Cover Plate Rotary Dimmer (bio-based, recycled, standard PC)

PEP ecopassport®

Product Environmental Profile

Registration number:	**ABBG-00490-V01.01-EN**	Drafting rules:	**PCR-ed4-EN-2021 09 06**
Contact information:	**Pia Denninghoff - pia.denninghoff@de.abb.com**	Supplemented by:	**PSR-0005-ed3.1-EN-2023 12 08**
Verifier accreditation number:	**VH08**	Information and reference documents:	**www.pep-ecopassport.org**
Date of issue:	**January-25**	Validity period:	**5 years**

Independent verification of the declaration and data in compliance with ISO 14025: 2006

Internal: ☐ **External:** ☒

The PCR review was conducted by a panel of experts chaired by Julie Orgelet (Ddemain)

PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022
The components of the present PEP may not be compared with components from any other program.

Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"

ABB Purpose & Embedding Sustainability

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.
The contect of this PEP cannot be compared with the content based on another program/database.
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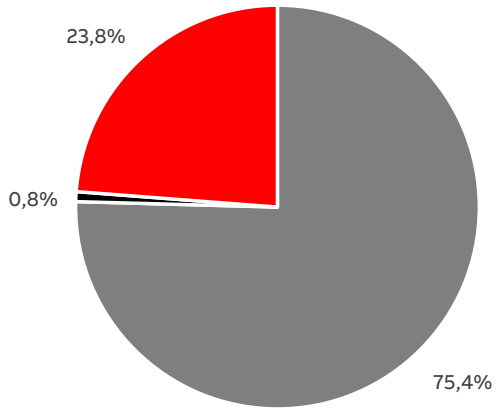
General information

Reference product	**6540-44G-102 Cover Plate Rotary Dimmer (2CKA006599A3052)**
Description of the product	**The plastic cover plate for rotary dimmer is designed for the manual control of rotary dimmers or potentiometers that control LED bulbs and luminaires. It is suitable for indoor use without exposure to extreme conditions.**
Functional unit	**Protecting the user from direct contact with live parts. The product achieves performance levels defined by IEC 60529 (IP20 protection) and IEC 62262 (IK0 resistance) standards over a reference service life of 20 years.**
Other products covered	**Other products belonging to the Plastic Cover Plate Rotary Dimmer family. All products covered by this PEP are listed in the table on page 8.**
Manufacturing address	**Freisenbergstrasse 2, 58513 Lüdenscheid, Germany busch-jaeger.com**

Constituent Materials



Total weight of reference product	33,216 g - including the product and its packaging 26,316 g - for the reference product only

Plastics as % of weight		**Metals as % of weight**		**Others as % of weight**	
Name and CAS number	Weight%	Name and CAS number	Weight%	Name and CAS number	Weight%
Plastic - recycled PC (93%)	62,4	**Metal - Steel**	0,8	**Carton**	16,9
Plastic - PA6 GF30	13,1			**PE foil**	3,9
				Electronics	3,0

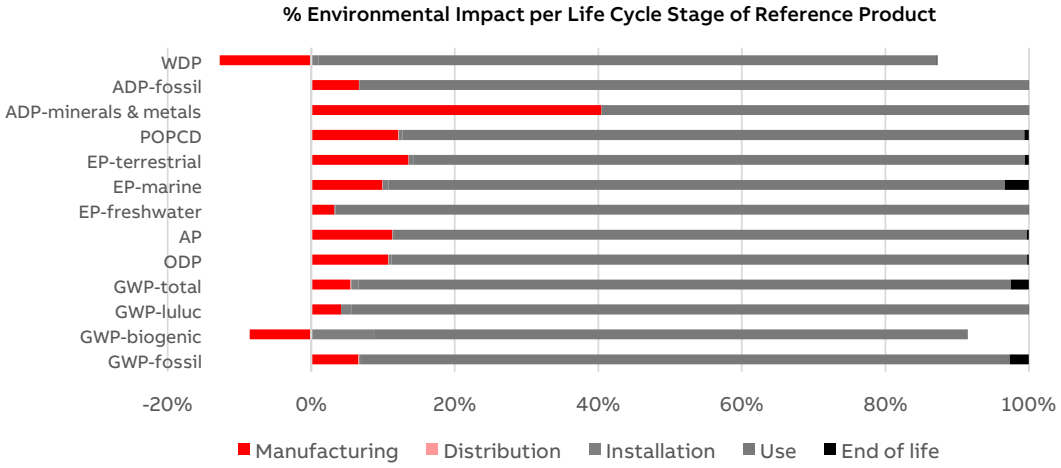
Additional Information

Manufacturing	Manufactured by Busch-Jaeger Elektro GmbH at the Aue factory, ISO 14001 certified. The manufacturing phase in the LCA model includes the production of raw materials, items, and packaging, as well as the industrial processes required for production, assembly, and packaging of the reference product. The final assembly is modeled using economic and mass allocation approaches. The electricity mix for production facilities is modeled using custom LCA datasets based on hydropower energy imported from Norway, incorporating energy transformation and transmission losses.
Distribution	Transport between the last Group distribution center and an average delivery point in the sales area. Average packaging weight is 6.9g, consisting of a cardboard box and the PE packaging foil.
Installation	For the installation of the product, only standard tools are needed.The installation stage includes the disposal of the packaging and the transport of packaging material to disposal. During installation, the customer can decide whether the glow lamp will be installed or disposed. According to the reference life cycle scenario, glow lamp is mounted at the installation stage, while in the alternative scenario glow lamp is disposed at this stage.
Use	The product with glow lamp has an average power consumption of 16.2 mW, which corresponds to the total energy consumption of 2 838 Wh, calculated according to PSR-0005-ed3.1 -EN-2023 12 08. In the alternative life cycle scenario, there is no electricity consumption during the use stage.
End of life	The end-of-life stage is modeled according to PCR-ed4-EN-2021 09 06 and PSR-0005-ed3.1-EN-2023 12 08.
Benefits and loads beyond the system boundaries	The Module D formula from the PCR-ed4-EN-2021 09 06 was used to calculate the benefits and loads beyond the system boundaries.

Environmental Impacts

Reference lifetime	20 years
Product category	Other equipments - passive product
Installation elements	No additional elements needed during installation
Use scenario	Reference scenario: Load rate = 30%, Use rate = 100% The electricity consumption equals 2 838 Wh over 20 years. Alternative scenario: No electricity consumption.
Geographical representativeness	Manufacturing: Germany Distribution, Installation, Use and End-of-life: Germany, Netherlands, Rest of Europe
Technological representativeness	Manufacturing of plastic cover plate for rotary dimmer representative of the year 2023.
Software and database used	SimaPro 9.6.0.1, ecoinvent 3.10, Industry Data 2.0
Energy model used	
Manufacturing	Busch-Jaeger Elektro GmbH energy mix in 2023, specific for the plant in Aue: 90.0% - hydropower energy imported from Norway (confirmed by certificate of origin), 10.0% - local CHP generation.
Installation	No energy consumption occur during the installation stage.
Use	Electricity low voltage, consumption mix at consumer (Germany, Netherlands, Rest of Europe).
End of life	The energy-related processes used for the inputs of the end-of-life stage are those included in the ecoinvent datasets selected for the analysis.

Common base of mandatory indicators



Environmental impact indicators

Indicator		Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
GWP	Total	kg CO2 eq.	1,33E+00	7,29E-02	1,20E-03	1,40E-02	1,21E+00	3,33E-02	5,69E-02
	Fossil	kg CO2 eq.	1,24E+00	8,17E-02	1,20E-03	4,86E-03	1,12E+00	3,33E-02	4,94E-02
	Biogenic	kg CO2 eq.	8,60E-02	-8,87E-03	3,82E-07	9,10E-03	8,57E-02	8,81E-06	7,55E-03
	Luluc	kg CO2 eq.	1,98E-03	8,21E-05	6,66E-08	2,80E-05	1,87E-03	4,49E-07	-1,49E-05
ODP		kg CFC-11 eq.	2,35E-08	2,51E-09	2,43E-11	8,54E-11	2,08E-08	5,83E-11	9,03E-10
AP		H+ eq.	3,73E-03	4,22E-04	1,49E-06	1,31E-05	3,29E-03	1,04E-05	3,52E-05
EP	Freshwater	kg P eq.	1,22E-03	3,93E-05	1,56E-08	1,92E-06	1,17E-03	1,73E-07	-7,00E-06
	Marine	kg N eq.	9,14E-04	9,05E-05	3,37E-07	7,52E-06	7,85E-04	3,07E-05	1,15E-05
	Terrestrial	mol N eq.	7,60E-03	1,03E-03	3,65E-06	4,54E-05	6,47E-03	4,34E-05	1,33E-04
POPCD		kg NMVOC eq.	2,40E-03	2,90E-04	3,10E-06	1,18E-05	2,08E-03	1,56E-05	1,65E-05
ADP	Minerals & metals	kg SB eq.	2,36E-05	9,56E-06	1,92E-10	1,24E-08	1,41E-05	2,43E-09	-3,25E-08
	Fossil	MJ	1,20E+01	7,94E-01	2,78E-04	1,14E-02	1,12E+01	2,52E-03	1,64E+00
WDP		m^3 eq. depr.	1,21E-01	-2,07E-02	1,53E-05	1,71E-03	1,39E-01	1,63E-04	9,15E-03

Resource use indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
PERE	MJ	6,30E+00	4,90E-01	7,07E-05	7,45E-03	5,80E+00	7,85E-04	2,87E-02
PERM	MJ	8,72E-02	8,72E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,91E-02
PERT	MJ	6,39E+00	5,78E-01	7,07E-05	7,45E-03	5,80E+00	7,85E-04	-3,04E-02
PENRE	MJ	1,88E+01	1,05E+00	1,59E-02	4,48E-02	1,77E+01	3,74E-02	8,96E-01
PENRM	MJ	2,27E-01	2,27E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,45E-01
PENRT	MJ	1,91E+01	1,27E+00	1,59E-02	4,48E-02	1,77E+01	3,74E-02	1,44E+00

Common base of mandatory indicators

Use of secondary materials, water, and energy resources

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
SM	kg	1,98E-02	1,98E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,34E-02	2,39E-03	6,47E-07	5,42E-05	1,10E-02	-1,94E-05	1,38E-04

Waste category indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
HWD	kg	8,34E-05	5,80E-06	1,07E-07	2,16E-07	6,19E-05	1,53E-05	-1,67E-06
N-HWD	kg	9,81E-02	5,00E-03	6,03E-06	1,25E-03	7,81E-02	1,37E-02	-5,44E-04
RWD	kg	7,40E-05	1,18E-06	1,71E-09	7,59E-08	7,27E-05	1,67E-08	-9,51E-07

Output flow indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
CfRu	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MfR	kg	6,16E-03	8,38E-04	0,00E+00	5,11E-03	0,00E+00	2,11E-04	0,00E+00
MfER	kg	1,42E-02	6,77E-04	0,00E+00	9,85E-04	0,00E+00	1,25E-02	-2,67E-05
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Other indicators

Indicator		Unit	Total
Biogenic Carbon	Product	kg of C	0,00E+00
	Packaging	kg of C	2,33E-03

Products covered

The PEP includes a group of similar products which all belong to the same product family. There are different variations of the products, which are split of 9 different product groups. Products within one product variation group vary only in color, so the environmental impact of all products within one product variant group is the same.
The complete list of products covered by this PEP is shown in the table below.

General characteristics of all products covered by the EPD

Design name	Product type	Product code	Material
Busch-art linear	6540-44G-102 (reference product) 6540-44M-102 6540-44G-102-500 6540-44M-102-500	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	Recycled PC (93% recycled content)
Busch-art linear	6540-45M-102 6540-45M-102-500	2CKA006599A3055 2CKA006599A3059	Recycled PC (98% recycled content)
Saga	2115-916-510	2CKA006599A3051	Bio-based PC (89% bio-based content)
Future	6540-84-102 6540-884-102 6540-84-102-500	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	Bio-based PC (82% bio-based content)
Future	6540-885-102 6540-81-102 6540-82-102 6540-83-102	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	Standard PC
Busch Duro 2000 SI / Reflex SI = Jussi	2115-214 2115-214-110 2115/11-212-500 2115/11-214-500	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	Standard PC
Impressiovo	6540-885-102-510 6540-81-102-510 6540-83-102-510 6540-84-102-510	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	Standard PC
Busch-BalanceSI	2115-914	2CKA006599A3017	Standard PC
Basis55	2115-94-507 2115-95-507 2115-92-507	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929	Standard PC

Extrapolation Factors

For products other than the Reference product covered by this PEP, the environmental impacts for each phase of the life cycle are obtained by multiplying the values of the Reference product by the extrapolation factors provided in the tables below, with the following formulas:

$$y = a * x_0$$

Where:

- y is the selected impact category;
- a is the extrapolation factor from the tables below
- x_0 is the environmental indicator of the reference product

Total impact

Values of 'a' extrapolation factors to calculate total environmental impact score

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total		1.079	1.029	1.036	1.104	1.006	1.130	1.024	1.026
GWP- fossil		1.084	1.031	1.039	1.110	1.006	1.138	1.026	1.028
GWP-biogenic		1.010	0.999	0.999	1.013	1.001	1.016	1.002	1.002
GWP-luluc		1.146	1.017	1.031	1.154	1.025	1.156	1.028	1.011
ODP		1.092	1.021	1.046	1.124	1.018	1.158	1.036	1.036
AP		1.219	1.044	1.030	1.214	1.015	1.237	1.025	1.016
EP-freshwater		1.064	1.003	1.002	1.055	1.002	1.061	1.002	0.999
EP-marine		1.122	1.041	1.032	1.136	1.004	1.152	1.021	1.010
EP-terrestrial		1.152	1.059	1.042	1.172	1.020	1.189	1.034	1.022
POCP		1.152	1.061	1.035	1.164	1.016	1.189	1.029	1.017
ADP-minerals		1.230	0.989	0.988	1.179	0.988	1.187	0.988	0.988
ADP-fossil		1.076	1.086	1.106	1.198	1.065	1.243	1.103	1.114
WDP		1.206	1.358	1.350	1.527	1.308	1.592	1.336	1.331
PERE		1.048	0.988	1.015	1.056	0.990	1.040	1.003	1.000
PERM		1.205	4.266	4.547	1.768	1.475	1.313	1.499	0.975
PERT		1.050	1.033	1.063	1.065	0.997	1.043	1.010	1.000
PENRE	1.000	1.081	1.047	1.055	1.125	1.026	1.156	1.044	1.046
PENRM		0.904	1.996	2.056	3.265	2.202	3.855	2.839	3.056
PENRT		1.079	1.058	1.067	1.150	1.040	1.188	1.065	1.070
SM		1.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW		1.088	0.966	1.048	1.122	0.980	1.059	1.016	1.019
HWD		1.198	1.015	1.002	1.165	1.003	1.191	1.005	1.001
NHWD		1.058	0.979	0.992	1.046	0.943	1.058	0.972	0.968
RWD		1.083	1.011	1.001	1.070	1.001	1.088	1.001	0.999
CRU		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR		1.001	1.090	1.536	1.536	1.517	1.139	1.540	1.150
MER		1.052	0.856	0.875	0.923	0.593	1.066	0.764	0.783
EE		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging		1.000	1.000	1.623	1.623	1.623	1.000	1.623	1.000

Extrapolation Factors

Manufacturing stage

Values of ‘a’ extrapolation factors to calculate environmental impact score of manufacturing stage

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total		2.437	1.232	1.444	2.859	1.218	3.378	1.472	1.586
GWP- fossil		2.268	1.539	1.637	2.711	1.262	3.102	1.488	1.520
GWP-biogenic		0.902	4.060	3.227	1.510	1.628	0.849	1.619	0.976
GWP-luluc		4.521	1.420	1.529	4.494	1.382	4.754	1.474	1.270
ODP		1.856	1.201	1.417	2.144	1.163	2.474	1.320	1.342
AP		2.939	1.390	1.250	2.881	1.125	3.093	1.206	1.147
EP-freshwater		2.982	1.106	1.025	2.675	1.021	2.873	1.027	0.981
EP-marine		2.227	1.471	1.327	2.381	1.160	2.536	1.266	1.186
EP-terrestrial		2.119	1.441	1.292	2.247	1.143	2.392	1.237	1.169
POCP		2.258	1.516	1.278	2.340	1.140	2.560	1.233	1.159
ADP-minerals		1.568	0.972	0.971	1.441	0.970	1.461	0.971	0.970
ADP-fossil		2.144	2.297	2.590	3.975	1.978	4.668	2.543	2.717
WDP		-0.201	-1.090	-0.995	-2.027	-0.750	-2.453	-0.914	-0.929
PERE		1.611	0.851	1.178	1.707	0.868	1.508	1.034	1.000
PERM		1.205	4.266	4.547	1.768	1.475	1.313	1.499	0.975
PERT		1.549	1.366	1.687	1.716	0.960	1.479	1.104	0.996
PENRE	1.000	2.460	1.847	1.978	3.228	1.469	3.808	1.776	1.832
PENRM		0.904	1.996	2.056	3.265	2.202	3.855	2.839	3.056
PENRT		2.183	1.873	1.992	3.235	1.600	3.817	1.965	2.050
SM		1.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW		1.492	0.806	1.257	1.670	0.868	1.330	1.072	1.102
HWD		3.835	1.221	1.017	3.355	1.052	3.741	1.067	1.026
NHWD		2.133	1.027	1.161	2.213	0.991	2.170	1.089	0.989
RWD		6.199	1.699	1.015	5.332	1.016	6.504	1.025	0.951
CRU		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR		1.004	1.522	1.523	1.523	1.245	2.023	1.409	1.959
MER		2.018	1.197	1.009	2.015	0.862	2.573	0.956	0.912
EE		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging		1.000	1.000	1.623	1.623	1.623	1.000	1.623	1.000

Distribution stage

Values of ‘a’ extrapolation factors to calculate environmental impact score of distribution stage

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total									
GWP- fossil									
GWP-biogenic									
GWP-luluc									
ODP									
AP									
EP-freshwater									
EP-marine									
EP-terrestrial									
POCP									
ADP-minerals									
ADP-fossil									
WDP									
PERE									
PERM									
PERT									
PENRE	1.000	1.003	0.871	0.979	0.979	0.746	0.992	0.889	0.821
PENRM									
PENRT									
SM									
RSF									
NRSF									
FW									
HWD									
NHWD									
RWD									
CRU									
MFR									
MER									
EE									
Biogenic C, product									
Biogenic C, packaging									

Extrapolation Factors

Installation stage

Values of ‘a’ extrapolation factors to calculate environmental impact score of installation stage

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total			1.030	1.542	1.542	1.572		1.572	1.030
GWP- fossil			1.087	1.389	1.389	1.476		1.476	1.087
GWP-biogenic			1.000	1.624	1.624	1.624		1.624	1.000
GWP-luluc			1.003	1.616	1.616	1.619		1.619	1.003
ODP			1.012	1.592	1.592	1.603		1.603	1.012
AP			1.020	1.569	1.569	1.589		1.589	1.020
EP-freshwater			1.011	1.593	1.593	1.604		1.604	1.011
EP-marine			1.014	1.586	1.586	1.600		1.600	1.014
EP-terrestrial			1.017	1.578	1.578	1.595		1.595	1.017
POCP			1.023	1.563	1.563	1.585		1.585	1.023
ADP-minerals			1.034	1.533	1.533	1.566		1.566	1.034
ADP-fossil			1.033	1.534	1.534	1.567		1.567	1.033
WDP			1.007	1.604	1.604	1.611		1.611	1.007
PERE			1.017	1.577	1.577	1.594		1.594	1.017
PERM			1.000	1.000	1.000	1.000		1.000	1.000
PERT			1.017	1.577	1.577	1.594		1.594	1.017
PENRE	1.000	1.000	1.020	1.568	1.568	1.589	1.000	1.589	1.020
PENRM			1.000	1.000	1.000	1.000		1.000	1.000
PENRT			1.020	1.568	1.568	1.589		1.589	1.020
SM			1.000	1.000	1.000	1.000		1.000	1.000
RSF			1.000	1.000	1.000	1.000		1.000	1.000
NRSF			1.000	1.000	1.000	1.000		1.000	1.000
FW			1.005	1.609	1.609	1.614		1.614	1.005
HWD			1.030	1.543	1.543	1.573		1.573	1.030
NHWD			1.074	1.423	1.423	1.497		1.497	1.074
RWD			1.041	1.511	1.511	1.553		1.553	1.041
CRU			1.000	1.000	1.000	1.000		1.000	1.000
MFR			1.023	1.560	1.560	1.583		1.583	1.023
MER			1.113	1.319	1.319	1.432		1.432	1.113
EE			1.000	1.000	1.000	1.000		1.000	1.000
Biogenic C, product			1.000	1.000	1.000	1.000		1.000	1.000
Biogenic C, packaging			1.000	1.000	1.000	1.000		1.000	1.000

Use stage

Values of ‘a’ extrapolation factors to calculate environmental impact score of use stage

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total									
GWP- fossil									
GWP-biogenic									
GWP-luluc									
ODP									
AP									
EP-freshwater									
EP-marine									
EP-terrestrial									
POCP									
ADP-minerals									
ADP-fossil									
WDP									
PERE									
PERM									
PERT									
PENRE	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PENRM									
PENRT									
SM									
RSF									
NRSF									
FW									
HWD									
NHWD									
RWD									
CRU									
MFR									
MER									
EE									
Biogenic C, product									
Biogenic C, packaging									

Extrapolation Factors

End-of-life stage

Values of ‘a’ extrapolation factors to calculate environmental impact score of end-of-life stage

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total		1.009	1.630	1.255	0.839	0.515	0.996	0.704	0.752
GWP- fossil		1.009	0.819	0.835	0.839	0.515	0.996	0.704	0.752
GWP-biogenic		1.010	3072.053	1591.953	0.866	0.590	0.999	0.749	0.790
GWP-luluc		1.023	0.901	0.909	0.930	0.735	1.019	0.838	0.864
ODP		1.063	0.829	0.844	0.901	0.543	1.059	0.720	0.766
AP		1.024	0.830	0.845	0.864	0.545	1.014	0.722	0.767
EP-freshwater		1.015	0.888	0.898	0.910	0.701	1.009	0.817	0.847
EP-marine		1.006	0.818	0.834	0.836	0.515	0.992	0.703	0.752
EP-terrestrial		1.016	0.824	0.840	0.851	0.531	1.004	0.713	0.760
POCP		1.032	0.826	0.841	0.868	0.534	1.023	0.715	0.762
ADP-minerals		1.014	0.865	0.877	0.888	0.640	1.006	0.780	0.816
ADP-fossil		1.018	0.895	0.904	0.919	0.719	1.012	0.828	0.856
WDP		1.016	0.888	0.898	0.911	0.701	1.009	0.817	0.847
PERE		1.015	0.890	0.899	0.912	0.705	1.009	0.820	0.849
PERM		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PERT		1.015	0.890	0.899	0.912	0.705	1.009	0.820	0.849
PENRE	1.000	1.064	0.833	0.848	0.906	0.554	1.060	0.728	0.772
PENRM		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PENRT		1.064	0.833	0.848	0.906	0.554	1.060	0.728	0.772
SM		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
RSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW		1.000	0.800	0.818	0.813	0.466	0.983	0.673	0.727
HWD		1.001	0.996	0.997	0.997	0.990	1.001	0.994	0.995
NHWD		1.004	0.831	0.846	0.846	0.549	0.991	0.724	0.769
RWD		1.017	0.910	0.918	0.932	0.760	1.012	0.854	0.877
CRU		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MER		1.004	0.817	0.833	0.833	0.512	0.990	0.702	0.750
EE		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Module D

Values of ‘a’ extrapolation factors to calculate environmental impact score of Module D

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total		1.070	-0.161	-0.126	-0.126	-0.077	-0.183	-0.112	-0.149
GWP- fossil		1.080	-0.333	-0.386	-0.386	-0.332	-0.358	-0.370	-0.320
GWP-biogenic		1.002	0.970	1.586	1.586	1.593	0.966	1.589	0.971
GWP-luluc		0.901	2.592	3.646	3.646	3.363	2.734	3.542	2.529
ODP		1.089	-0.490	-0.544	-0.544	-0.454	-0.529	-0.518	-0.467
AP		1.202	-2.389	-3.168	-3.168	-2.994	-2.450	-3.137	-2.338
EP-freshwater		0.999	0.970	1.197	1.197	1.028	1.053	1.137	0.931
EP-marine		1.169	-1.838	-2.527	-2.527	-2.421	-1.874	-2.511	-1.807
EP-terrestrial		1.153	-1.577	-2.168	-2.168	-2.089	-1.600	-2.160	-1.552
POCP		1.320	-4.413	-5.757	-5.757	-5.498	-4.478	-5.746	-4.325
ADP-minerals		0.984	1.306	1.540	1.540	1.504	1.290	1.571	1.283
ADP-fossil		1.064	-0.068	-0.075	-0.075	-0.063	-0.074	-0.072	-0.065
WDP		1.085	-0.442	-0.502	-0.502	-0.486	-0.436	-0.514	-0.432
PERE		1.206	-2.395	-3.394	-3.394	-3.137	-2.526	-3.297	-2.338
PERM		1.000	1.000	1.623	1.623	1.623	1.000	1.623	1.000
PERT		0.805	4.206	6.362	6.362	6.119	4.330	6.270	4.152
PENRE	1.000	1.078	-0.297	-0.341	-0.341	-0.280	-0.326	-0.320	-0.283
PENRM		1.062	-0.056	-0.046	-0.046	-0.056	-0.046	-0.056	-0.056
PENRT		1.072	-0.206	-0.229	-0.229	-0.195	-0.220	-0.220	-0.197
SM		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
RSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW		1.132	-1.199	-1.371	-1.371	-1.212	-1.259	-1.338	-1.155
HWD		1.002	1.036	1.070	1.070	1.058	0.997	1.123	1.013
NHWD		0.933	2.107	2.946	2.946	2.814	2.159	2.916	2.071
RWD		1.004	0.864	0.965	0.965	0.718	0.992	0.869	0.810
CRU		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MER		1.000	1.231	1.000	1.000	1.231	1.000	1.231	1.231
EE		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Extrapolation Factors

Biogenic carbon content of the product

To calculate 'Biogenic carbon content of the product' impact category for products containing bio-based PC for total life cycle environmental impacts and only at the manufacturing stage the following formulas should be used:

$$y = a * x_0 + b$$

Where:

- y is the selected impact category;
- a is the extrapolation factor from the tables above
- x_0 is the environmental indicator of the reference product
- b is the extrapolation factor (y-intercept of linear function)

Values of 'b' extrapolation factors to calculate environmental impact score for products containing bio-based PC - total and at the manufacturing stage

Impact category	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952
Biogenic C, product	0.00700	0.00657

Scaling Factors

Each product might be also used according to alternative life cycle scenario (glow lamp is disposed by customer at the installation stage). Following by alternative life cycle scenario, environmental impacts for installation, use and end-of-life stages might differ from those from reference scenario. Total environmental impacts score and for installation, use and end-of-life stages can be calculated by multiplying the values of the Reference product by the scaling factors provided in the tables below, with the following formulas:

$$y = a * x_0$$

Where:

- y is the selected impact category;
- a is the scaling factor from the tables below
- x_0 is the environmental indicator of the reference product

Total impact

Values of 'a' scaling factors to calculate total environmental impact score for in alternative life cycle scenario

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total	0.093	0.172	0.122	0.129	0.197	0.099	0.223	0.117	0.119
GWP- fossil	0.099	0.183	0.130	0.138	0.209	0.105	0.237	0.125	0.127
GWP-biogenic	0.003	0.013	0.002	0.002	0.016	0.004	0.018	0.005	0.005
GWP-luluc	0.056	0.202	0.074	0.087	0.210	0.081	0.212	0.084	0.067
ODP	0.115	0.207	0.136	0.161	0.240	0.133	0.273	0.151	0.151
AP	0.120	0.340	0.164	0.150	0.335	0.135	0.357	0.145	0.136
EP-freshwater	0.035	0.099	0.038	0.036	0.090	0.036	0.095	0.036	0.034
EP-marine	0.142	0.263	0.182	0.173	0.278	0.146	0.294	0.163	0.152
EP-terrestrial	0.148	0.300	0.207	0.190	0.320	0.169	0.337	0.182	0.170
POCP	0.135	0.287	0.196	0.170	0.298	0.151	0.323	0.164	0.152
ADP-minerals	0.405	0.635	0.394	0.394	0.584	0.394	0.592	0.394	0.393
ADP-fossil	0.068	0.144	0.154	0.174	0.266	0.133	0.311	0.171	0.182
WDP	-0.155	0.051	0.203	0.196	0.373	0.153	0.437	0.182	0.176
PERE	0.079	0.127	0.068	0.094	0.135	0.070	0.119	0.083	0.079
PERM	1.000	1.205	4.266	4.547	1.768	1.475	1.313	1.499	0.975
PERT	0.092	0.141	0.125	0.155	0.157	0.089	0.135	0.102	0.091
PENRE	0.061	0.143	0.108	0.117	0.186	0.088	0.217	0.105	0.107
PENRM	1.000	0.904	1.996	2.056	3.265	2.202	3.855	2.839	3.056
PENRT	0.072	0.152	0.130	0.140	0.223	0.113	0.261	0.138	0.142
SM	1.000	1.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RSF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW	0.181	0.268	0.147	0.229	0.303	0.161	0.240	0.197	0.200
HWD	0.081	0.279	0.096	0.083	0.246	0.084	0.272	0.086	0.082
NHWD	0.196	0.255	0.175	0.188	0.242	0.139	0.255	0.168	0.164
RWD	0.017	0.100	0.029	0.018	0.087	0.018	0.105	0.018	0.017
CRU	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR	1.000	1.001	1.090	1.536	1.536	1.517	1.139	1.540	1.150
MER	1.000	1.052	0.856	0.875	0.923	0.593	1.066	0.764	0.783
EE	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging	1.000	1.000	1.000	1.623	1.623	1.623	1.000	1.623	1.000

Scaling Factors

Installation stage

Values of ‘a’ scaling factors to calculate environmental impact score of installation stage for alternative life cycle scenario

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total	1.174	1.174	1.204	1.717	1.717	1.747	1.174	1.747	1.204
GWP- fossil	1.500	1.500	1.587	1.889	1.889	1.976	1.500	1.976	1.587
GWP-biogenic	1.001	1.001	1.001	1.625	1.625	1.625	1.001	1.625	1.001
GWP-luluc	1.013	1.013	1.016	1.630	1.630	1.632	1.013	1.632	1.016
ODP	1.273	1.273	1.285	1.865	1.865	1.877	1.273	1.877	1.285
AP	1.198	1.198	1.218	1.767	1.767	1.787	1.198	1.787	1.218
EP-freshwater	1.361	1.361	1.372	1.954	1.954	1.965	1.361	1.965	1.372
EP-marine	1.085	1.085	1.099	1.671	1.671	1.685	1.085	1.685	1.099
EP-terrestrial	1.134	1.134	1.150	1.712	1.712	1.729	1.134	1.729	1.150
POCP	1.224	1.224	1.246	1.786	1.786	1.809	1.224	1.809	1.246
ADP-minerals	1.275	1.275	1.309	1.808	1.808	1.841	1.275	1.841	1.309
ADP-fossil	1.193	1.193	1.226	1.726	1.726	1.760	1.193	1.760	1.226
WDP	1.072	1.072	1.079	1.676	1.676	1.684	1.072	1.684	1.079
PERE	1.085	1.085	1.102	1.662	1.662	1.679	1.085	1.679	1.102
PERM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PERT	1.085	1.085	1.102	1.662	1.662	1.679	1.085	1.679	1.102
PENRE	1.257	1.257	1.277	1.825	1.825	1.846	1.257	1.846	1.277
PENRM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PENRT	1.257	1.257	1.277	1.825	1.825	1.846	1.257	1.846	1.277
SM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
RSF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW	1.081	1.081	1.086	1.690	1.690	1.695	1.081	1.695	1.086
HWD	2.511	2.511	2.541	3.054	3.054	3.084	2.511	3.084	2.541
NHWD	1.186	1.186	1.260	1.609	1.609	1.683	1.186	1.683	1.260
RWD	1.206	1.206	1.248	1.718	1.718	1.759	1.206	1.759	1.248
CRU	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR	1.000	1.000	1.023	1.560	1.560	1.583	1.000	1.583	1.023
MER	1.000	1.000	1.113	1.319	1.319	1.432	1.000	1.432	1.113
EE	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Use stage

Values of ‘a’ scaling factors to calculate environmental impact score of use stage for alternative life cycle scenario

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total									
GWP- fossil									
GWP-biogenic									
GWP-luluc									
ODP									
AP									
EP-freshwater									
EP-marine									
EP-terrestrial									
POCP									
ADP-minerals									
ADP-fossil									
WDP									
PERE									
PERM									
PERT									
PENRE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PENRM									
PENRT									
SM									
RSF									
NRSF									
FW									
HWD									
NHWD									
RWD									
CRU									
MFR									
MER									
EE									
Biogenic C, product									
Biogenic C, packaging									

Scaling Factors

End-of-life stage

Values of 'a' scaling factors to calculate environmental impact score of end-of-life stage for alternative life cycle scenario

Impact category	2CKA006599A3052 (reference product) 2CKA006599A3053 2CKA006599A3056 2CKA006599A3057	2CKA006599A3055 2CKA006599A3059	2CKA006599A3051	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952	2CKA006599A0237 2CKA006599A2883 2CKA006599A3033 2CKA006599A3034	2CKA006599A3044 2CKA006599A3035 2CKA006599A3036 2CKA006599A3037	2CKA006599A3017	2CKA006599A2928 2CKA006599A2991 2CKA006599A2929
GWP-total	0.997	1.006	1.627	1.252	0.836	0.512	0.993	0.701	0.749
GWP- fossil	0.997	1.006	0.816	0.831	0.836	0.512	0.993	0.701	0.749
GWP-biogenic	1.008	1.018	3072.061	1591.961	0.874	0.598	1.007	0.758	0.799
GWP-luluc	0.857	0.880	0.757	0.766	0.787	0.591	0.876	0.694	0.721
ODP	0.965	1.027	0.794	0.809	0.866	0.508	1.024	0.685	0.731
AP	0.979	1.003	0.808	0.823	0.843	0.523	0.993	0.700	0.746
EP-freshwater	0.924	0.939	0.812	0.821	0.834	0.624	0.932	0.741	0.771
EP-marine	0.998	1.004	0.817	0.832	0.834	0.513	0.990	0.701	0.750
EP-terrestrial	0.986	1.002	0.811	0.826	0.838	0.517	0.990	0.699	0.746
POCP	0.979	1.011	0.805	0.820	0.847	0.513	1.002	0.694	0.741
ADP-minerals	0.975	0.989	0.840	0.852	0.863	0.615	0.980	0.755	0.790
ADP-fossil	0.910	0.928	0.805	0.814	0.829	0.629	0.922	0.738	0.766
WDP	0.935	0.951	0.823	0.833	0.846	0.636	0.944	0.753	0.782
PERE	0.908	0.923	0.797	0.807	0.819	0.612	0.916	0.727	0.757
PERM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PERT	0.908	0.923	0.797	0.807	0.819	0.612	0.916	0.727	0.757
PENRE	0.959	1.023	0.792	0.807	0.866	0.514	1.020	0.687	0.731
PENRM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PENRT	0.959	1.023	0.792	0.807	0.866	0.514	1.020	0.687	0.731
SM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
RSF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
NRSF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW	1.003	1.003	0.803	0.821	0.816	0.469	0.987	0.676	0.730
HWD	0.021	0.022	0.017	0.018	0.019	0.011	0.022	0.015	0.016
NHWD	0.929	0.933	0.760	0.775	0.775	0.478	0.920	0.653	0.698
RWD	0.889	0.906	0.799	0.807	0.821	0.649	0.901	0.743	0.766
CRU	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MFR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MER	1.000	1.004	0.817	0.833	0.833	0.512	0.990	0.702	0.750
EE	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, product	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Biogenic C, packaging	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Biogenic carbon content of the product

To calculate 'Biogenic carbon content of the product' impact category for products containing bio-based PC for total life cycle environmental impacts for alternative life cycle scenario, the following formulas should be used:

$$y = a * x_0 + b$$

Where:

- y is the selected impact category;
- a is the scaling factor from the tables above
- x_0 is the environmental indicator of the reference product
- b is the scaling factor from the table below

Values of 'b' scaling factors to calculate total environmental impact score for products containing bio-based PC for alternative product life cycle scenario

Impact category	2CKA006599A2953 2CKA006599A2961 2CKA006599A3009	2CKA006599A2966 2CKA006599A2950 2CKA006599A2951 2CKA006599A2952
Biogenic C, product	0.00700	0.00657

Glossary

Environmental impact Indicators	
GWP-total	Global Warming Potential total (Climate change)
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential
EP-freshwater	Eutrophication potential - freshwater compartment
EP-marine	Eutrophication potential - fraction of nutrients reachin marine end compartment
EP-terrestrial	Eutrophication potential - Accumulated Exceedance
POPCD	Formation potential of tropospheric ozone
ADP-m&m	Abiotic Depletion for non-fossil resources potential
ADP-fossil	Abiotic Depletion for fossil resources potential,
WDP	Water deprivation potential

Resource indicators	
PENRE	Use of non-renewable primary energy excluding renewable primary energy resources used as raw material
PENRM	Use of non-renewable primary energy resources used as raw material
PENRT	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials
PERE	Use of renewable primary energy excluding non-renewable primary energy resources used as raw material.
PERM	Use of renewable primary energy resources used as raw material
PERT	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)

Secondary materials, water and energy resources		Waste category indicators	
SM	Use of secondary materials	HWD	Hazardous waste disposed
RSF	Use of renewable secondary fuels	N-HWD	Non-hazardous waste disposed
NRSF	Use of non-renewable secondary fuels	RWD	Radioactive waste disposed
FW	Net use of fresh water		

Output flow indicators	
CfRu	Components for re-use
MfR	Materials for recycling
MfER	Materials for energy recovery
EE	Exported Energy

References

[1] PCR “PEP-PCR-ed4-EN-2022_09_06” - Product Category Rules for Electrical, Electronic and HVAC-R Products (published: 6th September 2022)

[2] PSR-0005-ed3.1-EN-2023 12 08 - Electrical swichgear and control gear solutions

[3] EN 50693:2019 - Product category rules for life cycle assessments of electronic and electrical products and systems

[4] ISO 14040:2006 - Environmental management -Life cycle assessment - Principles and framework

[5] ISO 14044:2006 - Environmental management - Life cycle assessment - Requirements and guidelines

[6] ecoinvent database version 3.10 (November 2023) - (https://ecoinvent.org/)

[7] SimaPro Software version 9.6.0.1 - PRé Sustainability

[8] UNI EN 15804:2012+A2:2019: Sustainability of constructions - Environmental product declarations (September 2019)