ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A1*

Owner of the Declaration	modulyss®
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-MOD-20210149-CBC1-EN
Issue date	08/07/2021
Valid to	07/07/2026

Tufted carpet tiles

with a maximum total pile weight of 1300 g/m²,
a pile material of 100% regenerated polyamide 6,
ecoBack or comfortBack^{eco} backing

modulyss®

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD EN 15804 VERIFIED

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

General Information

modulyss®

Tufted carpet tiles
max. total pile weight 1300 g/m²
100% regenerated PA 6, ecoBack or comfortBack^{eco} backing

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

Owner of the declaration
modulyss
Zevensterrestraat 21
9240 Zele
Belgium

Declaration number
EPD-MOD-20210149-CBC1-EN

Declared product / declared unit
1 m² tufted carpet tiles with a surface pile of 100% regenerated PA 6 and an ecoBack or comfortBack^{eco} backing.

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 modular carpet tiles with ecoBack or comfortBack^{eco}, a pile material of PA 6 with 100% recycled content and a maximum total pile weight of 1300 g/m^2. The products are produced in Zele, Belgium
LCA results for products with a maximum total pile weight of 500 g/m^2 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 declaration is only valid in conjunction with a valid *GUT-PRODIS* license of the product.

Issue date
08/07/2021

Valid to
07/07/2026

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

Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

Angela Schindler
(Independent verifier)

Product

Product description/Product definition
Tufted carpet tiles having a surface pile of 100% regenerated polyamide 6 and an ecoBack or comfortBack^{eco} backing.
The colour of the carpet is generated either by solution-dyed yarn or aqueous dyeing methods.
The total recycled content amounts to at least 62% with a total pile weight of 1300 g/m^2 and a comfortBack^{eco} backing and at least 59% with a total pile weight of 1300 g/m^2 and an ecoBack backing.

The declaration applies to a group of products with a maximum total pile weight of 1300 g/m^2.
LCA results for products with a maximum total pile weight of 500 g/m^2 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').
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 *DIN 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 professional areas. The use class can be found on the technical data sheet of the product.

Technical Data

Name	Value	Unit
Type of manufacture	Tufted tiles, solution dyed yarn or aqueous dyeing methods	-
Product Form	Tiles 50 cm x 50 cm	-
Secondary backing	ecoBack or comfortBackeco	-
Yarn type	100% regenerated polyamide 6	-
Total pile weight	max. 1300	g/m²
Total carpet weight	max. 5000	g/m²

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.pro-dis.info) or on the manufacturer's technical information section (www.modulyss.com).

Base materials/Ancillary materials

Name	Value	Unit
Polyamide 6	26,0	%
Polyester	10,8	%
Polypropylene	0.6	%
Limestone	32,8	%
Aluminiumhydroxide	10,1	%
SBR-latex	9,8	%
Polyolefin	8,8	%
Glass fibre	0,2	%
Additives	0,8	%

This product contains substances listed in the *ECHA candidate list* (16.01.2020) or other carcinogenic, mutagenic and 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	m²
Conversion factor to 1 kg	5	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 annexe, 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 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:
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. The indicated values refer to the declared functional unit of all products with a total pile weight of 1300 g/m^2.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck, EURO 0-6 mix)	0.0117	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	55	%

Installation in the building (A5)

Name	Value	Unit
Material loss	0.15	kg

Polyethene packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant. Cardboard packaging waste is considered 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 m^2 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. The effects of Module B2 need to be calculated on the basis of this useful life 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.modulyss.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)	5	kg
Collected separately (scenario 3)	5	kg
Landfilling (scenario 1)	5	kg
Energy recovery (scenario 2)	5	kg
Energy recovery (scenario 3)	2.844	kg
Recycling (scenario 3)	2.156	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 (61.9%), hard coal (26.8%) and petrol coke (11.3%).
The inorganic material is substantially integrated in 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 1300 g/m². LCA results for products with a maximum total pile weight of 500 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)

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.]	7.69E+0	2.98E-1	6.55E-1	0.00E+0	2.91E-1	1.66E-2	6.36E+0	6.42E+0	3.40E-1	-2.02E-2	0.00E+0	-4.21E-1	-3.58E-1
ODP	[kg CFC11-Eq.]	1.79E-8	5.21E-17	5.36E-10	0.00E+0	1.21E-8	2.90E-18	2.31E-15	3.20E-15	1.15E-15	-3.06E-16	0.00E+0	-6.25E-15	-2.17E-15
AP	[kg SO_2-Eq.]	2.27E-2	1.23E-3	8.56E-4	0.00E+0	1.14E-3	6.86E-5	4.43E-3	4.66E-3	8.81E-4	-2.33E-5	0.00E+0	-4.79E-4	-1.28E-3
EP	[kg $(PO_4)^{3-}$-Eq.]	4.48E-3	3.14E-4	1.78E-4	0.00E+0	3.17E-4	1.75E-5	1.10E-3	1.15E-3	9.56E-4	-3.20E-6	0.00E+0	-6.62E-5	-1.69E-4
POCP	[kg ethene-Eq.]	1.24E-3	-5.28E-4	2.84E-5	6.29E-5	1.47E-4	-2.94E-5	2.70E-4	2.00E-4	7.93E-5	-2.14E-6	0.00E+0	-4.44E-5	-1.20E-4
ADPE	[kg Sb-Eq.]	7.42E-6	2.64E-8	2.30E-7	0.00E+0	4.43E-6	1.47E-9	2.01E-7	2.14E-7	6.52E-8	-3.77E-9	0.00E+0	-7.74E-8	-2.80E-7
ADPF	[MJ]	1.52E+2	4.06E+0	4.80E+0	0.00E+0	6.77E+0	2.26E-1	3.41E+0	4.28E+0	5.07E+0	-2.91E-1	0.00E+0	-6.08E+0	-3.23E+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]	6.87E+1	2.27E-1	2.49E+0	0.00E+0	1.24E+0	1.26E-2	5.41E-1	7.99E-1	3.79E-1	-7.88E-2	0.00E+0	-1.61E+0	-5.08E-1
PERM	[MJ]	3.90E-1	0.00E+0	-3.90E-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]	6.91E+1	2.27E-1	2.10E+0	0.00E+0	1.24E+0	1.26E-2	5.41E-1	7.99E-1	3.79E-1	-7.88E-2	0.00E+0	-1.61E+0	-5.08E-1
PENRE	[MJ]	1.26E+2	4.07E+0	5.28E+0	0.00E+0	7.86E+0	2.27E-1	3.78E+1	3.88E+1	5.23E+0	-3.55E-1	0.00E+0	-7.39E+0	-3.26E+1
PENRM	[MJ]	3.43E+1	0.00E+0	-2.15E-1	0.00E+0	0.00E+0	0.00E+0	-3.41E+1	-3.41E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	1.61E+2	4.07E+0	5.06E+0	0.00E+0	7.86E+0	2.27E-1	3.73E+0	4.79E+0	5.23E+0	-3.55E-1	0.00E+0	-7.39E+0	-3.26E+1
SM	[kg]	1.91E+0	0.00E+0	5.73E-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	[m³]	1.90E-1	2.60E-4	6.32E-3	0.00E+0	4.13E-3	1.45E-5	1.98E-2	2.00E-2	4.82E-5	-7.70E-5	0.00E+0	-1.58E-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]	3.79E-3	2.05E-10	1.14E-4	0.00E+0	5.90E-10	1.14E-11	1.25E-8	1.27E-8	9.40E-10	-7.95E-11	0.00E+0	-1.65E-9	-2.45E-9
NHWD	[kg]	8.56E-1	6.05E-4	6.06E-2	0.00E+0	5.62E-3	3.37E-5	1.16E+0	1.16E+0	4.98E+0	-1.65E-4	0.00E+0	-3.41E-3	-2.38E-1
RWD	[kg]	3.21E-3	4.93E-6	1.00E-4	0.00E+0	3.32E-4	2.74E-7	1.30E-4	2.03E-4	6.07E-5	-2.54E-5	0.00E+0	-5.19E-4	-1.31E-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]	1.99E-2	0.00E+0	1.30E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.26E+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	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	2.96E-1	0.00E+0	0.00E+0	0.00E+0	8.75E+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	5.45E-1	0.00E+0	0.00E+0	0.00E+0	1.62E+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

References

EN 1307
DIN EN 1307: 2014+A1:2016: Textile 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

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: 2012-04: 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 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

Regulation (EU) No. 305/2011
Regulation No. 305/2011 Construction Products Regulation (CPR) of the European Council and of the European Parliament, April 2011

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 3.6
ecoinvent, Zurich, Switzerland, database version 3.6, published September 2019

GaBi database 2021-1
GaBi Software-System and Database for Life Cycle Engineering, thinkstep AG, Leinfelden-Echterdingen, 2021-1

IBU 2021
IBU (2016): 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), Januar 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

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 (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: 25.03.2014 (Status: 27.06.2018)

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

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

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

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

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Author of the Life Cycle Assessment
Gemeinschaft umweltfreundlicher Teppichboden (GUT) e.V.
Schönebergstraße 2
52068 Aachen
Germany

Tel +49 (0)241 96843 410
Fax +49 (0)241 96843 400
Mail mail@gut-ev.de
Web **www.gut-ev.org**

Owner of the Declaration
modulyss
Zevensterrestraat 21
9240 Zele
Belgium

Tel +32 (0)52 45 72 11
Fax +32 (0)52 44 90 99
Mail info@modulyss.com
Web **www.modulyss.com**

EPD

Environmental Product Declaration

GUT/Prodis ID:

BE1E1ACC

modulyss

MOSS ecoBack

surface pile weight: 580 g/m²

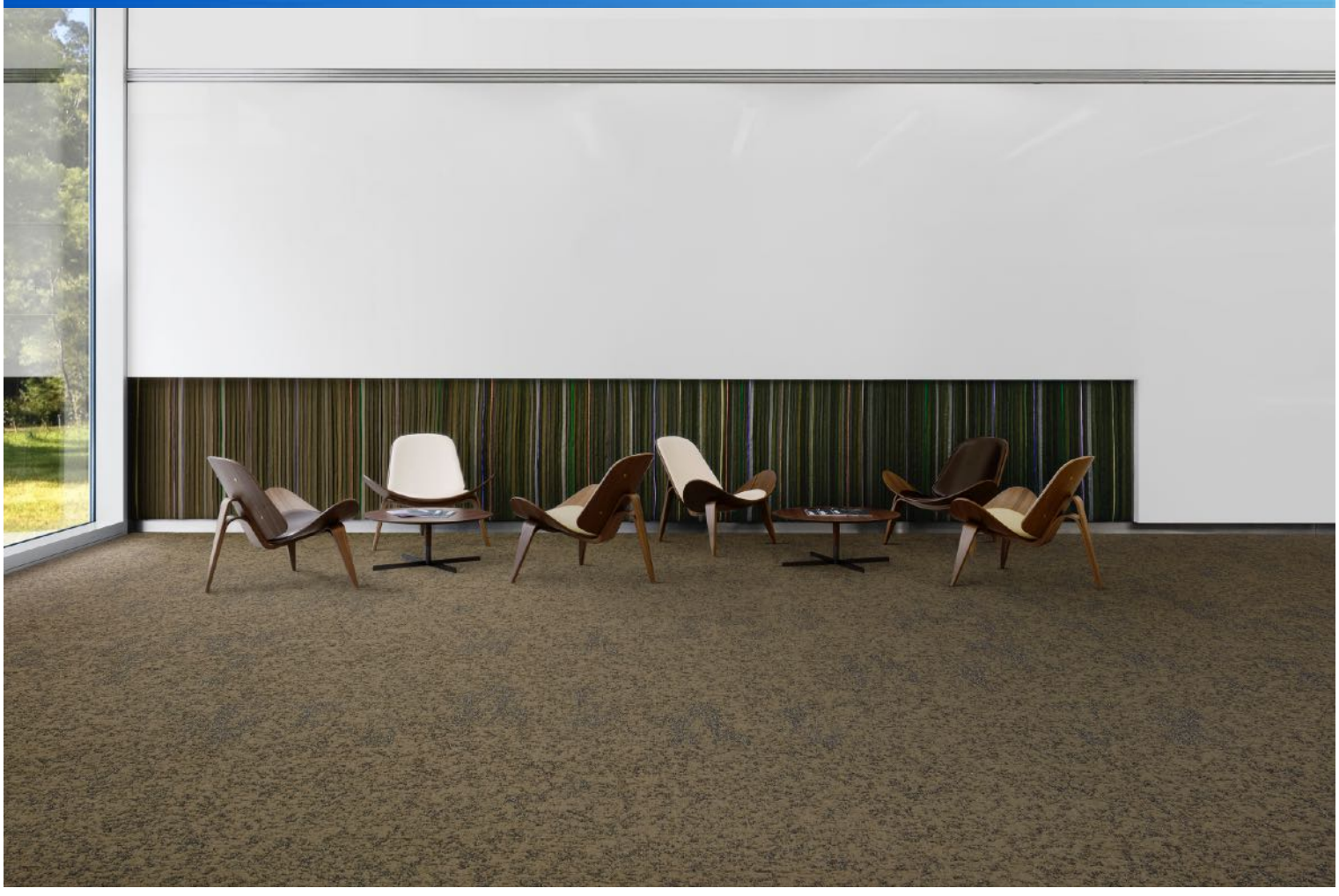
pile material: polyamide 6 with 100% recycled content

backing: ecoBack

These EPD data are only valid in combination with the environmental product declaration EPD-MOD-20210149-CBC1-EN published by Institut Bauen und Umwelt e.V. (IBU) and a GUT/Prodis license

---

This data set gives product specific LCA results based on the calculation procedure described in the above mentioned EPD.



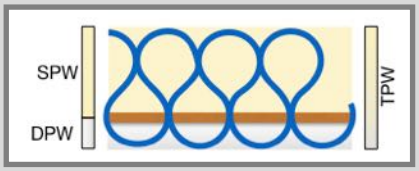
Calculation method for similar Products of the EPD document

The EPD document is valid for all products with a surface pile weight lower or equal to the declared maximum pile weight of 1300 g/m².
The respective declaration number is EPD-MOD-20210149-CBC1-EN.

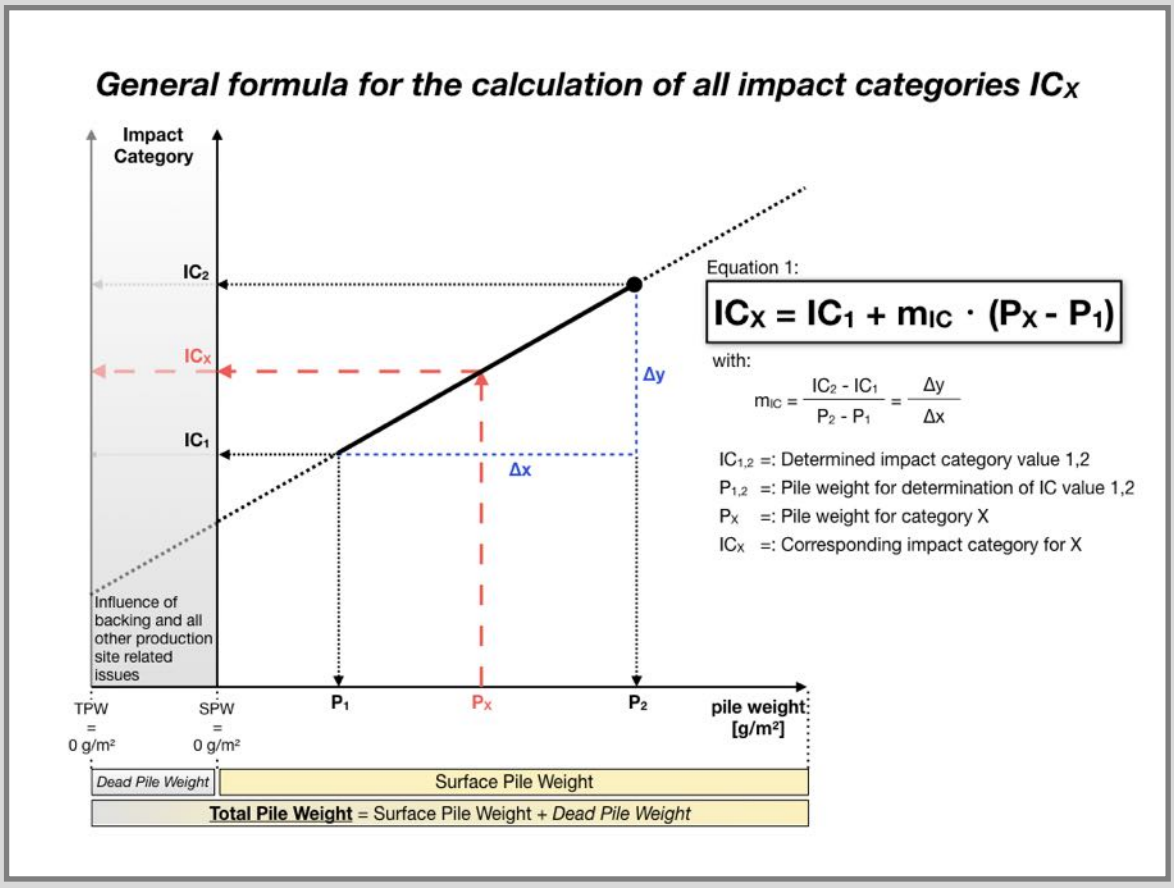
This document indicates more specific LCA results for (a) product(s) with identical material compositions and production parameters. The product(s) belong(s) to the same family of products and only differ in its/their pile weight(s).

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 ICx.

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.

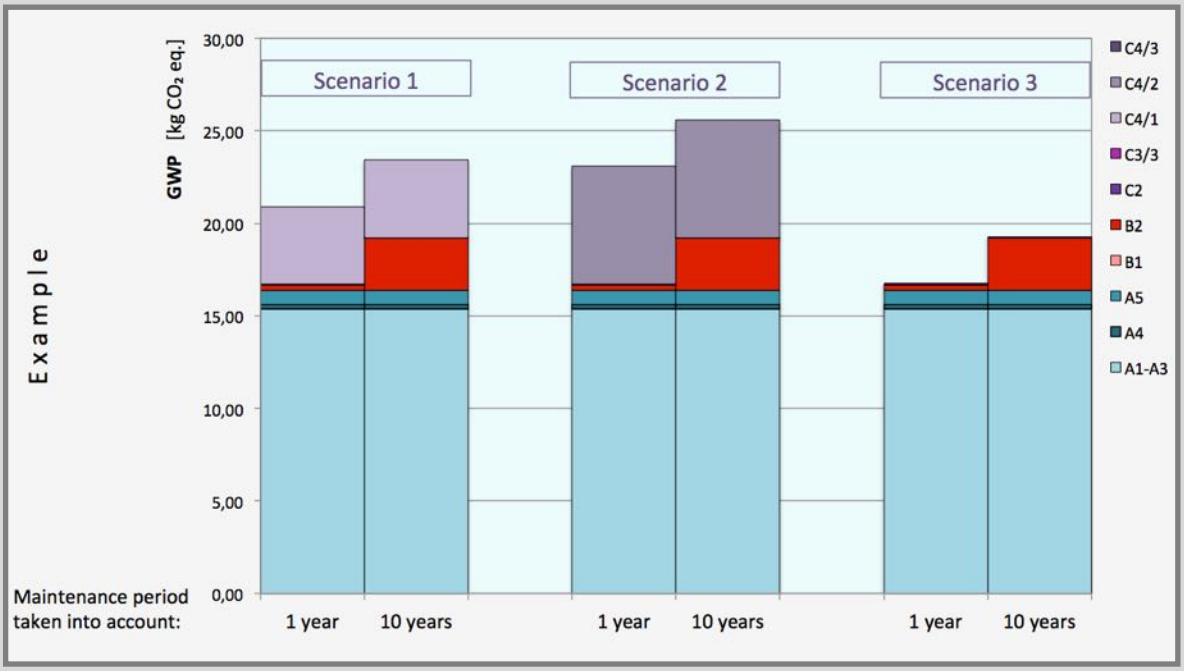
Reference service life (RSL)
The actual service life of textile floor coverings depends on a wide range of various impact factors such as the allocation of the application area to the use class, maintenance, intensity of use and most often fashion and building related aspects. Therefore, technical service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

Product description

Name	Value	Unit
Type of manufacture	tufted tiles	-
Yarn type	polyamide 6 with 100% recycled content	-
Total pile weight	880	g/m²
Surface pile weight	580	g/m²
Dead pile weight	290	g/m²
Secondary backing	ecoBack	-
Product Form	tiles 50 cm x 50 cm	-
Max. total carpet weight	4580	g/m²

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6	19,2	%
Polyester	11,8	%
Polypropylene	0,7	%
Limestone	35,8	%
Aluminiumhydroxide	11,0	%
SBR-Latex	10,7	%
Polyolefin	9,6	%
Glass fibre	0,2	%
Additives	0,9	%
Recycled content out of total weight	59 %	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m²
Conversion factor to 1 kg	4,6	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)	0,0107	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	55	%

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)	4,58	kg/m²
Collected separately (scenario 3)	4,58	kg/m²
Landfilling (scenario 1)	4,58	kg/m²
Energy recovery (scenario 2)	4,58	kg/m²
Energy recovery (scenario 3)	2,42	kg/m²
Recycling (scenario 3)	2,16	kg/m²

LCA: Results for MOSS ecoBack

(calculated with a total pile weight of 880 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]	6,89E+00	2,74E-01	6,13E-01	0,00E+00	2,91E-01	1,52E-02	5,80E+00	5,86E+00	3,11E-01	-2,69E-02	0,00E+00	-6,44E-01	-3,58E-01
ODP	[kg CFC11-eq]	1,28E-08	4,78E-17	3,84E-10	0,00E+00	1,21E-08	2,65E-18	2,13E-15	2,95E-15	1,05E-15	-4,10E-16	0,00E+00	-9,74E-15	-2,17E-15
AP	[kg SO2-eq]	1,85E-02	1,13E-03	6,93E-04	0,00E+00	1,14E-03	6,28E-05	3,32E-03	3,53E-03	8,07E-04	-3,11E-05	0,00E+00	-7,40E-04	-1,28E-03
EP	[kg PO4)3-eq]	3,55E-03	2,88E-04	1,40E-04	0,00E+00	3,17E-04	1,60E-05	8,08E-04	8,53E-04	8,76E-04	-4,28E-06	0,00E+00	-1,02E-04	-1,69E-04
POCP	[kg ethen-eq]	1,02E-03	-4,85E-04	2,12E-05	6,29E-05	1,47E-04	-2,69E-05	2,05E-04	1,41E-04	7,26E-05	-2,86E-06	0,00E+00	-6,82E-05	-1,20E-04
ADPE	[kg Sb-eq]	6,19E-06	2,42E-08	1,93E-07	0,00E+00	4,43E-06	1,35E-09	1,94E-07	2,06E-07	5,97E-08	-5,04E-09	0,00E+00	-1,20E-07	-2,80E-07
ADPF	[MJ]	1,43E+02	3,73E+00	4,50E+00	0,00E+00	6,77E+00	2,07E-01	2,99E+00	3,79E+00	4,64E+00	-3,87E-01	0,00E+00	-9,29E+00	-3,23E+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]	5,14E+01	2,09E-01	1,97E+00	0,00E+00	1,24E+00	1,16E-02	5,03E-01	7,39E-01	3,48E-01	-1,06E-01	0,00E+00	-2,51E+00	-5,08E-01
PERM	[MJ]	3,90E-01	0,00E+00	-3,90E-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	0,00E+00
PERT	[MJ]	5,18E+01	2,09E-01	1,58E+00	0,00E+00	1,24E+00	1,16E-02	5,03E-01	7,39E-01	3,48E-01	-1,06E-01	0,00E+00	-2,51E+00	-5,08E-01
PENRE	[MJ]	1,17E+02	3,74E+00	4,97E+00	0,00E+00	7,86E+00	2,08E-01	3,73E+01	3,83E+01	4,79E+00	-4,73E-01	0,00E+00	-1,13E+01	-3,26E+01
PENRM	[MJ]	3,43E+01	0,00E+00	-2,15E-01	0,00E+00	0,00E+00	0,00E+00	-3,41E+01	-3,41E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,51E+02	3,74E+00	4,75E+00	0,00E+00	7,86E+00	2,08E-01	3,29E+00	4,26E+00	4,79E+00	-4,73E-01	0,00E+00	-1,13E+01	-3,26E+01
SM	[kg]	1,47E+00	0,00E+00	4,41E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,80E-01
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	0,00E+00
FW	[m³]	1,37E-01	2,38E-04	4,71E-03	0,00E+00	4,13E-03	1,33E-05	1,84E-02	1,86E-02	4,42E-05	-1,03E-04	0,00E+00	-2,45E-03	-3,08E-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]	2,57E-03	1,88E-10	7,71E-05	0,00E+00	5,90E-10	1,04E-11	1,24E-08	1,25E-08	8,61E-10	-1,06E-10	0,00E+00	-2,53E-09	-2,45E-09
NHWD	[kg]	6,96E-01	5,56E-04	5,57E-02	0,00E+00	5,62E-03	3,09E-05	1,15E+00	1,15E+00	4,56E+00	-2,21E-04	0,00E+00	-5,26E-03	-2,38E-01
RWD	[kg]	3,14E-03	4,53E-06	9,78E-05	0,00E+00	3,32E-04	2,51E-07	1,22E-04	1,89E-04	5,56E-05	-3,40E-05	0,00E+00	-8,08E-04	-1,31E-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]	1,37E-02	0,00E+00	1,30E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,26E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	2,66E-01	0,00E+00	0,00E+00	0,00E+00	7,76E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	4,91E-01	0,00E+00	0,00E+00	0,00E+00	1,44E+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