EPD

Environmental Product Declaration

GUT/Prodis ID:

DA45FBB8

Interface

Open Air 404 CQuest Bio

surface pile weight: 370 g/m²

pile material: polyamide 6 with 100% recycled content

backing: CQuest Bio backing, heavy backing with textile bottom

These EPD data are only valid in combination with the environmental product declaration EPD-INT-20200181-CCC1-EN published by Institut Bauen und Umwelt e.V. (IBU) and a GUT/Prodis license

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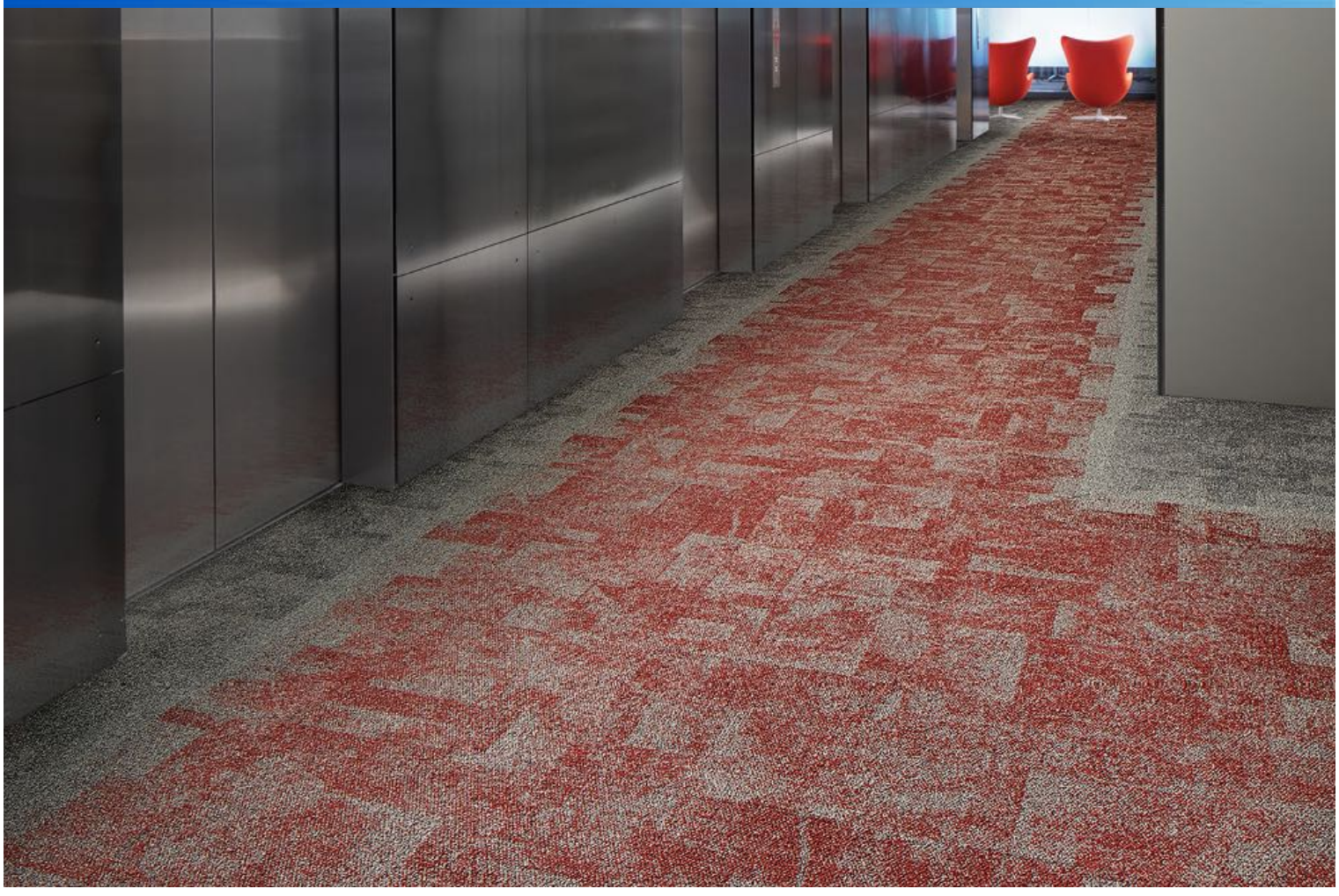
This data set gives product specific LCA results based on the calculation procedure described in the above mentioned EPD.



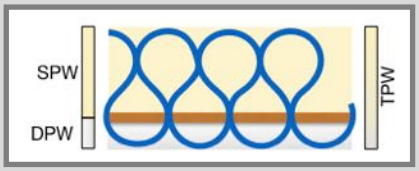
Calculation method for similar Products of the EPD document

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-20200181-CCC1-EN .

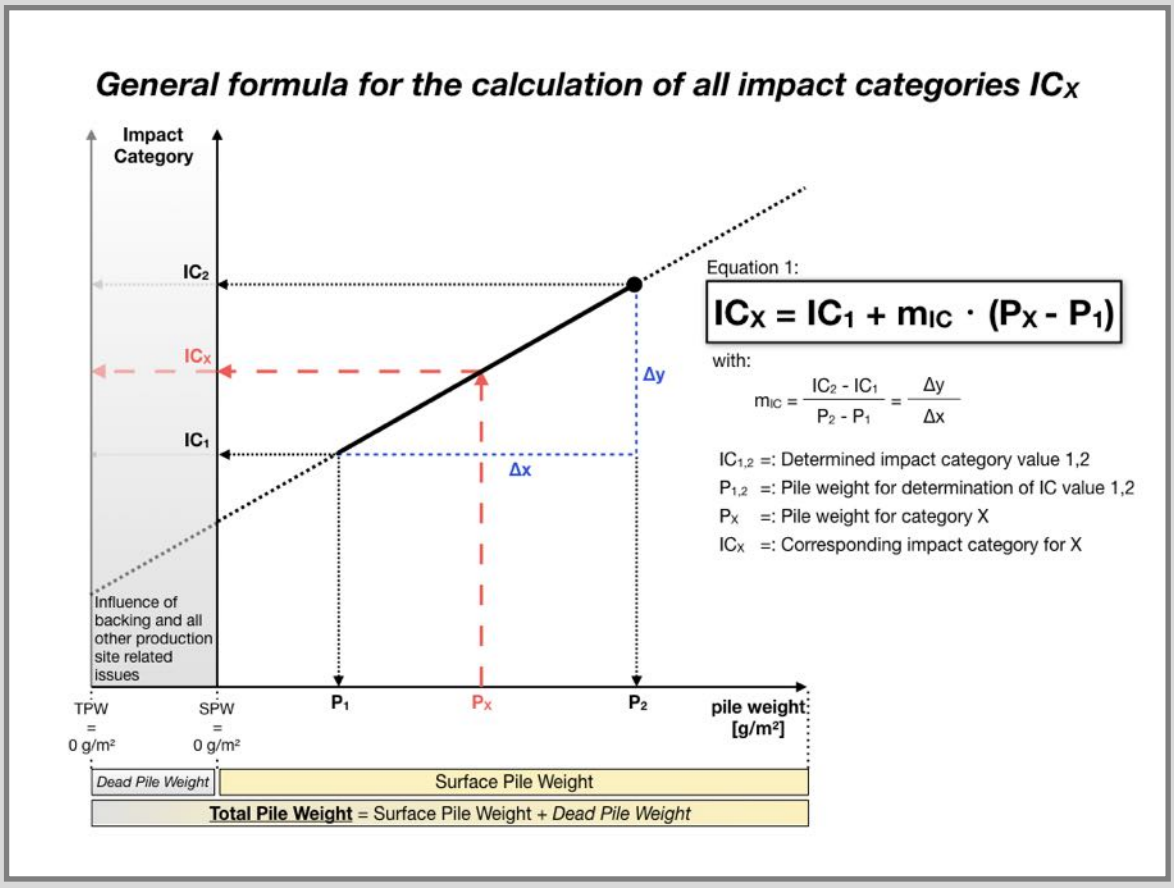
This document indicates more specific LCA results for (a) product(s) with identical material compositions and production parameters. The product(s) belong(s) to the same family of products and only differ in its/their pile weight(s).

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.

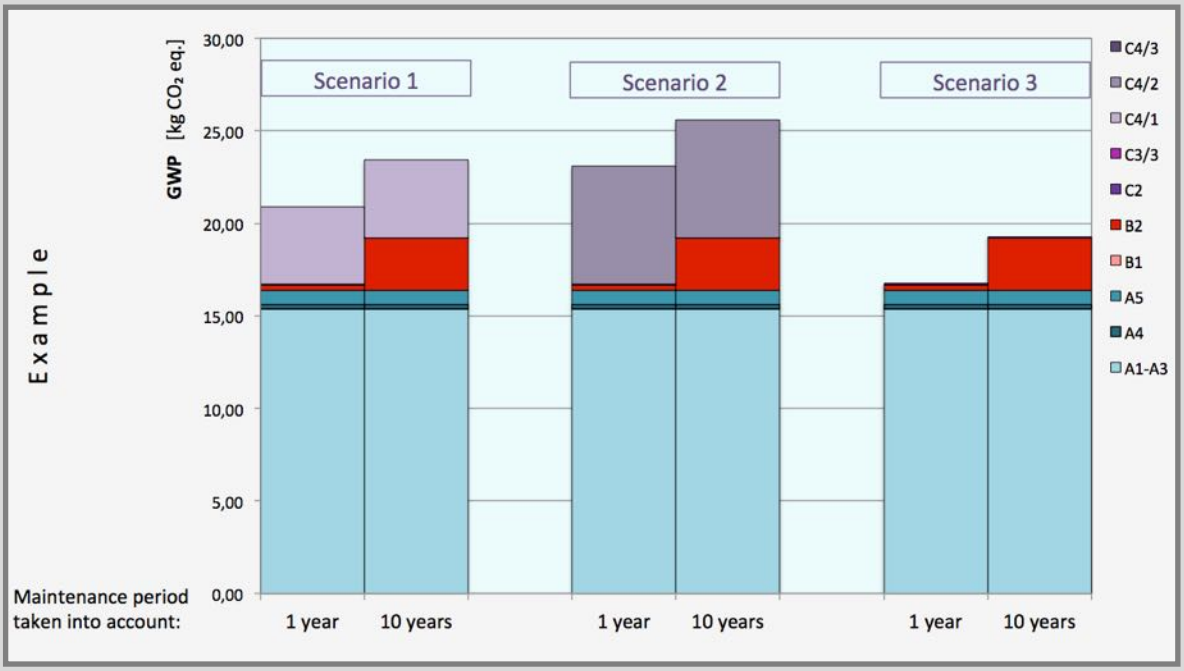
Reference service life (RSL)
The actual service life of textile floor coverings depends on a wide range of various impact factors such as the allocation of the application area to the use class, maintenance, intensity of use and most often fashion and building related aspects. Therefore, technical service 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 Open Air 404 CQuest Bio

Product description

Name	Value	Unit
Type of manufacture	tufted tiles	-
Yarn type	polyamide 6 with 100% recycled content	-
Total pile weight	610	g/m²
Surface pile weight	370	g/m²
Dead pile weight	240	g/m²
Secondary backing	CQuest Bio backing, heavy backing with textile bottom	-
Product Form	tiles 50 cm x 50 cm	-
Max. total carpet weight	4490	g/m²

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6	13,6	%
Polyester	2,7	%
Polypropylene	1,1	%
Limestone	57,3	%
Aluminiumhydroxide	7,6	%
Ethylene vinyl acetate (EVA)	8,4	%
Wood resin	6,4	%
Glass fibre	0,8	%
Additives	2,3	%
Product specific recycled content minimum	80	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m²
Conversion factor to 1 kg	0,22	m²/kg
Mass reference	4,5	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)	0,0105	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	55	%

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,13	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)	4,49	kg/m²
Collected separately (scenario 3)	4,49	kg/m²
Landfilling (scenario 1)	4,49	kg/m²
Energy recovery (scenario 2)	4,49	kg/m²
Energy recovery (scenario 3)	1,54	kg/m²
Recycling (scenario 3)	2,95	kg/m²

LCA: Results for Open Air 404 CQuest Bio (calculated with a total pile weight of 610 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]	3,13E+00	2,68E-01	4,68E-01	0,00E+00	2,92E-01	1,48E-02	5,05E+00	5,11E+00	1,20E+00	-1,74E-02	0,00E+00	-2,53E-01	-2,51E-01
ODP	[kg CFC11-eq]	3,27E-08	4,39E-17	9,83E-10	0,00E+00	1,21E-08	2,45E-18	2,03E-15	2,77E-15	9,82E-16	-2,45E-16	0,00E+00	-3,46E-15	-1,47E-15
AP	[kg SO2-eq]	1,32E-02	1,13E-03	5,07E-04	0,00E+00	1,16E-03	6,26E-05	2,52E-03	2,73E-03	8,21E-04	-2,19E-05	0,00E+00	-3,13E-04	-9,80E-04
EP	[kg PO4)3-eq]	1,02E-02	2,84E-04	3,35E-04	0,00E+00	3,17E-04	1,57E-05	6,02E-04	6,47E-04	8,58E-04	-2,73E-06	0,00E+00	-3,92E-05	-1,20E-04
POCP	[kg ethen-eq]	8,64E-04	-4,75E-04	1,53E-05	6,29E-05	1,48E-04	-2,64E-05	1,57E-04	9,39E-05	9,27E-05	-2,00E-06	0,00E+00	-2,88E-05	-8,71E-05
ADPE	[kg Sb-eq]	1,18E-05	2,25E-08	3,62E-07	0,00E+00	4,43E-06	1,25E-09	2,10E-07	2,22E-07	5,86E-08	-3,24E-09	0,00E+00	-4,62E-08	-1,90E-07
ADPF	[MJ]	6,98E+01	3,65E+00	2,30E+00	0,00E+00	6,76E+00	2,02E-01	2,80E+00	3,57E+00	4,52E+00	-2,45E-01	0,00E+00	-3,56E+00	-2,31E+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]	4,35E+01	2,05E-01	2,08E+00	0,00E+00	1,20E+00	1,14E-02	1,38E+01	1,40E+01	3,28E-01	-6,51E-02	0,00E+00	-9,22E-01	-3,45E-01
PERM	[MJ]	1,36E+01	0,00E+00	-3,39E-01	0,00E+00	0,00E+00	0,00E+00	-1,33E+01	-1,33E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	5,71E+01	2,05E-01	1,74E+00	0,00E+00	1,20E+00	1,14E-02	4,86E-01	7,10E-01	3,28E-01	-6,51E-02	0,00E+00	-9,22E-01	-3,45E-01
PENRE	[MJ]	6,39E+01	3,66E+00	2,74E+00	0,00E+00	7,86E+00	2,03E-01	1,43E+01	1,52E+01	4,66E+00	-3,01E-01	0,00E+00	-4,36E+00	-2,34E+01
PENRM	[MJ]	1,15E+01	0,00E+00	-2,69E-01	0,00E+00	0,00E+00	0,00E+00	-1,12E+01	-1,12E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	7,53E+01	3,66E+00	2,47E+00	0,00E+00	7,86E+00	2,03E-01	3,10E+00	4,04E+00	4,66E+00	-3,01E-01	0,00E+00	-4,36E+00	-2,34E+01
SM	[kg]	3,48E+00	0,00E+00	1,04E-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	2,60E-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]	3,90E-01	2,38E-04	1,22E-02	0,00E+00	4,27E-03	1,32E-05	1,55E-02	1,57E-02	5,72E-05	-7,54E-05	0,00E+00	-1,07E-03	-2,19E-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]	2,77E-03	1,70E-07	8,31E-05	0,00E+00	9,63E-10	9,45E-09	1,84E-08	4,23E-08	1,70E-08	-1,20E-10	0,00E+00	-1,74E-09	-5,89E-09
NHWD	[kg]	8,47E-01	5,59E-04	6,95E-02	0,00E+00	5,63E-03	3,11E-05	1,47E+00	1,47E+00	4,47E+00	-1,38E-04	0,00E+00	-1,98E-03	-1,62E-01
RWD	[kg]	1,90E-03	4,52E-06	6,11E-05	0,00E+00	3,38E-04	2,52E-07	1,19E-04	1,87E-04	5,62E-05	-2,22E-05	0,00E+00	-3,15E-04	-8,94E-05
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	1,21E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,70E+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	1,54E-01	0,00E+00	0,00E+00	0,00E+00	3,71E+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	2,95E-01	0,00E+00	0,00E+00	0,00E+00	7,28E+00	5,56E+01	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