# **ENVIRONMENTAL PRODUCT DECLARATION**

as per /ISO 14025/ and /EN 15804/

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-20170098-CBC1-EN
Issue date	09/06/2017
Valid to	08/06/2022

**Tufted carpet tiles** with a maximum total pile weight of 1100 g/m<sup>2</sup>, a pile material of polyamide 6.6, colored by aqueous dyeing methods, Back2Back backing

## modulyss®

Institut Bauen und Umwelt e.V.

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





## **General Information**

### modulyss®

#### Programme holder

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

## Declaration number

EPD-MOD-20170098-CBC1-EN

#### This Declaration is based on the Product Category Rules: Floor coverings, 07.2016 (PCR tested and approved by the SVR)

## Issue date

09/06/2017

Valid to 08/06/2022

Wermanes

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

Mann

Dr. Burkhart Lehmann (Managing Director IBU)

## Product

#### Product description / Product definition

Tufted carpet tiles having a surface pile of polyamide 6.6 and a Back2Back backing.

Back2Back backing: Bitumen based heavy backing with recycled content. Recycled content includes recycled limestone and recycled production waste 'B2B' (see more information on the website www.modulyss.com).

The carpet is colored by aqueous dyeing methods. The percentage of the recycled content out of total weight depends on the total pile weight of the product. For a total pile weight of 1100 g/m<sup>2</sup> the recycled content amounts to 45%. For a total pile weight up to 600 g/m<sup>2</sup> the recycled content amounts to at least 50%.

The declaration applies to a group of products with a

## **Tufted carpet tiles**

max. total pile weight 1100 g/m<sup>2</sup> PA 6.6, aqueous dyeing methods, Back2Back backing

## Owner of the Declaration

modulyss Zevensterrestraat 21 9240 Zele Belgium

#### **Declared product / Declared unit**

1  $m^2$  tufted carpet tiles with a surface pile of PA 6.6 and a Back2Back backing.

#### Scope:

The manufacturer declaration applies to a group of similar products with a maximum total pile weight of 1100 g/m2.

The products are manufactured in the modulyss production site Zele, Belgium.

Specific LCA results of products having a lower total pile weight can be taken from the corresponding tables of the annex or can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex'). The result tables of the annex refer to categories of total pile weights in steps of 100 g/m<sup>2</sup>. The declaration is only valid in conjunction with a valid GUT-/PRODIS/ license of the product.

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 CEN Norm /EN 15804/ serves as the core PCR

Independent verification of the declaration according to /ISO 14025/

internally x externally

chindle

Angela Schindler (Independent verifier appointed by SVR)

maximum total pile weight of 1100 g/m<sup>2</sup>. LCA results are calculated for products with the maximum total pile weight.

More specific LCA results of products having a lower total pile weight can be taken from the corresponding tables of the annex. These result tables refer to categories of total pile weights in steps of 100 g/m<sup>2</sup>. 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 (www.modulyss.com).

#### Application

The products can be used in commercial areas. The use class as defined in /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.

#### **Technical Data**

#### **Constructional data**

Name	Value	Unit
Type of manufacture	Tufted tiles, aqueous	
rype of manufacture	dyeing methods	-
Product Form	Tiles 50 cm x 50 cm	-
Secondary backing	Back2Back backing	-
Yarn type	Polyamide 6.6	-
Total pile weight	max. 1100	g/m²
Total carpet weight	max. 5100	g/m <sup>2</sup>

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.modulyss.com).

## LCA: Calculation rules

#### **Declared Unit**

Name	Value	Unit
Declared unit	1	m <sup>2</sup>
Conversion factor to 1 kg	0.20	m²/kg
Mass reference	5.10	kg/m²

The declared unit refers to 1 m<sup>2</sup> produced textile floor covering. Output of module A5 'Assembly' is 1 m<sup>2</sup> 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.

#### Base materials / Ancillary materials

Name	Value	Unit
Polyamide 6.6	21.6	%
Polyester	3.5	%
Polypropylene	0.6	%
Limestone	50.0	%
Aluminiumhydroxide	5.8	%
SBR-latex/SBS-copolymer	5.1	%
Bitumen	13.0	%
Glass fibre	0.2	%
Additives	0.2	%

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.

#### 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.

#### <u>B1 Use:</u>

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').

#### <u>B3 - B7:</u>

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>0.1), generated electricity and steam are listed in the result table as exported energy.

C3-3: Collection of the carpet waste, 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 2017/, service pack 33 and from the /ecoinvent 3.3/ 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 up to 1100 g/m<sup>2</sup>. Specific information on products having a lower total pile weight can be taken from the annex.

Transport to the construction site (A	A4)	1
---------------------------------------	-----	---

Name	Value	Unit
Litres of fuel (truck, EURO 0-5 mix)	0.0102	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	85	%

#### Installation in the building (A5)

Name	Value	Unit
Material loss	0.15	kg
Dookoging wooto and installation woo	to are on	noidorod

Packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant.

Preparation of the floor and auxiliaries (adhesives, fixing agents, PET connectors, etc.) are not taken into account.

#### Maintenance (B2)

Indication per m<sup>2</sup> floor covering and per year (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	m <sup>3</sup>
Cleaning agent (wet cleaning)	0.09	kg
Electricity consumption	0.314	kWh
Eurthor information on cleaning a	nd maintar	00000000

Further information on cleaning and maintenance see <u>www.modulyss.com</u>

#### 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)	5.1	kg
Collected separately (scenario 3)	5.1	kg
Landfilling (scenario 1)	5.1	kg
Energy recovery (scenario 2)	5.1	kg
Energy recovery (scenario 3)	2.24	kg
Recycling (scenario 3)	2.86	kg

# Reuse, recovery and/or recycling potentials (D), relevant scenario information

Recovery or recycling potentials due to the three endof-life scenarios (module C) are indicated separately.

<u>Recycling in the cement industry (scenario 3)</u> /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 results are valid for all declared products with a maximum total pile weight of 1100 g/m<sup>2</sup>.

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 and C4/2 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. The CML characterisation factors version April 2015 are applied.

DESC		ION C	F THE	SYST	EM BO	UNDA	12015 ( X =	INCLU	DED IN	LCA: N	IND =	MOD	ULE N		ECLA	RED)
															BENEF	ITS AND
PROD	DUCT S	STAGE	CONST ON PRO	OCESS	USE STAGE END OF LIFE STAGE BEYON								ADS			
			STA	AGE				SY SY					STEM IDARIES			
			υ							<u> </u>			5		DOON	
a		bu	Transport from the gate to the site			e l	t	≣ I	Operational energy use	Operational water use	ion		Waste processing			
l√ Iteri	port	turi	ron Te s	yldr		and			l er	N N	tior	Dort	ces	sal		tial
w matei supply	Transport	fac	or f	Assembly	Use	ten	Kepair	bist	onal use	ion <i>a</i> use	nstr	Transport	bro	Disposal	Reuse-	secycling potential
Raw material supply	Tra	Manufacturing	ansport from th gate to the site	Ast	_	Maintenance	Repair Benlacement	Refurbishment	atio	erati	De-construction demolition	Tra	ste	Ë	מא	Recycling
<u>م</u>		Ξ	ga			2		-   2	bei	Эре	De		Vas			
	A2	A3		4.5	<b>D4</b>			4 DC	-	-	C1	C2		C4		<u> </u>
A1		-	A4	A5	B1		33 B	-	B6	B7					_	D
X	Х	X	X	X	X					MND	MND	Х	X	X		Х
RESU	JLTS	OF TH	IE LCA	\ - EN\	/IRONN	IENTA		CT: 1 m	<sup>2</sup> floorc	overin	g			1		
Param eter	U	nit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	1	<b>)</b>	D/1	D/2	D/3
GWP		O <sub>2</sub> -Eq.]	1.72E+1	-							_				-2.86E+0	-5.79E-1
ODP AP		<u>C11-Eq.]</u> O <sub>2</sub> -Eq.]	2.40E-8		4 7.03E-1 4 9.18E-				5 2.11E-12 5 3.75E-3		_	13 -3.05 3 -2.52		.00E+0 .00E+0	-5.33E-11 -4.42E-3	-1.51E-11 -2.25E-3
EP	[kg (PC	D₄)³Eq.]	5.08E-3	3 2.23E-	4 1.91E-	4 0.00E+	0 3.21E-	4 1.24E-5	5 9.39E-4	8.13E-6	3 1.00E-	3 -2.66	6E-5 0.	.00E+0	-4.67E-4	-2.35E-4
POCP		ene-Eq.]	3.34E-3	-		_			-					.00E+0	-4.22E-4	-2.89E-4
ADPE ADPF		b-Eq.] //J]	1.04E-5 3.09E+2	-	8 3.15E- 0 9.27E+		-		-		_			.00E+0	-5.46E-7 -4.01E+1	-2.19E-7
	GW	P = Glob	al warmin	ng potenti	al; ODP =	Depletion	potential of	of the strate	spheric oz	one layer	; AP = Ac	dificatio	n poten	tial of la	nd and wa	ater; EP =
Captio	n Eutr	ophicatio	on potenti	al; POCP				spheric ozo					Abiotic	depletio	n potentia	l for non-
RESL		OF TH				fossil resources; ADPF = Abiotic depletion potential for fossil resources RESULTS OF THE LCA - RESOURCE USE: 1 m <sup>2</sup> floorcovering										
THE OU				V - IVEC	JUUKU	E USE:	1 m² ti	oorcove	ering							
Parame		Unit	A1-A3	A4	A5	B1	1 m² fi B2	C2	ering C3/2	C3/3	C4/1	D	,	D/1	D/2	D/3
Parame PER	eter	[MJ] 3	<b>A1-A3</b> 3.41E+1	<b>A4</b> 1.48E-1	<b>A5</b> 1.02E+0	<b>B1</b> 0.00E+0	<b>B2</b> 9.87E-1	<b>C2</b> 8.24E-3	<b>C3/2</b> 4.25E-1	1.88E-1	3.99E-1	-4.11	E-1 0.0	00E+0	-7.19E+0	-5.71E-1
Parame PERI PERI	eter I E I M I	[MJ] 3 [MJ] 0	A1-A3 3.41E+1 0.00E+0	A4 1.48E-1 0.00E+0	A5 1.02E+0 0.00E+0	<b>B1</b> 0.00E+0 0.00E+0	<b>B2</b> 9.87E-1 0.00E+0	C2 8.24E-3 0.00E+0	<b>C3/2</b> 4.25E-1 0.00E+0	1.88E-1 0.00E+0	3.99E-1	-4.11 0.00E	E-1 0.0	00E+0 00E+0	-7.19E+0 0.00E+0	-5.71E-1 0.00E+0
Parame PERI PERI PER	eter I E I M I T I	[MJ] 3 [MJ] 0 [MJ] 3	A1-A3 3.41E+1 0.00E+0 3.41E+1	A4 1.48E-1 0.00E+0 1.48E-1	A5 1.02E+0 0.00E+0 1.02E+0	<b>B1</b> 0.00E+0 0.00E+0 0.00E+0	<b>B2</b> 9.87E-1 0.00E+0 9.87E-1	C2 8.24E-3 0.00E+0 8.24E-3	C3/2 4.25E-1 0.00E+0 4.25E-1	1.88E-1 0.00E+0 1.88E-1	3.99E- 0.00E+ 3.99E-	-4.11 0 0.00E	E-1 0.0 E+0 0.0 E-1 0.0	00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0	-5.71E-1 0.00E+0 -5.71E-1
Parame PERI PERI	eter I	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2	A4 1.48E-1 0.00E+0	A5 1.02E+0 0.00E+0	<b>B1</b> 0.00E+0 0.00E+0	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1	<b>C3/2</b> 4.25E-1 0.00E+0	1.88E-1 0.00E+0	3.99E- 0.00E+ 3.99E- 5.45E+	-4.11 0 0.008 -4.11 0 -2.75	E-1 0.0 E+0 0.0 E-1 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0	-5.71E-1 0.00E+0
Parame PERI PERI PERF PENF PENF	eter         I           E         I           M         I           T         I           RE         I           RE         I           RM         I           RT         I	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2 7.91E+1 3.26E+2	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 2.95E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0	B1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 8.05E+0	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1	3.99E-' 0.00E+ 3.99E-' 5.45E+ 0.00E+ 5.45E+	-4.11 0 0.00E -4.11 0 -2.75 0 0.00E 0 -2.75	E-1 0.0 E+0 0.0 E-1 0.0 E+0 0.0 E+0 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1
Parama PERI PERI PENF PENF PENF SM	eter         I           E                     M                     T                     RE                     RM                     RT	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [MJ] 3	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2 7.91E+1 3.26E+2 2.49E+0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 2.95E+0 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 7.28E-2	B1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	B2 9.87E-1 9.87E-1 8.05E+0 0.00E+0 8.05E+0 0.00E+0	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0	3.99E- 0.00E+ 3.99E- 5.45E+ 0.00E+ 5.45E+ 0.00E+ 0.00E+	-4.11 0 0.006 -4.11 0 -2.75 0 0.006 0 -2.75 0 0.006	E-1 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0
Parama PERI PERI PENF PENF SM RSF	eter         I           E	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [MJ] 3 [kg] 2 [MJ] 0	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2 7.91E+1 3.26E+2 2.49E+0 0.00E+0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 2.95E+0 0.00E+0 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 7.28E-2 0.00E+0	B1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	B2 9.87E-1 9.87E-1 8.05E+0 0.00E+0 8.05E+0 0.00E+0 0.00E+0	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 0.00E+0	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0	3.99E- 0.00E+ 3.99E- 5.45E+ 0.00E+ 5.45E+ 0.00E+ 0.00E+ 0.00E+	-4.11 0.006 -4.11 0.2.75 0.006 0.2.75 0.006 0.006 0.006	E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0
Parama PER PER PEN PEN PEN SM RSF NRS	eter         I           E	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [kg] 2 [MJ] 0 [MJ] 0	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2 7.91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 7.28E-2 0.00E+0 0.00E+0	B1 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	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 8.05E+0 0.00E+0 0.00E+0 0.00E+0	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 0.00E+0 0.00E+0	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0	3.99E-' 0.00E+t 3.99E-' 5.45E+t 0.00E+t 0.00E+t 0.00E+t 0.00E+t	-4.11 0 0.006 -4.11 0 -2.75 0 0.006 0 -2.75 0 0.006 0 0.006 0 0.006	E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1
Paramo PERI PERI PENF PENF SM RSF	eter         I           E	[MJ] 3 [MJ] 0 [MJ] 2 [MJ] 7 [MJ] 7 [MJ] 3 [MJ] 3 [MJ] 0 [MJ] 0 [MJ] 0	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2 7.91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.61E-2	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 7.28E-2 0.00E+0 0.00E+0 3.14E-3	B1 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	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 4.25E-3	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 0.00E+0 0.00E+0 1.53E-5	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 2.68E-4	3.99E- 0.00E+ 3.99E- 5.45E+ 0.00E+ 5.45E+ 0.00E+ 0.00E+ 0.00E+ 1.30E-	-4.11 0.000 -4.11 02.75 0.000 02.75 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	E-1 0.0 E+0 0.0 E+1 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 -1.03E-2	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3
Paramo PER PER PENF PENF SM RSF NRS	eter         I           E            M            T            RE            RT            RT            F            F            F            F	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [MJ] 3 [MJ] 0 [MJ] 0 [MJ] 0 [MJ] 0 [MJ] 0 [MJ] 0	A1-A3 341E+1 0.00E+0 341E+1 2.47E+2 7.91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.661E-2 Use of re	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 newable	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+2 0.00E+0 0.00E+0 3.14E-3 primary 6	B1 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	B2 9.87E-1 9.87E-1 8.05E+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	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 0.00E+0 0.00E+0	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary energy	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 2.68E-4 ergy reso	3.99E-' 0.00E++ 3.99E-' 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E-t	-4.11 0 0.000 -4.11 0 -2.75 0 0.000 0 -2.75 0 0.000 0 0.000 0 0.000 0 0.000 5 -5.87 ed as ra	E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = U	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of
Parama PERI PERI PENF PENF SM RSF NRS FW	Eter I E I M I T I RE I RM I RT I F	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [kg] 2 [MJ] 0 [MJ] 0 [m <sup>3</sup> ] 0 PERE = 1 wable prion-rene	A1-A3 3.41E+1 0.00E+0 3.41E+1 2.47E+2 .91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 Use of regimes of re	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 anewable pergy ress imary en	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 7.28E-2 0.00E+0 0.00E+0 3.14E-3 primary e ources us ergy excli	B1 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 anergy ex	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 4.25E-3 cluding re v material -renewab	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable p s; PERT = le primary	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rrimary energy res	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources	3.99E- 0.00E+ 3.99E- 5.45E+ 0.00E+ 5.45E+ 0.00E+ 0.00E+ 0.00E+ 1.30E- 1.	-4.11 0.000 -4.11 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.2.75	E-1 0.0 E-0 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F sources PENRM	-7.19E+0 0.00E+0 -7.19E+0 4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.03E-2 ERM = L ; PENRE I = Use of	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non-
Parama PER PER PEN PEN PEN SM RSF NRS	eter         I           E         I           M         I           T         I           RE         I           RM         I           RT         I           RT         I           RT         I           F         I           F         I           renew         n           renew         n	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [kg] 2 [MJ] 0 [MJ] 1 [MJ] 1 [M] 1	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 2.91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 Use of rerimary environments wable primary environments 0.00E+0 0.0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 mewable bergy res imary en mergy res	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 7.28E-2 0.00E+0 0.00E+0 3.14E-3 primary e ources us ergy excl	B1 0.00E+0 0.0	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 v material -renewab	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable ps; PERT = primary s; PENRT	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rrimary energy re: Total use energy re: = Total us	1.88E-1 0.00E+0 1.88E-1 7.90E+1 7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources a se of non	3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E- sable prin used as r -renewat	-4.11 0.000 -4.11 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F sources PENRM ergy res	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L ; PENRE I = Use of ources; S	-5.71E-1 0.00E+0 -5.71E-1 8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- SM = Use
Parama PERI PERI PENF PENF SM RSF NRS FW	eter         I           E         I           M         I           T         I           RE         I           RM         I           RT         I           RT         I           RT         I           F         I           F         I           renew         n           renew         n	[MJ] 3 [MJ] 0 [MJ] 3 [MJ] 2 [MJ] 7 [MJ] 3 [kg] 2 [MJ] 0 [MJ] 1 [MJ] 1 [M] 1	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 2.91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 Use of rerimary environments wable primary environments 0.00E+0 0.0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 mewable bergy res imary en mergy res	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 7.28E-2 0.00E+0 0.00E+0 3.14E-3 primary e ources us ergy excl	B1 0.00E+0 0.0	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 4.25E-3 Cluding rer v material	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable ps; PERT = le primary s; PENRT =	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 8.25E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rrimary ene Total use energy res = Total use SF = Use	1.88E-1 0.00E+0 1.88E-1 7.90E+1 7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources a se of non	3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E- sable prin used as r -renewat	-4.11 0.000 -4.11 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F sources PENRM ergy res	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L ; PENRE I = Use of ources; S	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- M = Use
Parama PERI PERI PENI PENI PENI SIM RSF NRS FW	eter I	[MJ] 3 [MJ] 7 [MJ] 3 [MJ] 3 [MJ] 7 [MJ] 3 [MJ] 7 [MJ] 6 [MJ] 0 [MJ] 1 [MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[M	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 2.47E+2 2.47E+2 2.47E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 3.61E-2 Use of rerimary ery wable primary ery wable primary ery waterial	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 mewable bergy res imary en bergy res imary en	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 7.28E-2 0.00E+0 0.0	B1 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 a srav ding non sed as rav newable s	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 4.25E-3 cluding re v material -renewab v material secondary	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable p s; PERT = le primary s; PERT = le primary s; PERT =	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary ene Total use energy re: = Total use SF = Use ter	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-re	3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E- sable prinused as r -renewable preveable	-4.11 0.000 -4.11 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F sources PENRM ergy res	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L ; PENRE I = Use of ources; S	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- M = Use
Parama PERI PERI PENI PENI PENI SM RSF NRS FW Captio	eter I E M T I R E R M R T R F I F I F I F I F I I T S	[MJ] 3 [MJ] 7 [MJ] 3 [MJ] 3 [MJ] 7 [MJ] 3 [MJ] 7 [MJ] 6 [MJ] 0 [MJ] 1 [MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[MJ] 1 [[M	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 7.91E+1 2.26E+2 2.49E+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 1.64E+1 1.64E	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 mewable bergy res imary en bergy res imary en	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 7.28E-2 0.00E+0 0.0	B1 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 a srav ding non sed as rav newable s	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 4.25E-3 cluding re v material -renewab v material secondary	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable ps; PERT = le primary s; PENRT =	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary ene Total use energy re: = Total use SF = Use ter	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-re	3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E- sable prinused as r -renewable preveable	-4.11 0.000 -4.11 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F sources PENRM ergy res	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L ; PENRE I = Use of ources; S	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- M = Use
Parama PERI PERI PENI PENI PENI SM RSF NRS FW Captio	eter I E I M I T I RE I RE I RM I RT I F	(MJ) 3 (MJ) 4 (MJ) 4 (MJ) 7 (MJ) 7 (MJ) 3 (MJ) 7 (MJ) 4 (MJ) 4 (M	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 7.91E+1 2.26E+2 2.49E+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 1.64E+1 1.64E	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 mewable bergy res imary en bergy res imary en	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 7.28E-2 0.00E+0 0.0	B1 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 a srav ding non sed as rav newable s	B2 9.87E-1 0.00E+0 9.87E-1 8.05E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 4.25E-3 cluding re v material -renewab v material secondary	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable p s; PERT = le primary s; PERT = le primary s; PERT =	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 -7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary ene Total use energy re: = Total use SF = Use ter	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-re	3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E- sable prinused as r -renewable prevention	-4.11 0.000 -4.11 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.2.75 0.000 0.000 0.000 0.2.75 0.0000 0.0000 0.0000 0.000000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 erials; F sources PENRM ergy res	-7.19E+0 0.00E+0 -7.19E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L ; PENRE I = Use of ources; S	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- M = Use
Parama PER PER PEN PEN SM RSF NRS FW Caption	eter     E     M     T     RE     RT	MJ     3       [MJ]     3       [MJ]     2       [MJ]     3       [MJ]     10       [MJ]     10       [MJ]     10       PERE =     wable pron-rene       wable procondary     0       OF Th     covering       OF Th     covering	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 .91E+1 3.26E+2 2.49E+0 1.00E+	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+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 1.48E-1 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 0.00E+0 9.78E+2 0.00E+0 0.00E+0 3.14E-3 primary e ources us ergy exclu- ources us Use of re TPUT F	B1 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 set as raw uting non set as raw	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           8.05E+0           0.00E+0           0.00	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable p s; PERT = le primary s; PENT fuels; NR wai	C3/2 4.25E-1 0.00E+0 4.255E-1 8.25E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary energy re: = Total uss SF = Use ter CATEGO	1.88E-1 0.00E+0 1.88E-1 7.96E+1 -7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 2.68E-4 2.68E-4 2.68E-4 ergy resc of renew sources to se of non-re	3.99E-' 0.00E++ 3.99E-' 5.45E++ 0.00E++ 0.00E++ 0.00E++ 1.30E-5 varble prinused as r renewable c4/1	-4.11 0 0.000 -4.11 0 -2.75 0 0.000 0 -2.75 0 0.000 0 0.0000 0 0.0000 0 0.0000 0 0.000 0 0.0000 0 0.00000 0 0.00000 0	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 PENRM ergy res els; FW	-7.19E+0 0.00E+0 -7.19E+0 4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L s; PENRE I = Use of	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 Jse of = Use of f non- M = Use net fresh
Paramo PER PER PEN PEN SM RSF NRS FW Caption	eter     E     M     T     RE     RT     RT     F     F     rene of se JLTS flooro eter	[MJ]         2           [MJ]         3           [MJ]         7           (MJ]         7           (MJ)         7	A1-A3 A41E+1 1,00E+0 3,41E+1 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 3,26E+2 2,47E+2 2,47E+2 3,26E+2 2,47E+2 3,47E+2 4,47E+	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.78F = 1.78F = A - OU A4	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+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 TPUT F A5	B1           0.00E+0           0.00	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           4.25E-3           cluding re-           material-           renewaby material-           vecondary           AND V           B2           1.13E-9	C2           8.24E-3           0.00E+0           8.24E-3           1.64E-1           0.00E+0           1.64E-1           0.00E+0           0.00E+0           1.53E-5           newable p           s; PERT =           le primary           rele primary           s, ASTE (           C2           8.62E-9	C3/2 4.25E-1 0.00E+0 4.25E-1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary energy re- = Total us SF = Use ter CATEG( C3/2	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-res <b>DRIES</b> <b>C3/3</b> 2.24E-10	3.99E-* 0.00E++ 3.99E-* 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 0.00E++ 0.00E++ 1.30E-5 urces us vable prin used as r -renewable C4/1 2.11E-5	-4.11     0.000     -4.11     -2.75     0.000     -2.75     0.000     -2.75     0.000     0	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 PENRM PENRM PENRM PENRM PENRM PD/1 00E+0	-7.19E+0 0.00E+0 -7.19E+0 4.83E+1 0.00E+0 4.83E+1 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L ; PENRE I = Use of 0urces; S = Use of D/2	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 0.00E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- SM = Use net fresh
Parama PER PER PEN PEN PEN SM RS FW Caption	eter         I           E         I           M         I           T         I           RE         I           F         I           rene         I           rene         I           rene         I           Floor         I           D         I	[MJ]         3           [MJ]         10           [MJ]         2           [MJ]         2           [MJ]         2           [MJ]         3           [kg]         2           [MJ]         7           [MJ]         3           [kg]         2           [MJ]         0           [MJ]         0           [MJ]         0           [MJ]         0           [MJ]         0           [MJ]         0           [M]         0	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 2.91E+1 3.26E+2 2.49E+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 1.26E+2 1.26E	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+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 1.74E-4 nergy ress imary en nergy ress imary en imary	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+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 P.78E+2 0.00E+0 0.00E+0 9.78E+0 0.00E+0	B1           0.00E+0           nergy exed as raw           annewable           LOWS           B1           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           waterial           secondary           B2           1.13E+9           8.17E-3	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.64E-1 0.00E+0 0.00E+0 1.53E-5 newable p s; PERT = le primary s; PENRT ( C2 8.62E-9 1.26E-5	C3/2 4.25E-1 0.00E+0 4.25E-1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary ener Total use energy re: = Total us SF = Use ter CATEGO C3/2 1.96E-8	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-res <b>DRIES</b> <b>C3/3</b> 2.24E-10	3.99E-* 3.99E-* 0.00E++ 3.99E-* 5.45E++ 0.00E++ 0.00E++ 0.00E++ 0.00E++ 1.30E-5 varble prin used as r r-renewable c4/1 2.11E-5 5.09E++	-4.11     0 0.000     -4.11     -2.75     0 0.001     -2.75     0 0.001     -2.75     0 0.001     0 0.000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0 E-4 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 PENRM PENRM PENRM PENRM PENRM PENRM D/1 00E+0 00E+0 00E+0 00E+0	-7.19E+0 -7.19E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 PERM = L : PENRE I = Use of D/2 -1.17E-8 -1.17E-8 -1.71E-2 -3.28E-3	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- M = Use of f non- M = Use of f ano- so of -1.41E-1 -1.90E-4
Paramo PER PER PEN PEN SM RSF NRS FW Caption 1 m <sup>2</sup> 1 Paramo HWU NHW	eter     E     M     T     RE     RE     RE     F     F	[MJ]         3           [MJ]         10           [MJ]         2           [MJ]         2           [MJ]         2           [MJ]         3           [kg]         2           [MJ]         7           [MJ]         3           [kg]         2           [MJ]         0           [MJ]         0           [MJ]         0           [MJ]         0           [MJ]         0           [MJ]         0           [M]         0	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 2.91E+1 3.26E+2 2.49E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.00E	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+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 1.55E-7 2.25E-4	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+2 0.00E+0	B1           0.00E+0           stars           ding non           sed as raw           ding non           sed as raw           ding non           sed as raw           B1           0.00E+0           0.00E+0           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           0.00	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable psissipping s; PERT = le primary s; PENRT fuels; NR wai C2 8.62E-9 1.26E-5 2.24E-7	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 3.43E+0 0.00E+0 0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is sources is sources is sources is c 3/3 2.24E-10 3.63E-4 8.58E-5	3.99E- 3.99E- 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 1.30E-5 0.00E++ 0.00E+		E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 PENRM PENRM PENRM PENRM PENRM PENRM D/1 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 FERM = L s; PENRE I = Use of ources; S = Use of <b>D/2</b> -1.17E-8 -1.71E-2	-5.71E-1 -0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non MM = Use net fresh D/3 -3.02E-9 -1.41E-1 -1.90E-4
Paramo PER PER PENF PENF SM SM SM SW Captio Captio	eter         I           E         J           M         J           T         J           RE         J           RT         J           RT         J           RT         J           F         J           rene         n           rene         n           rene         N           JLTS         J           D         D           J         J           R         J	[MJ]         3           [MJ]         3           [MJ]         2           [MJ]         3           [MJ]         3           [MJ]         3           [MJ]         7           [MJ]         7           [MJ]         3           [MJ]         3           [MJ]         3           [MJ]         4           [MJ]         6           [MJ]         6           [MJ]         6           [M]         7           [M]         6           [M]         7           [M	A1-A3 A1-A3 A1E+1 100E+0 A1E+1 247E+2 247E+2 247E+2 247E+2 247E+2 247E+2 249E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 Use of rerimary er wable pr rimary er wable pr rimary er wable pr rimary er wable pr rimary er <b>A1-A3</b> 2.32E-5 3.96E-1 3.47E-3 1.00E+0 1.39E-2	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.55E-7 2.25E-4 4.02E-6 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 7.28E-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 F Cources us use of re TPUT F 6.84E-7 5.44E-2 1.97E-4 0.00E+0 0	B1           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           8.05E+0           0.00E+0           0.00E+0           4.25E-3           cluding rer           renewab           waterial           -renewab           waterial           -renewab           MD V           B2           1.13E-9           8.17E-3           3.81E-4           0.00E+00           0.00E+00	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.53E-5 newable p s; PERT = le primary s; PENRT / fuels; NR wai /ASTE ( 8.62E-9 1.26E-5 2.24E-7 0.00E+0 0.00E+0	C3/2           4.25E-1           0.00E+0           4.25E-1           8.25E+1           -7.91E+1           3.43E+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           SF = Use           ter           C3/2           1.96E-8           1.27E+0           0.00E+0           0.00E+0           0.00E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 5.51E-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 2.68E-4 ergy resc of renew sources se of non-resc of non-resc <b>C3/3</b> 2.24E-10 3.63E-4 8.58E-5 0.00E+0 2.86E+	3.99E- 3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 1.30E-5 0.00E++ 1.30E-5 0.00E++ 1.30E-5 0.00E++ 2.11E-5 5.09E++ 8.25E-5 0.00E++ 1.30E-5 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 0.00E+	-4.11           0         0.000           -4.11         -2.75           0         0.000           -2.75         0.000           0         -2.75           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         -5.87           ed as raticle primitics         second           second         -2.74           -         -9.74           -         -1.88           0         0.0000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0	00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 4.83E+1 0.00E+0 4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2 ERM = L ; PENRE I = Use of 0.00E+0 0.00E+0 -1.17E-8 -1.18E-8 -1.18E	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 0.00E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- SM = Use net fresh <b>D/3</b> -3.02E-9 -1.41E-1 -1.90E4 0.00E+0 0.00E+0
Paramo PER PER PEN PEN SM PEN SM SW Caption Caption <b>RESU</b> <b>1 m<sup>2</sup> 1</b> <b>Paramo</b> HWD NHW RWD CRU MEF	eter         I           E         J           M         J           T         J           RE         J           RT         J           RT         J           RT         J           RT         J           F         J           rene         n           rene         of set           JLTS         J           D         D           J         Z           R         Z	[MJ]         2           [MJ]         2           [MJ]         2           [MJ]         2           [MJ]         3           [MJ]         3           [MJ]         3           [MJ]         7           [MJ]         3           [M]         3	A1-A3 A41E+1 1,000E+0 3,41E+1 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,47E+2 2,49E+0 1,000E+0 0,00E+0 0,00E+0 0,00E+0 1,22E-5 3,96E-1 3,47E-3 0,00E+0 1,39E-2 0,00E+0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.74E-4 newable nergy res imary en nergy res 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 7.28E-2 0.00E+0 3.14E-3 primary e ources us ergy exclusion ources us use of re TPUT F A5 6.84E-7 5.44E-2 1.97E-4 0.00E+0	B1           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+00           0.00E+0           8.05E+00           0.00E+0           0.00E+0           4.25E-3           cluding re-           renewab           vmaterial           -renewab           vmaterial           -secondary           AND V           B2           1.13E-9           8.17E-3           3.81E-4           0.00E+00           0.00E+00	C2 8.24E-3 0.00E+0 8.24E-3 1.64E-1 0.00E+0 1.64E-1 0.00E+0 1.64E-1 0.00E+0 1.53E-5 newable p s; PERT = le primary s; PENRT fuels; NR wa VASTE C2 8.62E-9 1.26E-5 2.24E-7 0.00E+0 0.00E	C3/2           4.25E-1           0.00E+0           4.25E-1           8.25E+1           -7.91E+1           3.43E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           2.14E-2           rimary energy res           = Total us           SF = Use ter           CATEGO           C3/2           1.96E-8           1.27E+0           1.49E-4           0.00E+0           0.00E+0           0.00E+0           0.00E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 5.51E-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 <b>C3/3</b> 2.24E-10 3.63E-4 8.58E-5 0.00E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.88E+0 2.24E+0 2.88E+0 2.88E+0 2.24E+0 2.88	3.99E- 3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 1.30E-5 0.00E++ 0.211E-5 5.09E++ 8.25E-5 0.00E++ 0.00E	-4.11           0         0.000           -4.11           0         -2.75           0         0.000           0         -2.75           0         0.000           0         -2.75           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         -5.87           ed as ranked	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E-10 0.0 E-10 0.0 E-10 0.0 E-10 0.0 E-4 0.0 E-10 0.0 E-4 0.0 E-10 0.0 E-4 0.0 E-10 0.0 E-10 0.0 E-4 0.0 E-10 0.0 E-1	00E+0 00E+0	-7.19E+0 -7.19E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 -1.03E-2 ERM = L ;; PENRE I = Use of 0.00CE+0 -1.17E-8	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 0.00E+0 -7.91E+1 -7.41E-3 Jse of = Use of f non- SM = Use net fresh <b>D/3</b> -3.02E-9 -1.41E-1 -1.90E-4 0.00E+0 0.00E+0 0.00E+0
Paramo PERI PERI PENF PENF PENF SM RSF NRS FW Caption Caption <b>RESU</b> <b>1 m<sup>2</sup> 1</b> <b>Paramo</b> HWC NHW RWL CRL MFF EEE	eter         I           E         J           M         J           T         J           RE         J           RT         J           RE         J           RT         J           F         J           rene         n           rene         of set           JLTS         J           Construction         J           D         D           J         R           R         L	[MJ]         2           [MJ]         2           [MJ]         2           [MJ]         3           [MJ]         7           [MJ]         6           (MJ]         6           (MJ]         6           (MJ]         6           (MJ]         6           (MJ]         6           (MJ]         7           (MJ]         7           (MJ]         7           (MJ]         6           (MJ]         6           (MJ]         6           (MJ]         6           (MJ]         6	A1-A3 A1E+1 100E+0 341E+1 247E+2 91E+1 326E+2 249E+0 100E+0 100E+0 100E+0 100E+0 100E+0 100E+0 100E+0 110E+1 100E+0 1139E-2 100E+0 1139E-2 100E+0	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.774E-4 1.55E-7 2.25E-4 4.02E-6 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 0.00E+0 9.78E+2 0.00E+0 0.00E+0 3.14E-3 primary e ources us ergy exclusion ources us ergy exclusion ources us ergy exclusion ources us ergy exclusion ources us 0.00E+0 A5 6.84E-7 5.44E-2 1.97E-4 0.00E+0 5.38E-1	B1           0.00E+0           as raw           ading non-           ed as raw           newable           LOWS           B1           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           8.05E+0           0.00E+0           0.00E+0           4.25E-3           cluding re-           vmaterial-           renewaby           vmaterial-           secondary           B2           1.13E-9           8.17E-3           3.81E-4           0.00E+0           0.00E+0           0.00E+0	C2           8.24E-3           0.00E+0           8.24E-3           1.64E-1           0.00E+0           1.64E-1           0.00E+0           1.53E-5           newable p           s; PERT =           le primary           relsking           rASTE           C2           8.62E-9           1.26E-5           2.24E-7           0.00E+0           0.00E+0           0.00E+0	C3/2           4.25E-1           0.00E+0           4.25E-1           8.25E+1           7.91E+1           3.43E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           2.14E-2           rimary ener           Total use           energy re:           = Total us           SF = Use           ter           CATEGO           C3/2           1.96E-8           1.27E+0           1.49E-4           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           9.41E+0	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-res <b>DRIES</b> <b>C3/3</b> 2.24E-10 3.63E-4 8.58E-5 0.00E+0 2.86E+0 0.00E+0 0.00E+0 0.00E+0	3.99E- 3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 0.00E++ 0.00E++ 1.30E-5 urces us vable prinused as r renewable <b>C4/1</b> 0.211E-6 5.92E++ 8.25E-5 0.00E++	-4.11           0         0.000           -4.11         -2.75           0         0.000           0         -2.75           0         0.000           0         -2.75           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           second         -5.87           ed as range mathematic prime second           second         -5.87           B         -6.658           0         -9.74           5         -1.88           0         0.000           0         0.000           0         0.000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E-0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E-4 0.0 E-4 0.0 E-4 0.0 E-4 0.0 E-10 0.0 E-4 0.0 E-10 0.0 E-4 0.0 E-10 0.0 E-4 0.0 E-10	00E+0 00E+0	-7.19E+0 -7.19E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 -1.03E-2 ERM = L ; PENRE I = Use of 0.00CE+0 -1.17E-8 -1.17E-8 -1.71E-2 -3.28E-3 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of f non- M = Use of f non- M = Use of f non- M = Use net fresh <b>D/3</b> -3.02E-9 -1.41E-1 -1.90E-4 0.00E+0 0.00E+0 0.00E+0
Paramo PER PER PEN PEN SM PEN SM SW Caption Caption <b>RESU</b> <b>1 m<sup>2</sup> 1</b> <b>Paramo</b> HWD NHW RWD CRU MEF	eter         I           E         J           M         J           T         J           RE         J           F         J           reneed         n           reneed         n           reneed         n           P         J           D         D           J         R           Q         S           Q         S           Q         S           S         S	[MJ]         2           [MJ]         2           [MJ]         3           [MJ]         7           [MJ]         3           [MJ]         7           [MJ]         7           [MJ]         7           [MJ]         3           [MJ]         7           [MJ]         6           (MJ]         0           (MJ]         0           (MJ]         0           (MJ]         0           (m <sup>3</sup> )         0           (m <sup>3</sup> )         0           (m <sup>3</sup> )         0           (MJ)         0           (MJ)         0           (MJ)         0           (MJ)         0	A1-A3 A41E+1 100E+0 341E+1 247E+2 591E+1 326E+2 249E+0 100E+0 100E+0 100E+0 100E+0 100E+0 100E+0 100E+0 139E-2 139E-1 347E-3 100E+0 1.39E-2 1.39E	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.55E-7 2.25E-4 4.02E-6 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 0.00E+0 9.78E+2 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00CE+0 FPUT F A5 6.84E-7 5.44E-2 1.97E-4 0.00E+0 5.38E-1 1.28E+0	B1           0.00E+0           newable           2           LOWS           B1           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           8.05E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           4.25E-3           cluding re-           vmaterial           renewab           vmaterial           secondary           B2           1.13E-9           8.17E-3           3.81E-4           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0	C2           8.24E-3           0.00E+0           8.24E-3           1.64E-1           0.00E+0           1.64E-1           0.00E+0           0.00E+0           1.53E-5           newable p           s; PERT =           le primary           respective           645E-9           1.26E-5           2.24E-7           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0	C3/2 4.25E-1 0.00E+0 4.25E-1 8.25E+1 7.91E+1 3.43E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.14E-2 rimary ener Total use energy re: = Total us SF = Use ter CATEGO C3/2 1.96E-8 1.27E+0 1.49E-4 0.00E+0 0.00	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-res <b>DRIES</b> <b>C3/3</b> 2.24E-10 3.63E-4 8.58E-5 0.00E+0 2.28EE+0 0.00E+0 0.00E+0 0.00E+0	3.99E- 3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 0.00E++ 0.00E++ 1.30E-5 urces us vable prinused as r renewable vable prinused as r renewable <b>C4/1</b> 0.21E-6 5.92E++ 8.25E-5 0.00E++ 0.00E	-4.11           0         0.000           -4.11         -2.75           0         0.000           -2.75         0.000           0         -2.75           0         0.000           0         -2.75           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           second         -5.87           ed as rationary endation         -5.87           second         -5.87           b         -6.651           0         -9.74           5         -1.88           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0 E-4 0.0 E-4 0.0 E-10 0.0 E-4 0.0 E-4 0.0 E-4 0.0 E+0 0.0 E+0 0.0 E+0 0.0	00E+0 00E+0	-7.19E+0 0.00E+0 -7.19E+0 4.83E+1 0.00E+0 4.83E+1 0.00E+0 0.00E+0 -1.03E-2 FERM = L ; PENRE 1 = Use of 0urces; S = Use of <b>D/2</b> -1.17E-8 -1.17E-8 -1.71E-2 -3.28E-3 0.00E+0 0.00E+0 0.00E+0 0.00E+0	-5.71E-1 0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 0.00E+0 -7.91E+1 -7.41E-3 Jse of = Use of f non- SM = Use of f non- SM = Use of f non- SM = Use net fresh -3.02E-9 -1.41E-1 -1.90E-4 0.00E+0 0.00E+0 0.00E+0 0.00E+0
Paramo PERI PERI PENF PENF PENF SM RSF NRS FW Caption Caption <b>RESU</b> <b>1 m<sup>2</sup> 1</b> <b>Paramo</b> HWC NHW RWL CRL MFF EEE	eter         I           E         I           M         I           T         I           RE         I           RE         I           RE         I           RE         I           RE         I           F         I           F         I           F         I           Image: State of the state of th	[MJ]     3       [MJ]     3       [MJ]     2       [MJ]     2       [MJ]     3       [kg]     2       [MJ]     3       [kg]     2       [MJ]     0       [MJ]     0       [MJ]     0       PERE =     1       wable p     0       cond-rene     0       OF TH     0       OF TH     0       (kg)     0       (kg)     0       (kg)     0       (kg)     0       (kg)     0       (kg)     0       (MJ)     0       (MJ)     0	A1-A3 3.41E+1 1.00E+0 3.41E+1 2.47E+2 .91E+1 3.26E+2 2.49E+0 1.00E+0 1.00E+0 1.00E+0 3.61E-2 Use of refinance	A4 1.48E-1 0.00E+0 1.48E-1 2.95E+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 A 1.55E-7 2.25E-4 4.02E-6 0.00E+0 0.00E	A5 1.02E+0 0.00E+0 1.02E+0 9.78E+0 0.00E+0 9.78E+0 0.00E+0 9.78E+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 5.44E-2 1.97E4 0.00E+0 5.38E-1 1.28E+0 0.00E+0	B1           0.00E+0           sraw           ading non           sed as raw           newable           *LOWS           B1           0.00E+0	B2           9.87E-1           0.00E+0           9.87E-1           8.05E+0           0.00E+0           4.25E-3           cluding reg           vmaterial           vecondary           AND W           B2           1.13E-9           8.17E-3           3.81E-4           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0           0.00E+0	C2           8.24E-3           0.00E+0           8.24E-3           1.64E-1           0.00E+0           1.64E-1           0.00E+0           1.53E-5           newable p           s; PERT =           le primary           relsking           rASTE           C2           8.62E-9           1.26E-5           2.24E-7           0.00E+0           0.00E+0           0.00E+0	C3/2           4.25E-1           0.00E+0           4.25E-1           8.25E+1           3.43E+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           2.14E-2           rimary energy re:           = Total us           SF = Use           ter           CATEGO           0.00E+0           1.96E-8           1.27E+0           1.49E-4           0.00E+0           0.00E+0           9.41E+0           0.00E+0           2.25E+1	1.88E-1 0.00E+0 1.88E-1 7.96E+1 7.96E+1 7.91E+1 5.51E-1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 2.68E-4 ergy resc of renew sources is se of non-res <b>DRIES</b> <b>2.24E-10</b> 3.63E-4 8.58E-5 0.00E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 2.86E+0 0.00E+0	3.99E- 3.99E- 0.00E++ 3.99E- 5.45E++ 0.00E++ 5.45E++ 0.00E++ 0.00E++ 1.30E-5 0.00E++ 1.30E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E++ 0.00E++ 8.25E-5 0.00E++ 0.00E+	-4.11           0         0.000           -4.11         -2.75           0         0.000           -2.75         0           0         -2.75           0         0.000           -2.75         0           0         -2.75           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         -9.74           5         -1.88           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000           0         0.000	E-1 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E+0 0.0 E-1 0.0 E-1 0.0 E-1 0.0 E-4	00E+0           00E+0	-7.19E+0 -7.19E+0 -7.19E+0 -4.83E+1 0.00E+0 -4.83E+1 0.00E+0 0.00E+0 0.00E+0 0.00E+0 -1.03E-2 -1.03E-2 -2.02E-2 -	-5.71E-1 -0.00E+0 -5.71E-1 -8.23E+1 0.00E+0 -8.23E+1 2.86E+0 0.00E+0 7.91E+1 -7.41E-3 Jse of = Use of fnon M = Use net fresh D/3 -3.02E-9 -1.41E-1 -1.90E-4 0.00E+0 0.00E+

thermal energy



## References

#### Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin(pub.): Generation of Environmental Product Declarations (EPDs):

#### **General Principles**

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013/04 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

#### 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, V1.5 August 2016 www.bau-umwelt.de

#### PCR Part B

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 B: Requirements on the EPD for floor coverings,

V1.4, September 2016 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 2015

#### 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 2017

GaBi Software-System and Database for Life Cycle Engeneering, thinkstep AG, Leinfelden-Echterdingen, service pack 33, 2017

#### ecoinvent 3.3

ecoinvent, Zurich, Switzerland, Database Version 3.3  $15^{\rm th}$  August 2016

Institut Bauen und Umwelt e.V.	<b>Publisher</b> Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	Tel Fax Mail Web	+49 (0)30 3087748- 0 +49 (0)30 3087748- 29 info@ibu-epd.com www.ibu-epd.com
Institut Bauen und Umwelt e.V.	<b>Programme holder</b> Institut Bauen und Umwelt e.V. Panoramastr 1 10178 Berlin Germany	Tel Fax Mail Web	+49 (0)30 - 3087748- 0 +49 (0)30 - 3087748 - 29 info@ibu-epd.com www.ibu-epd.com
UNICARPETS AND ENTRY CARPETS A	Author of the Life Cycle Assessment Gemeinschaft umweltfreundlicher Teppichboden (GUT) e.V. Schönebergstraße 2 52068 Aachen Germany	Tel Fax Mail Web	+49 (0)241 96843 410 +49 (0)241 96843 400 mail@gut-ev.de www.gut-ev.org
modu lyss <sup>®</sup>	<b>Owner of the Declaration</b> modulyss Zevensterrestraat 21 9240 Zele Belgium	Tel Fax Mail Web	+32 (0)52 45 72 11 +32 (0)52 44 90 99 info@modulyss.com www.modulyss.com