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ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	Interface Europe Manufacturing BV
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-INT-20180094-CBC1-EN
Issue date	02.07.2018
Valid to	01.07.2023

Modular carpet tiles

pile material polyamide 6 with 100% recycled content, solution dyed, maximum total pile weight 1500 g/m², Graphlex® backing system

Interface®

Institut Bauen und Umwelt e.V.

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

Interface®

General Information

Interface®

Modular carpet tiles

pile material PA 6 with 100% recycled content, solution dyed,
max. total pile weight 1500 g/m²,
Graphlex® backing system

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

Owner of the declaration
Interface Europe Manufacturing BV
Industrielaan 15
3925 ZG Scherpenzeel
The Netherlands

Declaration number
EPD-INT-20180094-CBC1-EN

Declared product / declared unit
1 m² tufted modular carpet tiles having a surface pile of recyled polyamide 6 and a Graphlex® backing system

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

Scope:
The manufacturer declaration applies to a group of similar products with a maximum total pile weight of 1500 g/m².
The products are tufted in Craigavon, Ireland, or in Scherpenzeel, the Netherlands, and they are back coated in Scherpenzeel.
LCA results for product groups having a lower total pile weight can be taken from the corresponding tables of the annex. Specific data can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex').
The declaration is only valid in conjunction with a valid GUT-/PRODIS/ license of the product.

Issue date
02.07.2018

Valid to
01.07.2023

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

Verification

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

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

Dipl. Ing. Hans Peters
(Managing Director IBU)

Angela Schindler
(Independent verifier appointed by SVR)

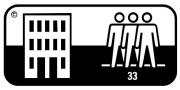
Product

Product description / Product definition
Tufted modular carpet tiles having a surface pile of solution dyed polyamide 6 with 100% recycled content and a Graphlex® backing system.
Graphlex® backing system:
Backing compound based on bitumen, containing recycled filler, glass-fleece reinforcement and polypropylene covering fleece.
Based on a total weight of 5300 g/m² the recycled content amounts to 60 %.
The declaration applies to a group of products with a maximum total pile weight of 1500 g/m².

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

For the placing on the market of the product in the EU/EFTA (with the exception of Switzerland) Regulation (EU) No. 305/2011 /CPR/ applies. The Declaration of Performance of the products taking into consideration /EN 14041/ and the CE-marking of the products can be found on the manufacturer's technical information section.

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



Technical Data

Name	Value	Unit
Product Form	Modular carpet tiles 50 cm x 50 cm	-
Type of manufacture	Tufted tiles	-
Yarn type	PA 6 with 100% recycled content, solution dyed	-
Secondary backing	Graphlex® backing system	-
Total pile weight	max. 1500	g/m²
Total carpet weight	max. 5300	g/m²

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

Base materials / Ancillary materials

Name	Value	Unit
Polyamide 6	28.3	%
Polyester	2.3	%
Polypropylene	0.9	%
Limestone	39.1	%
Aluminiumhydroxide	3.9	%
Polymere dispersion (dry mass)	9.8	%
Modified bitumen	14.1	%
Glass fibre	0.6	%
Additives	1.0	%

The products are registered in the GUT-/PRODIS/ Information System. The /PRODIS/ system ensures the compliance with limitations of various chemicals and VOC-emissions and a ban on 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	m²
Conversion factor to 1 kg	0.19	-
Mass reference	5.3	kg/m²

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

System boundary

Type of EPD: Cradle-to-grave

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

A1-A3 Production:
Energy supply and production of the basic material, processing of secondary material, auxiliary material, transport of the material to the manufacturing site, emissions, waste water treatment, packaging material and waste processing up to the landfill disposal of residual waste (except radioactive waste). Benefits for generated electricity and steam due to the incineration of production waste are aggregated.

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

A5 Installation:
Installation of the textile floor covering, processing of installation waste and packaging waste up to the landfill disposal of residual waste (except radioactive waste), the production of the amount of carpet that occurs as installation waste including its transport to the place of installation.
Generated electricity and steam due to the incineration of waste are listed in the result table as exported energy.
Preparing of the floor and auxiliary materials (adhesives, fixing agents, PET connectors) are beyond the system boundaries and not taken into account.

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

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

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

C1 De-construction:
The floor covering is de-constructed manually and no additional environmental impact is caused.

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

C3 Waste processing:
C3-1: Landfill disposal need 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).

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 at the end-of-life, transport from the reprocessing plant to the cement kiln.

Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

Background data are taken from the /GaBi database 2018/, service pack 35 and from the /ecoinvent 3.3/ database

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LCA: Scenarios and additional technical information

The following information refer to the declared modules and are the basis for calculations or can be used for further calculations. The indicated values refer to the declared functional unit of all products with a maximum total pile weight of 1450 g/m².
Specific information on products having a lower total pile weight can be taken from the annex.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck, EURO 0-6 mix)	0.009	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	85	%

Installation in the building (A5)

Name	Value	Unit
Material loss	0.16	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)
Indication per m² floor covering and per year.
Depending on the application based on EN ISO 10874, the technical service life recommended by the manufacturer and the anticipated strain on the floor by customers, the case-specific useful life can be established. The effects of Module B2 need to be calculated on the basis of this useful life in order to obtain the overall environmental impacts (see annex, chapter 'General Information on use stage').

Name	Value	Unit
Maintenance cycle (wet cleaning)	1.5	1/year
Maintenance cycle (vacuum cleaning)	208	1/year
Water consumption (wet cleaning)	0.004	m³
Cleaning agent (wet cleaning)	0.09	kg
Electricity consumption	0.314	kWh

Further information on cleaning and maintenance see www.interface.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)

Name	Value	Unit
Collected as mixed construction waste (scenario 1 and 2)	5.3	kg
Collected separately (scenario 3)	5.3	kg
Landfilling (scenario 1)	5.3	kg
Energy recovery (scenario 2)	5.3	kg
Energy recovery (scenario 3)	3.0	kg
Recycling (scenario 3)	2.3	kg

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

Recycling in the cement industry (scenario 3)
/VDZ e.V./
The organic material of the carpet is used as secondary fuel in a cement kiln. It mainly substitutes for lignite (62.2%), hard coal (27.3%) and petrol coke (10.5%).
The inorganic material is substantially integrated in the cement clinker and substitutes for original material input.

LCA: Results

The results are valid for all declared products with a maximum total pile weight of 1500 g/m².
LCA results for product groups having a lower total pile weight can be taken from the corresponding tables of the annex. The LCA results always refer to the highest total pile weight of the corresponding pile weight category. Results for similar products with any other total pile weight can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex').
The declared result figures in module B2 have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration (see annex, chapter 'General Information on use stage').

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

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	MNR	MNR	MNR	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
GWP	[kg CO_2-Eq.]	7.90E+0	2.24E-1	5.36E-1	0.00E+0	3.21E-1	1.24E-2	8.13E+0	3.06E-2	3.72E-1	-1.15E-1	0.00E+0	-3.57E+0	-7.09E-1
ODP	[kg CFC11-Eq.]	4.83E-8	6.15E-15	1.40E-9	0.00E+0	1.37E-8	3.40E-16	1.09E-12	1.36E-13	1.01E-13	-2.50E-13	0.00E+0	-7.76E-12	-9.44E-12
AP	[kg SO_2-Eq.]	2.09E-2	9.24E-4	7.82E-4	0.00E+0	1.41E-3	5.10E-5	4.81E-3	7.93E-5	9.90E-4	-1.79E-4	0.00E+0	-5.57E-3	-2.63E-3
EP	[kg $(PO_4)^{3-}$-Eq.]	6.01E-3	2.33E-4	2.18E-4	0.00E+0	4.42E-4	1.29E-5	1.22E-3	7.87E-6	1.04E-3	-2.02E-5	0.00E+0	-6.28E-4	-2.77E-4
POCP	[kg ethene-Eq.]	1.58E-3	-3.83E-4	4.28E-5	6.29E-5	1.74E-4	-2.12E-5	3.04E-4	5.43E-6	1.11E-4	-1.51E-5	0.00E+0	-4.70E-4	-3.46E-4
ADPE	[kg Sb-Eq.]	3.71E-6	1.68E-8	1.09E-7	0.00E+0	1.09E-6	9.29E-10	3.99E-8	1.55E-8	4.05E-8	-3.11E-8	0.00E+0	-9.67E-7	-8.41E-8
ADPF	[MJ]	1.54E+2	3.06E+0	4.66E+0	0.00E+0	6.38E+0	1.69E-1	3.27E+0	3.25E-1	5.40E+0	-1.58E+0	0.00E+0	-4.91E+1	-1.10E+2

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
PERE	[MJ]	5.53E+1	1.70E-1	1.62E+0	0.00E+0	1.56E+0	9.36E-3	4.44E-1	2.10E-1	4.17E-1	-3.88E-1	0.00E+0	-1.20E+1	-7.10E-1
PERM	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	5.53E+1	1.70E-1	1.62E+0	0.00E+0	1.56E+0	9.36E-3	4.44E-1	2.10E-1	4.17E-1	-3.88E-1	0.00E+0	-1.20E+1	-7.10E-1
PENRE	[MJ]	1.51E+2	3.08E+0	6.29E+0	0.00E+0	7.57E+0	1.70E-1	6.21E+1	5.90E+1	5.60E+0	-2.01E+0	0.00E+0	-6.24E+1	-1.10E+2
PENRM	[MJ]	5.85E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-5.85E+1	-5.85E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	2.10E+2	3.08E+0	6.29E+0	0.00E+0	7.57E+0	1.70E-1	3.66E+0	5.58E-1	5.60E+0	-2.01E+0	0.00E+0	-6.24E+1	-1.10E+2
SM	[kg]	3.37E+0	0.00E+0	1.47E-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	2.31E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.07E+2
FW	[m³]	8.28E-1	3.13E-4	2.48E-2	0.00E+0	7.38E-3	1.73E-5	2.44E-2	2.86E-4	-1.44E-5	-5.29E-4	0.00E+0	-1.64E-2	-9.80E-3

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² floorcovering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
HWD	[kg]	5.90E-3	1.78E-7	1.71E-4	0.00E+0	1.26E-9	9.82E-9	1.66E-8	2.62E-10	2.39E-8	-8.19E-10	0.00E+0	-2.54E-8	-7.32E-9
NHWD	[kg]	1.09E+0	2.58E-4	6.27E-2	0.00E+0	8.24E-3	1.42E-5	1.04E+0	3.93E-4	5.29E+0	-8.62E-4	0.00E+0	-2.68E-2	-9.96E-2
RWD	[kg]	1.38E-3	4.21E-6	4.50E-5	0.00E+0	3.95E-4	2.32E-7	1.56E-4	9.24E-5	7.96E-5	-1.70E-4	0.00E+0	-5.29E-3	-2.25E-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]	0.00E+0	0.00E+0	1.81E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.31E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.99E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	4.88E-1	0.00E+0	0.00E+0	0.00E+0	1.52E+1	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	8.83E-1	0.00E+0	0.00E+0	0.00E+0	2.75E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

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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www.ibu-epd.de

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

/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

PCR Part A
Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU),
Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, V1.7, March 2018
www.bau-umwelt.de

PCR Part B
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Part B: Requirements on the EPD for floor coverings, V1.2, Febuary 2018
www.bau-umwelt.de

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

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

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

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

ISO 15686
ISO 15686: Buildings and constructed assets - Service life planning
ISO 15686-1: 2011-05: Part 1: General principles and framework
ISO 15686-2: 2012-05: Part 2: Service life prediction procedures
ISO 15686-7: 2006-03: Part 7: Performance evaluation for feedback of service life data from practice
ISO 15686-8: 2008-06: Part 8: Reference service life and service-life estimation

VDZ e.V.
Umweltdaten der deutschen Zementindustrie 2016

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

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

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

GaBi database 2018
GaBi Software-System and Database for Life Cycle Engeneering, thinkstep AG, Leinfelden-Echterdingen, service pack 35, 2018

ecoinvent 3.3
ecoinvent, Zurich, Switzerland, Database Version 3.3, August 2016

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EPD

Environmental Product Declaration

GUT/Prodis ID:

004EA8FB

Interface

Urban Retreat 101

surface pile weight: 498 g/m²

pile material: polyamide 6 with 100% recycled content

backing: Graphlex® backing system

These EPD data are only valid in combination with

the environmental product declaration EPD-INT-20180094-CBC1-EN published by Institut Bauen und Umwelt e.V. (IBU) and a GUT/Prodis license

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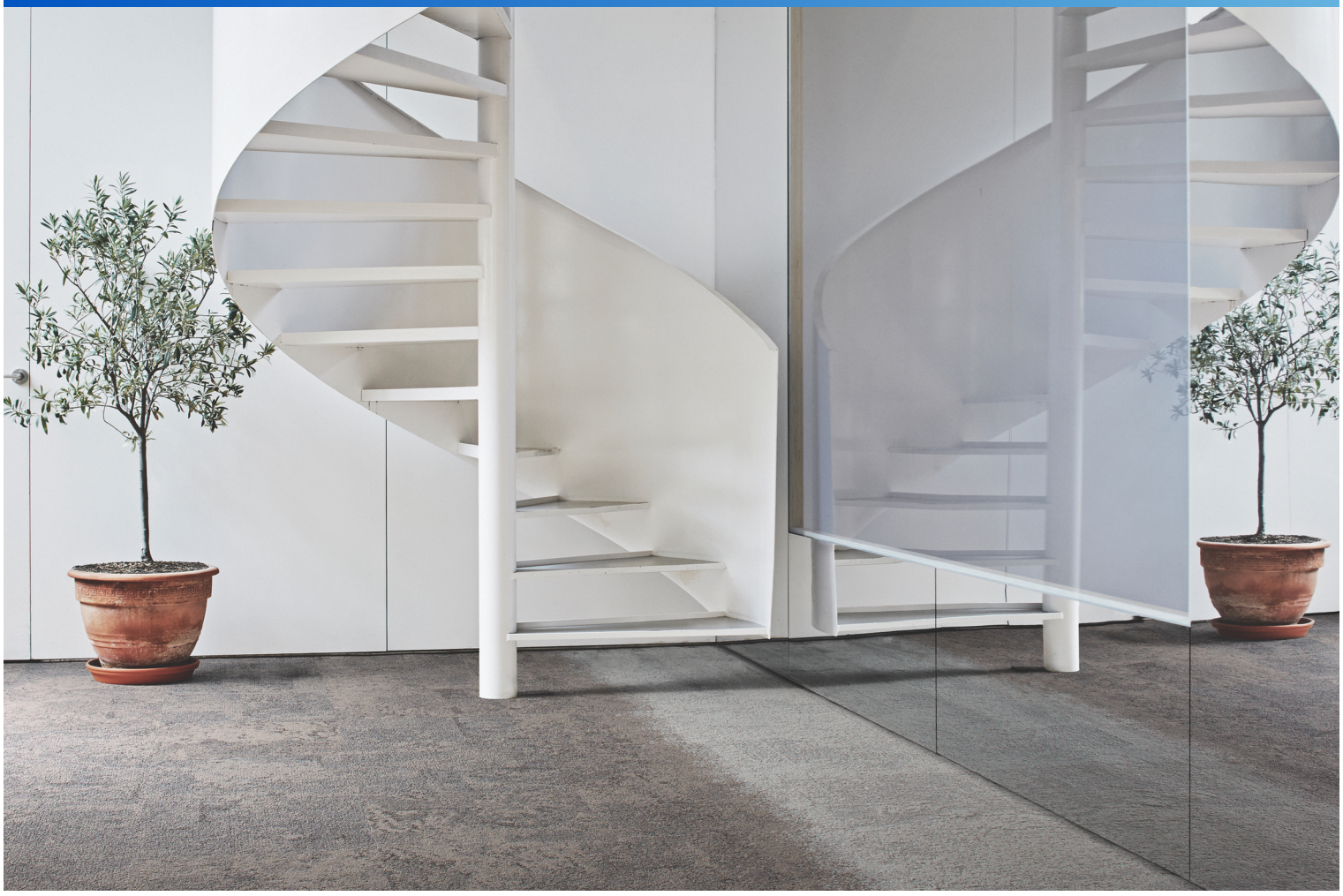
This data set gives product specific LCA results

based on the calculation procedure described in the above mentioned EPD.



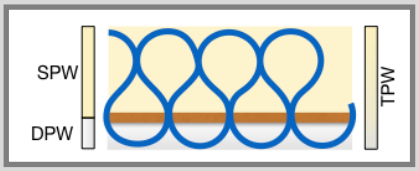
Calculation method for similar Products of the EPD document

The EPD document is valid for all products with a surface pile weight lower or equal to the declared maximum pile weight of 1500 g/m².
The respective declaration number is EPD-INT-20180094-CBC1-EN .

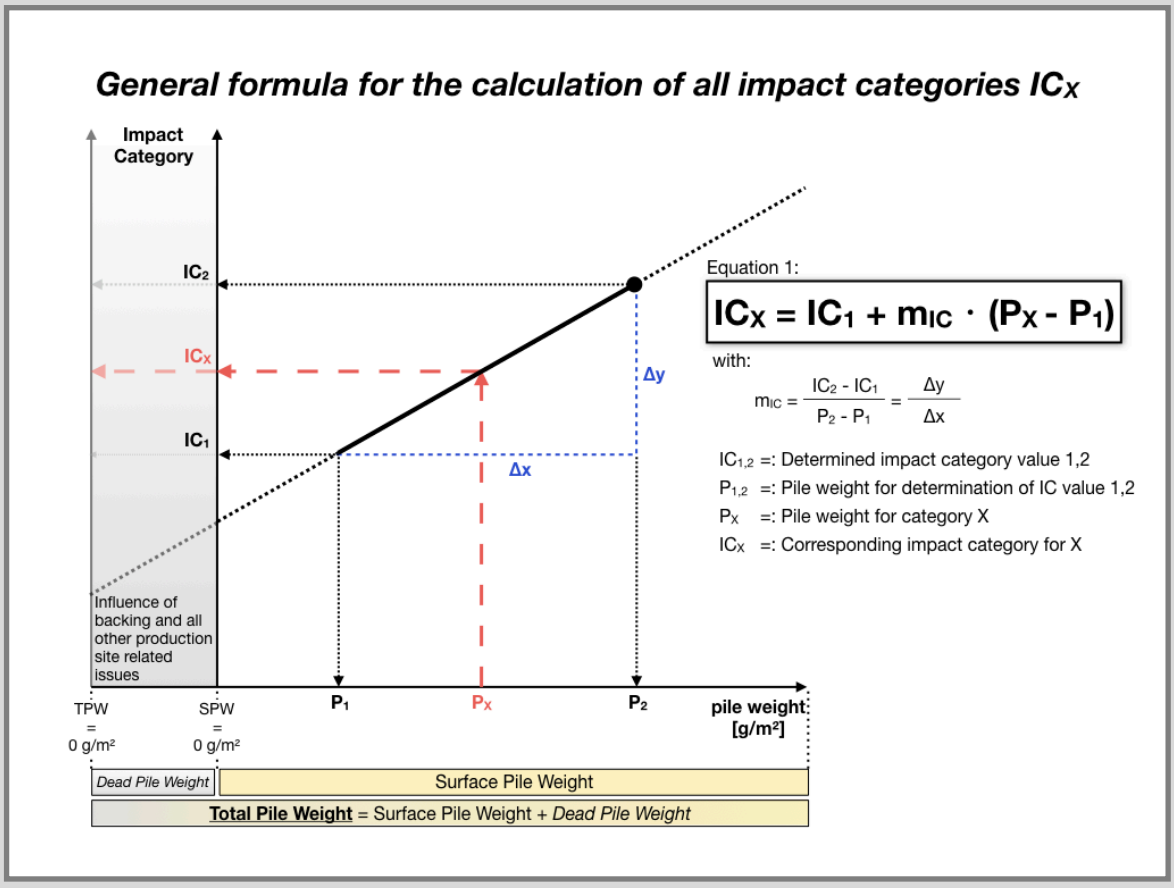
This document indicates more specific LCA results for (a) product(s) with identical material compositions and production parameters. The product(s) belong(s) to the same family of products and only differ in its/their pile weight(s).

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 (ICx).



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

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.

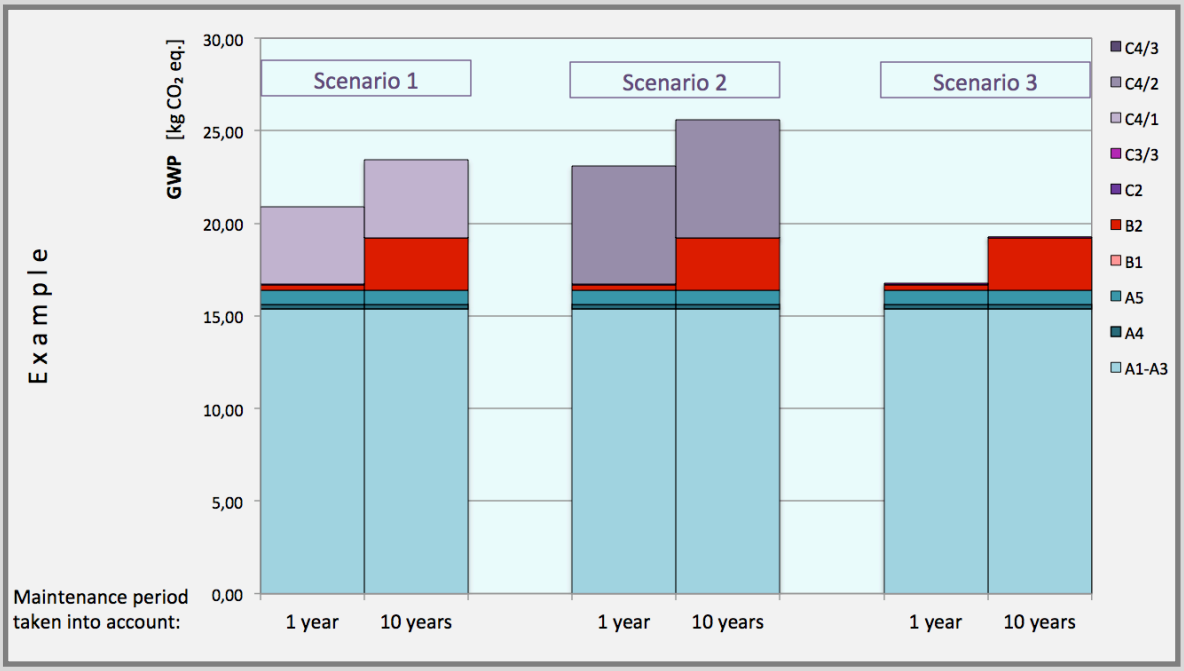
Reference service life (RSL)
The actual service life of textile floor coverings depends on a wide range of various impact factors such as the allocation of the application area to the use class, maintenance, intensity of use and most often fashion and building related aspects. Therefore, technical service 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 the product Urban Retreat 101

Product description

Name	Value	Unit
Type of manufacture	tufted tiles	-
Yarn type	polyamide 6 with 100% recycled content	-
Total pile weight	851	g/m²
Surface pile weight	498	g/m²
Dead pile weight	353	g/m²
Secondary backing	Graphlex® backing system	-
Product Form	tiles 50 cm x 50 cm	-
Max. total carpet weight	4651	g/m²

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6	18,3	%
Polyester	2,6	%
Polypropylene	1,1	%
Limestone	44,5	%
Modified bitumen	16,0	%
Aluminiumhydroxide	4,4	%
Polymer dispersion (solid content)	11,2	%
Glass fibre	0,7	%
Additives	1,2	%
Recycled content out of total weight	54 %	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m²
Conversion factor to 1 kg	0,22	m²/kg
Mass reference	4,7	kg/m²

LCA: Scenarios and additional technical information

All indicated values refer to the declared functional unit

Transport to the construction site (A4)

Name	Value for category	Unit
Litres of fuel (truck, EURO 0-5 mix)	0,0078	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	85	%

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,14	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	m³
Cleaning agent (wet cleaning)	0,09	kg
Electricity consumption	0,314	kWh

End of Life (C1-C4)

Name	Value for category	Unit
Collected as mixed construction waste (scenario 1 and 2)	4,65	kg/m²
Collected separately (scenario 3)	4,65	kg/m²
Landfilling (scenario 1)	4,65	kg/m²
Energy recovery (scenario 2)	4,65	kg/m²
Energy recovery (scenario 3)	2,34	kg/m²
Recycling (scenario 3)	2,31	kg/m²

LCA: Results for Urban Retreat 101

(calculated with a total pile weight of 851 g/m²)

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

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

Description of the system boundary

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

State of production			State of construction phase		State of use							End of life state				Credits and loads after life
raw material supply	transport	manufacturing	delivery	installation	use	maintenance	repair	replacement	renewal	energy use	water use	stop of use / demolition	transport	waste management	disposal	reuse, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	MND	MND	MND	MND	MND	MND	X	X	X	X

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

Para-meter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO2-eq]	5,68E+00	1,97E-01	4,26E-01	0,00E+00	3,21E-01	1,08E-02	6,65E+00	2,68E-02	3,27E-01	-9,33E-02	0,00E+00	-2,86E+00	-5,84E-01
ODP	[kg CFC11-eq]	2,84E-08	5,42E-15	8,18E-10	0,00E+00	1,37E-08	2,98E-16	1,06E-12	1,19E-13	8,81E-14	-2,03E-13	0,00E+00	-6,20E-12	-9,40E-12
AP	[kg SO2-eq]	1,45E-02	8,15E-04	5,38E-04	0,00E+00	1,41E-03	4,48E-05	3,03E-03	6,96E-05	8,69E-04	-1,47E-04	0,00E+00	-4,45E-03	-2,19E-03
EP	[kg PO4)3-eq]	3,84E-03	2,06E-04	1,40E-04	0,00E+00	4,42E-04	1,13E-05	7,51E-04	6,91E-06	9,09E-04	-1,64E-05	0,00E+00	-5,02E-04	-2,30E-04
POCP	[kg ethen-eq]	1,22E-03	-3,38E-04	3,02E-05	6,29E-05	1,74E-04	-1,86E-05	1,99E-04	4,77E-06	9,80E-05	-1,24E-05	0,00E+00	-3,75E-04	-2,88E-04
ADPE	[kg Sb-eq]	2,53E-06	1,49E-08	7,45E-08	0,00E+00	1,09E-06	8,15E-10	3,29E-08	1,37E-08	3,56E-08	-2,54E-08	0,00E+00	-7,72E-07	-7,01E-08
ADPF	[MJ]	1,29E+02	2,71E+00	3,89E+00	0,00E+00	6,38E+00	1,48E-01	2,60E+00	2,86E-01	4,74E+00	-1,28E+00	0,00E+00	-3,94E+01	-8,86E+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 for the LCA - Resource use: 1 m² floor covering

Para-meter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
PERE	[MJ]	4,00E+01	1,49E-01	1,17E+00	0,00E+00	1,56E+00	8,22E-03	3,83E-01	1,84E-01	3,66E-01	-3,15E-01	0,00E+00	-9,66E+00	-5,97E-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]	4,00E+01	1,49E-01	1,17E+00	0,00E+00	1,56E+00	8,22E-03	3,83E-01	1,84E-01	3,66E-01	-3,15E-01	0,00E+00	-9,66E+00	-5,97E-01
PENRE	[MJ]	1,03E+02	2,72E+00	4,85E+00	0,00E+00	7,57E+00	1,49E-01	6,15E+01	5,90E+01	4,93E+00	-1,63E+00	0,00E+00	-4,99E+01	-8,92E+01
PENRM	[MJ]	5,85E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,85E+01	-5,85E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,62E+02	2,72E+00	4,85E+00	0,00E+00	7,57E+00	1,49E-01	2,95E+00	4,89E-01	4,93E+00	-1,63E+00	0,00E+00	-4,99E+01	-8,92E+01
SM	[kg]	2,71E+00	0,00E+00	1,28E-01	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	2,31E+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	[m³]	4,75E-01	2,75E-04	1,44E-02	0,00E+00	7,38E-03	1,51E-05	2,08E-02	2,51E-04	-1,26E-05	-4,29E-04	0,00E+00	-1,32E-02	-7,94E-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 for the LCA - Output flows and waste categories: 1 m² floor covering

Para-meter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
HWD	[kg]	3,36E-03	1,57E-07	9,70E-05	0,00E+00	1,26E-09	8,61E-09	1,62E-08	2,30E-10	2,10E-08	-6,66E-10	0,00E+00	-2,03E-08	-5,28E-09
NHWD	[kg]	6,97E-01	2,27E-04	5,13E-02	0,00E+00	8,24E-03	1,25E-05	1,04E+00	3,45E-04	4,64E+00	-7,00E-04	0,00E+00	-2,13E-02	-9,93E-02
RWD	[kg]	1,24E-03	3,72E-06	4,01E-05	0,00E+00	3,95E-04	2,03E-07	1,35E-04	8,11E-05	6,99E-05	-1,39E-04	0,00E+00	-4,23E-03	-1,90E-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	1,81E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,31E+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	2,34E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	3,97E-01	0,00E+00	0,00E+00	0,00E+00	1,21E+01	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	7,19E-01	0,00E+00	0,00E+00	0,00E+00	2,20E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption	**HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed; **CRU** = Components for re-use; **MFR** = Materials for recycling; **MER** = Materials for energy recovery; **EEE** = Exported electrical energy; **EEE** = Exported thermal energy