJ] | 1.44E+2 | 3.76E+0 | 1.69E+1 | 0.00E+0 | 1.18E+1 | 2.32E-1 | 3.89E+1 | 3.94E+1 | 2.06E+0 | -1.81E+0 | 0.00E+0 | -1.98E+1 | -3.48E+1 |
| PENRM | [MJ] | 3.74E+1 | 0.00E+0 | -4.30E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -3.73E+1 | -3.73E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| PENRT | [MJ] | 1.82E+2 | 3.76E+0 | 1.68E+1 | 0.00E+0 | 1.18E+1 | 2.32E-1 | 1.61E+0 | 2.04E+0 | 2.06E+0 | -1.81E+0 | 0.00E+0 | -1.98E+1 | -3.48E+1 |
| SM | [kg] | 9.49E-1 | 0.00E+0 | 8.54E-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 | 4.80E-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] | 2.79E-2 | 3.64E-5 | 3.30E-3 | 0.00E+0 | 9.15E-3 | 2.25E-6 | 8.61E-3 | 8.70E-3 | 1.90E-5 | -3.98E-4 | 0.00E+0 | -4.35E-3 | -3.08E-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] | 2.82E-8 | 1.36E-11 | 2.57E-9 | 0.00E+0 | 8.67E-11 | 8.36E-13 | 3.41E-10 | 3.93E-10 | 3.70E-10 | -4.06E-10 | 0.00E+0 | -4.44E-9 | -3.93E-10 |
| NHWD | [kg] | 1.26E-1 | 8.99E-5 | 4.83E-2 | 0.00E+0 | 1.12E-2 | 5.54E-6 | 4.10E-1 | 4.11E-1 | 1.96E+0 | -8.47E-4 | 0.00E+0 | -9.27E-3 | -1.52E-1 |
| RWD | [kg] | 3.04E-3 | 5.18E-7 | 2.78E-4 | 0.00E+0 | 5.73E-6 | 3.20E-8 | 5.07E-5 | 7.96E-5 | 2.39E-5 | -1.31E-4 | 0.00E+0 | -1.43E-3 | -1.03E-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] | 1.34E-2 | 0.00E+0 | 2.50E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.80E-1 | 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 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| EEE | [MJ] | 0.00E+0 | 0.00E+0 | 4.47E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.89E+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 | 8.13E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.91E+0 | 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; EET = 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

EN 1307

DIN EN 1307: 2014+A1:2016+A2:2018-05: Textile floor coverings - Classification

EN 13501-1

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

EN 14041

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

EN 15804

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

EN 16810

DIN EN 16810: 2017-08: Resilient, textile and laminate floor coverings – Environmental product declarations – Product category rules

ISO 10874

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

ISO 14025

DIN EN /ISO 14025:2011-10/, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14040

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

ISO 14044

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

ISO 15686

ISO 15686: Buildings and constructed assets - Service life planning

ISO 15686-1: 2011-05: Part 1: General principles and framework

ISO 15686-2: 2012-05: Part 2: Service life prediction procedures

ISO 15686-7: 2017-04: Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8: 2008-06: Part 8: Reference service life and service-life estimation

CML characterization factors

Impact assessment characterization factors, version 4.7, August 2016, Institute of Environmental Sciences - 'Centrum voor Milieuwetenschappen in Leiden' (CML), Leiden, The Netherlands

ECHA candidate list

Candidate List of substances of very high concern (SVHCs) for authorisation, 16.01.2020, European Chemicals Agency (ECHA), Helsinki, Finland

ecoinvent 3.7

ecoinvent, Zurich, Switzerland, database version 3.7, published September 2020

GaBi database 2021

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

IBU 2021

IBU (2021): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V., Version 2.0 Institut Bauen und Umwelt e.V., Berlin. www.ibu-epd.de

PCR Part A

Product Category Rules for Construction Products from the range of Environmental Product Declarations. Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, V1.9, Berlin: Institut Bauen und Umwelt e.V. (IBU), January 2021

PCR Part B

Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for floor coverings, V1.2, Berlin: Institut Bauen und Umwelt e.V. (IBU), February 2018

ACCS

Australian Carpet classification scheme, Incorporating the environmental certification scheme (ECS), Carpet Institute of Australia Limited (CIAL), Melbourne 2019

AS/NZS 3733:2018

Textile Floor Coverings - Cleaning Maintenance of Residential and Commercial carpeting, 2018

REACH

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Last update: 27.02.2020 (Status: 27.06.2018)

VDZ e.V.

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

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