# **ENVIRONMENTAL PRODUCT DECLARATION**

as per EN ISO 14025 and EN 15804

Owner of the Declaration	ERFMI vzw, European Resilient Flooring Manufacturers' Institute
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ERF-2013611-E
Issue date	01.04.2013
Valid to	31.12.2018

# Polyvinyl chloride floorcoverings with enhanced slip resistance (Safety Flooring) according to EN 13845 ERFMI European Resilient Flooring Manufacturers' Institute



Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com



# **General Information**

# **ERFMI - European Resilient Flooring** Manufacturers' Institute

## **Programme holder**

IBU - Institut Bauen und Umwelt e.V. Rheinufer 108 D-53639 Königswinter

# **Declaration number**

EPD-ERF-2013611-E

# This Declaration is based on the Product **Category Rules:**

Floor coverings, Version 1.1: 29.10.2012 (PCR tested and approved by the independent expert committee)

# **Issue date**

01.04.2013

Valid to 31.12.2018

ennon Prof. Dr.-Ing. Horst J. Bossenmayer

(President of Institut Bauen und Úmwelt e.V.)

Prof. Dr.-Ing. Hans-Wolf Reinhardt (Chairman of SVA)

# Product

### **Product description**

Resilient floor coverings are an entire product family of flexible flooring solutions available in sheet, tiles and planks. It is classified in heterogeneous or homogeneous composition based on vinyl, linoleum, cork or rubber. Resilient floor coverings can provide different functionalities (acoustic, static control, slip resistance, easy maintenance etc.) to match a wide range of domestic, commercial and industrial applications. It is available in an enormous range of patterns and colours fitting with inspiration and decorative needs.

Polyvinyl chloride floorcoverings with enhanced slip resistance (safety flooring) are based on polyvinyl chloride with a wear surface modified to provide sustainable enhanced slip resisting properties under specified conditions. The surface contains various aggregate or identifiable particles of different hardness which are present throughout the normal wear life of the product.

# Polyvinyl chloride floorcoverings with enhanced slip resistance (Safety Flooring)

# **Owner of the Declaration**

ERFMI vzw. European Resilient Flooring Manufacturers' Institute 71. Avenue de Cortenbergh B-1000 Brussels

# **Declared product / Declared unit**

1m<sup>2</sup> Polyvinyl chloride floorcoverings with enhanced slip resistance (Safety Flooring), installed

## Scope:

In this EPD polyvinyl chloride floorcoverings with enhanced slip resistance (safety flooring) are declared. The application of this EPD is restricted to polyvinyl chloride floorcoverings with enhanced slip resistance (safety flooring) produced by the members of the European Resilient Flooring Manufacturers' Institute (ERFMI). Data are based upon production during 2011 in Europe. Data have been provided by 5 companies of ERFMI which represents 100% of ERFMI members. The owner of the declaration shall be liable for the underlying information and evidence.

# Verification

The CEN Norm EN 15804 serves as the core PCR

Independent verification of the declaration and data according to EN ISO 14025

х

externally

internally

Prof. Dr. Birgi Grah

(Independent tester appointed by SVA)

# Application

According to EN ISO 10874 (EN 685) the area of application for resilient floor coverings is indicated by use classes. The declared product group covers the use classes 23, 32 to 34 and 41 to 43.

# **Technical Data**

Technical construction data for the product group:									
Constructional data	Test standard								
Product thickness *	av. 2.1	mm	EN ISO 24346						
Surface weight *	EN ISO 23997								
Product Form sheet									

weighted average

## **Base materials/ Ancilliary materials**

The product group has the follow	ing compos	sition:
Component	Value	Unit
Additives	2.9	%
Filler	17.6	%
Flame Retardant (Aluminium hydroxide)	4.1	%
Plasticizer	18.9	%
Pigments	0.5	%

2



Polymers (PVC)	44.1	%
Auxiliaries	2.2	%
Lacquer	0.7	%
Flooring Recyclate (PVC)	9	%

The declared recipes were checked with the REACH candidate list from June 18th, 2012 and did not contain listed REACH substances.

#### **Reference service life**

This EPD does not indicate RSL. Only module B2 (maintenance) is declared and the use stage scenario is independent on the life time of the product.

# LCA: Calculation rules

#### **Declared Unit**

1m<sup>2</sup> of installed floor covering.

Name	Value	Unit
Declared unit	1	m <sup>2</sup>
Conversion factor to 1 kg	1/2.9	-

The declaration refers to an average product from 5 production sites of ERFMI members. The data have been weighted according to the annual square meters produced by each site. The life cycle impact assessment is conducted based on the vertical average.

# System boundary

Type of EPD: cradle to grave

Modules A1-A3 include processes that provide materials and energy input for the system, manufacturing and transport processes up to the factory gate, as well as waste processing.

Module A4 includes transport of the floor covering to the place of installation.

Module A5 includes the production of adhesive for the installation of the floor covering, and incineration of offcuts and packaging material. The declared modules in the table of results (chapter 5) refer to one life cycle of the floor covering with B2 (cleaning) being declared for a time period of one year. For the calculation of the impact of B2 for a different time period the values for B2 have to be multiplied by the estimated service life in years. ERFMI provides an online tool for this calculation on the ERFMI home page (www.erfmi.com) for the enduser.

Module B2 is including provision of cleaning agent, energy and water consumption for the cleaning of the floor covering incl. waste water treatment. The LCA results in this EPD are declared for a one year usage.

Module C1 considers electricity supply for the deconstruction of the flooring.

Module C2 includes transportation of the postconsumer waste to waste processing.

End of life scenarios are declared for:

- 100% incineration in a waste incineration plant (WIP)
- 100% landfilling

- 100% recycling according to information from AgPR, (Arbeitsgemeinschaft PVC-Bodenbelag Recycling)

Module D includes benefits from all net flows given in module A5 and C3 that leave the product boundary system after having passed the end-of-waste state in the form of recovery and/or recycling potentials. Module D is declared for each scenario separately.

#### 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.

# LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules

#### Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel	0,0046	l/m²*100km
Transport distance	2000	km
Capacity utilisation (including empty runs)	85	%

#### Installation in the building (A5)

Name	Value	Unit
Auxiliary (adhesive)	0.3	kg
Material loss (installation waste)	6.0	%

#### Maintenance (B2)

Name	Value	Unit
Maintenance cycle (vacuum	156	number/a
cleaning & wet cleaning )	150	number/a

Water consumption	0.003	m³
Auxiliary (detergent)	0.04	kg
Electricity consumption	0.55	kWh

## End of Life (C1-C4)

Name	Value	Unit
Incineration	2.9	kg
Recycling	2.9	kg
Landfilling	2.9	kg

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

For module D the credits given in module A5 and C3 are declared.

For waste incineration combustion in a WIP (R1 < 0.6) with energy recuperation is considered.

# LCA: Results

The results for module B2 refer to a period of one year.

For the calculation of the impact of B2 for a certain service life the values for B2 have to be multiplied by the estimated service life in years. ERFMI provides an online tool for this calculation on the ERFMI home page (www.erfmi.com ) for the end-user.

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RESU Para- meter PERE PERM PENRT PENRT SM RSF NRSF FW Caption	LTS ( Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1 - A           1,0E+(           2,0E+(           1,2E+(           1,2E+(           1,7E+(           4,7E+(           3,2E-(           -           6,2E+(           ERE = L           vable pri           on renew           vable pri           condary	E LC/ 3 A 01 00 00 1 1,6E 02 01 01 02 01 02 01 01 01 1,6E 01 01 01 1,6E 01 01 01 1,6E 01 01 01 1,6E 01 01 01 1,6E 01 1,6E	4 	SOUR           A5           -           6E+00           -           2E+01           0           -           9E+00           -	CE US B2 - - - - - - - - - - - - - - - - - -	E: 1mi E: 1mi C1 - 4,2E-02 - 2,5E-01 0 - 1,1E-01 excludir raw matu non rene raw matu on rene raw matu	Image: constraint of the second se	Ied           C3M           -           2           9,2E-           -      - <t< td=""><td>I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -</td><td>C3/R - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 0 - - - 0 0 0 - - - 0 0 0 - - - 0 0 0 - - - 0 0 0 - - - - 0 0 0 - - - - 0 0 0 - - - - - 0 0 0 - - - - - - 0 0 0 - - - - - 0 0 0 - - - - - - - - - - - - -</td><td>C4/1 - - 0 - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - 0 0 - - - - - - - - - - - - -</td><td>C4/L - - - - - - - - - - - - - - - - - - -</td><td>. C4/I - - - - - - - - - - - - -</td><td>R D/ -2,3E -2,3E -3,2E -3,2E -3,2E -6,5E wy mate ergy res ergy res ergy res ergy res ergy res</td><td>+00 -2 +01 -3, +00 -6 erials; P PENRM PENRM PENRM Sources; PENRM</td><td>D/L - .,2E-01 - .,0E+00 0 -</td><td>D/R - -2,2E-01 - -3,0E+00 0 - - -6,1E-01 Use of E = Use of of non SM = Use i net fresh</td></t<>	I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -	C3/R - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 0 - - - 0 0 0 - - - 0 0 0 - - - 0 0 0 - - - 0 0 0 - - - - 0 0 0 - - - - 0 0 0 - - - - - 0 0 0 - - - - - - 0 0 0 - - - - - 0 0 0 - - - - - - - - - - - - -	C4/1 - - 0 - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - 0 0 - - - - - - - - - - - - -	C4/L - - - - - - - - - - - - - - - - - - -	. C4/I - - - - - - - - - - - - -	R D/ -2,3E -2,3E -3,2E -3,2E -3,2E -6,5E wy mate ergy res ergy res ergy res ergy res ergy res	+00 -2 +01 -3, +00 -6 erials; P PENRM PENRM PENRM Sources; PENRM	D/L - .,2E-01 - .,0E+00 0 -	D/R - -2,2E-01 - -3,0E+00 0 - - -6,1E-01 Use of E = Use of of non SM = Use i net fresh
RESU Para- meter PERE PERM PERT PENRE PENRE PENRT SM RSF RSF FW Caption	LTS C Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1 - A           1,0E+(           2,0E+(           1,7E+(           1,7E+(           3,2E-(           6,2E+(           c           6,2E+(           c           c           0,2E+(           c<	E LCA 3 A 01 00 01 01 02 01 01 02 01 01 02 01 01 02 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 03 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 02 01 02 02 01 02 02 01 02 02 02 02 02 02 02 02 02 02	4 	SOUR           A5           - <td>CE US B2 - - - - - - - - - - - - - - - - - -</td> <td>E: 1m E: 1m C1 - 4,2E-02 - 2,5E-01 0 - 2,5E-01 0 - 1,1E-01 raw mate non rene raw mate ble secon VS ANI C1</td> <td>Alice Provide the second second</td> <td>Particle depict Particle depict Partic</td> <td>I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -</td> <td>C3/R - - 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - - - - - - - - -</td> <td>C4/ - - 0 - 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -</td> <td>C4/L - - - - - - - - - - - - - - - - - - -</td> <td>C4/I     -</td> <td>R D/ -2,3E -2,3E -3,2E -3,2E -3,2E -3,2E -5,5E -3,2E -5,5E -3,2E -2,3E -2,5E -2,</td> <td>+00 -2 +01 -3, +01 -3, +00 -6 erials; Pl ources; PENRM rgy resc s; FW =</td> <td>D/L - </td> <td>D/R - -2,2E-01 - -3,0E+00 0 - -6,1E-01 Jse of = Use of of non SM = Use inet fresh</td>	CE US B2 - - - - - - - - - - - - - - - - - -	E: 1m E: 1m C1 - 4,2E-02 - 2,5E-01 0 - 2,5E-01 0 - 1,1E-01 raw mate non rene raw mate ble secon VS ANI C1	Alice Provide the second	Particle depict Particle depict Partic	I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -	C3/R - - 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - 0 0 0 - - - - - - - - - - - - -	C4/ - - 0 - 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -	C4/L - - - - - - - - - - - - - - - - - - -	C4/I     -	R D/ -2,3E -2,3E -3,2E -3,2E -3,2E -3,2E -5,5E -3,2E -5,5E -3,2E -2,3E -2,5E -2,	+00 -2 +01 -3, +01 -3, +00 -6 erials; Pl ources; PENRM rgy resc s; FW =	D/L - 	D/R - -2,2E-01 - -3,0E+00 0 - -6,1E-01 Jse of = Use of of non SM = Use inet fresh
RESU Para- meter PERE PERM PERT PENRE PENRE PENRT SM RSF NRSF FW Caption RESU Para- meter HWD	LTS C Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	PF TH           A1 - A           1,0E+(           2,0E+(           1,7E+(           1,7E+(           1,7E+(           3,2E-(           6,2E+(           c           6,2E+(           c           d           d           d	E LCA 3 A 01 00 01 01 02 01 01 02 01 02 01 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 00 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 01 02 01 02 01 01 02 02 01 02 02 01 02 02 02 02 02 02 02 02 02 02	4 	SOUR           A5           - <td>CE US B2 - - - - - - - - - - - - - - - - - -</td> <td>E: 1mi E: 1mi C1 - 4,2E-02 - 2,5E-01 0 - 1,1E-01 excludir raw mat ple secor VS ANI C1 0 1 1E 04</td> <td>Image: constraint of the second sec</td> <td>Ied           C3//           -   -&lt;</td> <td>I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -</td> <td>C3/R - - - 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - - 0 0 - - - - - - - 0 0 - - - - - - - - - - - - -</td> <td>C4/I - - - 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -</td> <td>C4/L - - - - - - - - - - - - - - - - - - -</td> <td>C4/I           -           -           01           -           01           0           -           00           0           -           00           0           -           00           -           00           -           -           00           -   -</td> <td>R D/ -2,3E -3,2E -3,</td> <td>1 +00 -2 +01 -3, +01 -3, +00 -6 erials; Pl ources; PENRM rgy resc s; FW =</td> <td>D/L - - - - - - - - - - - - -</td> <td>D/R - -2,2E-01 - -3,0E+00 0 - - -6,1E-01 Jse of E = Use of of non SM = Use inet fresh D/R 0 - - - - - - - - - - - - -</td>	CE US B2 - - - - - - - - - - - - - - - - - -	E: 1mi E: 1mi C1 - 4,2E-02 - 2,5E-01 0 - 1,1E-01 excludir raw mat ple secor VS ANI C1 0 1 1E 04	Image: constraint of the second sec	Ied           C3//           -   -<	I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -         -           -	C3/R - - - 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - - 0 0 - - - - - - - 0 0 - - - - - - - - - - - - -	C4/I - - - 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -	C4/L - - - - - - - - - - - - - - - - - - -	C4/I           -           -           01           -           01           0           -           00           0           -           00           0           -           00           -           00           -           -           00           -   -	R D/ -2,3E -3,2E -3,	1 +00 -2 +01 -3, +01 -3, +00 -6 erials; Pl ources; PENRM rgy resc s; FW =	D/L - - - - - - - - - - - - -	D/R - -2,2E-01 - -3,0E+00 0 - - -6,1E-01 Jse of E = Use of of non SM = Use inet fresh D/R 0 - - - - - - - - - - - - -
RESU Para- meter PERE PERM PERT PENRE PENRE PENRE PENRE SM RSF FW Caption RSF FW Caption RUD RWD	LTS C Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	PF TH           A1 - A           1,0E+(           2,0E+(           1,7E+(           1,7E+(           3,2E-(           6,2E+(           6,2E+(           renew           able prion renew           yable prion renew           yable prion renew           yable prion renew           PF TH           A1 - A           4,2E-(           2,9E-(           7,8E-(	ELCA 3 A 01 00 01 01 02 01 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 02 01 00 02 01 02 01 00 00 01 00 03 00 00 00 00 00 00 00 00	- RE           .4           - <td>SOUR           A5           -           6E+00           -           2E+01           0           -           9E+00           -<!--</td--><td>CE US B2 - - - - - - - - - - - - - - - - - -</td><td>E: 1m E: 1m C1 - 4,2E-02 - 2,5E-01 0 - 2,5E-01 0 - 1,1E-01 C1 0 1,1E-04 3,7E-05</td><td>Image: constraint of the second sec</td><td>Image: constraint of the object           Image: constraint of the object</td><td>I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           02         0           03         0           04         0           04         0           04         0           04         0</td><td>C3/R - - - 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - - 0 0 - - - - - - - - - - - - -</td><td>C4/I - - - - - 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - 0 0 - - - - - - 0 0 - - - - - - - - - - - - -</td><td>C4/L - - 1,4E-( - - - - - - - - - - - - - - - - - -</td><td>C4/I           -           -           01           -           01           0<td>P         D/          </td><td>1 +00 -2 +01 -3, +01 -3, +00 -6 erials; 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RESU Para- meter PERE PERE PENRM PENRT SM RSF NRSF FW Caption RSF RSF RW Caption RUD RWD RWD RWD CRU MFR MER EEE	LTS C Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1 - A           1,0E+(           2,0E+(           1,7E+(           1,7E+(           3,2E-(           -           6,2E+(           rable prion renew           vable prion renew           0,7E TH           A1 - A           4,2E-(           2,9E-(           7,8E-(           -           -	E LC/ 3 A 01 00 01 02 02 01 02 02 01 02 02 01 02 02 01 02 02 01 02 02 01 02 02 01 02 02 02 02 02 02 03 02 02 03 03 00 00 03 03 00 01 03 03 00 00 03 03 00 03 03 00 03 03	A - RE 	SOUR           A5           -           6E+00           -           2E+01           0           -           2E+00           -           9E+00           -	CE US B2 - - 8,3E-01 - - 8,3E+00 0 - - - 3,2E+00 0 - - - 3,2E+00 y energy used as renewat FLOV B2 1,9E-03 5,8E-03 7,3E-04 - - - - - - - - - - - - - - - - - -	E: 1mi E: 1mi C1 - 4,2E-02 - 2,5E-01 0 - 2,5E-01 0 - 2,5E-01 0 - - - - - - - - - - - - -	Image: constraint of the second sec	Image: constraint of the optimization of the optization of the optimization of the optimization of the	I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           01         0           -         -           -         -           04         0           00         0           -         -           -         -	C3/R - - 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -	C4/ - - 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -	C4/L - 1,4E-( - - - - - - - - - - - - -	C4/I           -      -           -           -           -           -           -           -           -           -           -           -	R         D/           -2,3E         -           -2,3E         -           -3,2E         0           -3,2E         0           -6,5E         -           ary energy reservations; Farry energy re	+00         -2           +01         -3           +01         -3           +00         -6           brials; Pl	D/L - - - - - - - - - - - - -	D/R - -2,2E-01 - -3,0E+00 0 - - -3,0E+00 0 - - - - - - - - - - - - -
RESU Para- meter PERE PERR PENRM PENRT SM RSF NRSF FW Caption RSF RW Caption RU RWD RWD RWD RWD CRU MFR MER EEE EET	LTS C Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1 - A           1,0E+(           2,0E+(           1,7E+(           1,7E+(           3,2E-(           -           6,2E+(           rable prion renew           vable prion renew           0,7E TH           A1 - A           4,2E-(           2,9E-(           7,8E-(           -           -           -           -           -           -           -           -           -           -           -           -	E LC/ 3 A 01 00 01 01 02 01 03 03 03 03 03 03 03 03 05,7FE 03 03 5,7FE 03 03 5,7FE 03 03 03 03 03 03 03 03 03 03	A - RE A - - - - - - - - - - - - -	SOUR           A5           -           6E+00           -           2E+01           0           -           2E+00           -           9E+00           -	CE US B2 - - - 8,3E-01 - - - - - - - - - - - - - - - - - -	E: 1mi E: 1mi C1 - 4,2E-02 - 2,5E-01 0 - 2,5E-01 0 - 2,5E-01 0 - - 2,5E-01 0 - - - - 2,5E-01 0 - - - - - - - - - - - - -	Image: constraint of the second sec	Image: constraint of the optimization of the optization of the optimization of the optimization of the	I         C3/L           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           01         0           -         -           -         -           01         0           02         -           03         0           04         0           04         0           04         0           -         -           -         -           -         -           -         -           -         -	C3/R - - 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - - - - - - - - -	C4/ - - 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - 0 0 - - - 0 0 - - - 0 0 - - - - 0 0 - - - - - 0 0 - - - - - 0 0 - - - - - - 0 0 - - - - - - - - - - - - -	C4/L - 1,4E-( - - - - - - - - - - - - -	C4/I           -	R         D/           -2,3E         -           -3,2E         0           -3,2E         0           -3,2E         0           -6,5E         -           ary energy reservations; Fary energy reservation; Fary energy reservations; Fary energy reservations	+00         -2           +01         -3           +01         -3           +00         -6           brials; PI         bources;           PENRM         rgy resc           rgy resc         is; FW =           -00         -7           -0.03         -7           -0.03         -7           -0.03         -1           -0.01         2           +00         5           +01         1,	D/L - - - - - - - - - - - - -	D/R - -2,2E-01 - -3,0E+00 0 - - -3,0E+00 0 - - - - - - - - - - - - -

Not all of the life cycle inventories applied in this study support the methodological approach for the waste and water indicators. The data are based on publications of industry. The indicators for waste and water of the system are evaluated, but contain a higher degree of uncertainty.

<sup>1</sup> Scenario "I" = 100% Incineration"

<sup>2</sup> Scenario "L" = 100% Landfilling

3 Scenario "R" = 100% Recycling

The evaluation of best EoL-scenario requires the consideration of further aspects like avoidance of combustion of fossil fuels when incinerated and demand for landfilling when recycled.

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## EN ISO 23997

EN ISO 23997:2012: Resilient floor coverings -Determination of mass per unit area (ISO 23997:2008)

## EN ISO 24346

EN ISO 24346:2012: Resilient floor coverings -Determination of overall thickness (ISO 24346:2006)

## EN 13845

EN 13845:2005 Resilient floor coverings - Polyvinyl chloride floor coverings with particle based enhanced slip resistance – Specification

### EN 15804

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

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