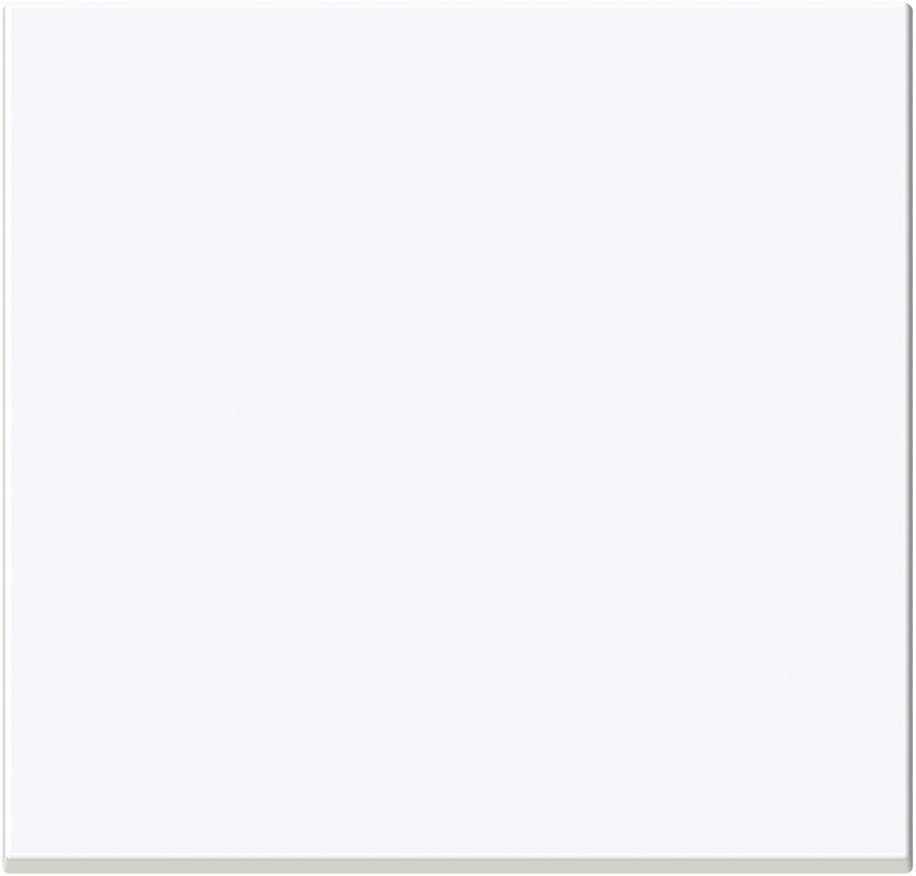
Vega Rockers

PEP ecopassport®

Product Environmental Profile



Registration number:	**ABBG-00809-V01.01-EN**	Drafting rules:	**PCR-ed4-EN-2021 09 06**
Contact information:	**Lide Brito Amas - lide.brito@es.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:	**August-25**	Validity period:	**5 years**

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

Internal:	☐	**External:**	x

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"

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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	**2CLA880100A1101 8801 BL, Rocker for switch 1-gang, White glossy**
Description of the product	**The family of products “VEGA Rockers” is composed of single and double rockers, which are applicable for switch functionalities.**
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 VEGA Rockers family. All products covered by this PEP are listed in the tables on pages 8 and 9.**
Manufacturing address	**Aranguren Pol., 6, Arragua, 20180 Oiartzun, Gipuzkoa, Spain https://new.abb.com/products/2CLA880100A1101**

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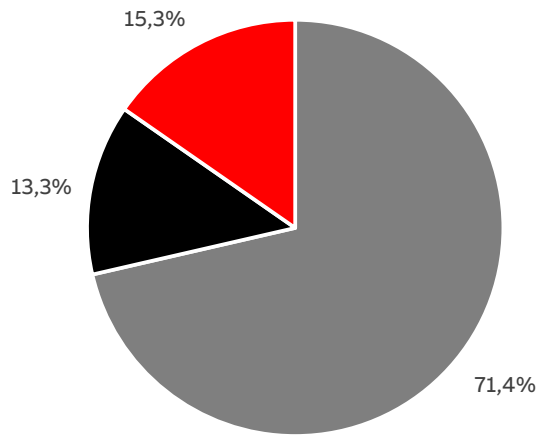
Constituent Materials



Total weight of reference product	34,800 g - including the product and its packaging 28,846 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%
Polycarbonate (94% recycled)	46,8	**Stainless steel (44.4% recycled)**	13,3	**Carton (92% recycled)**	15,3
Polyamide 6.6	22,8				
PP foil (30% recycled)	1,8				

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Additional Information

Manufacturing	Manufactured by ABB Niessen at the Oiartzun factory, ISO 14001 certified. Includes the environmental impacts associated with the extraction and processing of the raw materials making up the product and its packaging, as well as their transport to the manufacturing site. Additionally, it includes the electricity consumption required for the produced items manufacturing and the wastes generated during the manufacturing process, theirs transport to waste treatment company and recycling process.
Distribution	Includes the transportation in its packaging from the manufacturer's last logistic platform to an average delivery point in the sales area.
Installation	Includes the manual installation of the products by customers (no energy consumption is required during installation) and the end-of-life of the packaging.
Use	Due to the nature of the product, no energy is consumed during the RLT.
End of life	Includes the transportation of the product from the installation site to the final end-of-life treatment site, as well as the end-of-life treatment processes. A value of 1,000 km transport by lorry is used for the transportation scenario. The end-of-life treatment scenario is modeled according to Eurostat data for WEEE by waste management operations for year 2022, for all product distribution regions.
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.

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Environmental Impacts

Reference lifetime	20 years
Product category	Other equipments - passive product
Installation elements	Manual installation by the customer. No additional elements needed during installation.
Use scenario	Non-applicable
Geographical representativeness	Manufacturing: Spain Distribution, Installation and End-of-life: Spain, Portugal, Rest of Europe
Technological representativeness	Materials and processes data are representative of the production of 2CLA880100A1101 and other products of its homogeneous environmental VEGA Rockers family of the year 2024.
Software and database used	SimaPro 9.6.0.1, Ecoinvent 3.10, Industry Data 2.0

Energy model used	
Manufacturing	ABB Niessen energy mix in 2024 specific for the factory in Oiartzun: 7.71% - local self-generated electricity from solar PV 35.51% - thermosolar energy from electricity grid (confirmed by certificate of origin) 56.78% - hydropower from electricity grid (confirmed by certificate of origin)
Installation	No energy required
Use	Non-applicable
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.

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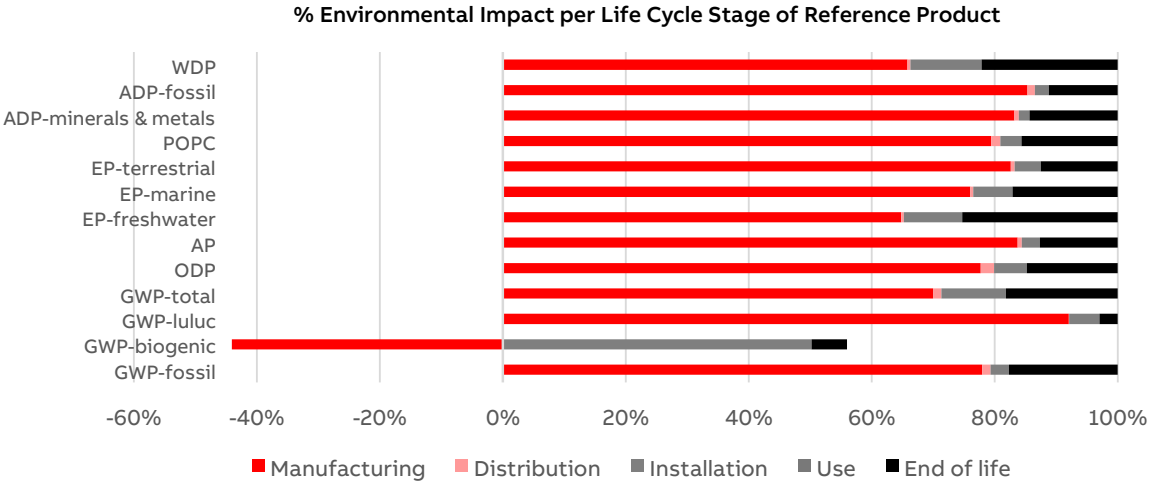
Common base of mandatory indicators



Environmental impact indicators

Indicator		Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
GWP	Total	kg CO2 eq.	1,22E-01	8,51E-02	1,61E-03	1,28E-02	0,00E+00	2,21E-02	-4,82E-02
	Fossil	kg CO2 eq.	1,19E-01	9,27E-02	1,60E-03	3,58E-03	0,00E+00	2,11E-02	-4,74E-02
	Biogenic	kg CO2 eq.	2,18E-03	-8,06E-03	2,70E-07	9,18E-03	0,00E+00	1,05E-03	-8,07E-04
	Luluc	kg CO2 eq.	5,25E-04	4,83E-04	3,67E-07	2,60E-05	0,00E+00	1,56E-05	-4,82E-06
ODP		kg CFC-11 eq.	1,49E-09	1,16E-09	3,27E-11	7,92E-11	0,00E+00	2,21E-10	-4,83E-10
AP		H+ eq.	3,96E-04	3,32E-04	2,66E-06	1,17E-05	0,00E+00	5,01E-05	-1,49E-04
EP	Freshwater	kg P eq.	1,86E-05	1,21E-05	7,75E-08	1,77E-06	0,00E+00	4,71E-06	-5,79E-06
	Marine	kg N eq.	1,08E-04	8,19E-05	5,60E-07	6,85E-06	0,00E+00	1,85E-05	-3,81E-05
	Terrestrial	mol N eq.	9,62E-04	7,94E-04	6,02E-06	4,10E-05	0,00E+00	1,20E-04	-3,49E-04
POCP		kg NMVOC eq.	3,02E-04	2,40E-04	4,54E-06	1,04E-05	0,00E+00	4,73E-05	-9,76E-05
ADP	Minerals & metals	kg SB eq.	6,39E-07	5,31E-07	4,74E-09	1,11E-08	0,00E+00	9,17E-08	-2,22E-07
	Fossil	MJ	1,79E+00	1,53E+00	2,21E-02	4,02E-02	0,00E+00	2,02E-01	-7,42E-01
WDP		m^3 eq. depr.	1,32E-02	8,66E-03	6,24E-05	1,52E-03	0,00E+00	2,91E-03	1,58E-02

Resource use indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
PERE	MJ	2,54E-01	2,21E-01	2,22E-04	6,98E-03	0,00E+00	2,57E-02	-6,48E-03
PERM	MJ	3,21E-02	3,21E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,34E-03
PERT	MJ	2,86E-01	2,53E-01	2,22E-04	6,98E-03	0,00E+00	2,57E-02	2,87E-03
PENRE	MJ	1,79E+00	1,53E+00	2,21E-02	4,02E-02	0,00E+00	2,02E-01	-7,42E-01
PENRM	MJ	3,05E-01	3,05E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,44E-01
PENRT	MJ	2,10E+00	1,84E+00	2,21E-02	4,02E-02	0,00E+00	2,02E-01	-8,86E-01

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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	2,41E-02	2,41E-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	2,92E-04	1,14E-04	2,04E-06	5,21E-05	0,00E+00	1,24E-04	3,02E-04

Waste category indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
HWD	kg	2,01E-02	1,80E-02	1,81E-05	1,38E-04	0,00E+00	1,86E-03	-8,29E-03
N-HWD	kg	6,76E-02	2,61E-02	2,08E-04	5,47E-03	0,00E+00	3,59E-02	-5,74E-03
RWD	kg	1,49E-06	7,75E-07	4,16E-09	6,55E-08	0,00E+00	6,41E-07	-3,45E-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	3,05E-02	2,23E-03	0,00E+00	4,63E-03	0,00E+00	2,36E-02	0,00E+00
MfER	kg	4,28E-03	6,38E-04	0,00E+00	7,09E-04	0,00E+00	2,93E-03	-3,40E-06
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	2,22E-03

Optional indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
Tot PE	MJ	2,39E+00	2,09E+00	2,23E-02	4,72E-02	0,00E+00	2,27E-01	-8,83E-01
Efp	Dise inc	5,03E-09	3,89E-09	1,26E-10	1,06E-10	0,00E+00	9,00E-10	-1,65E-09
IrHH	kBq U-235 eq	1,44E-02	1,17E-02	1,67E-05	2,57E-04	0,00E+00	2,50E-03	-7,63E-03
ETX FW	CTUe	7,53E-01	5,92E-01	4,56E-03	5,70E-02	0,00E+00	9,97E-02	-2,62E-01
HTX CE	CTUh	1,19E-09	1,05E-09	9,59E-12	9,88E-12	0,00E+00	1,17E-10	-7,66E-10
HTX N-CE	CTUh	8,03E-10	5,34E-10	1,67E-11	5,67E-11	0,00E+00	1,95E-10	-1,90E-10
IrLS	Pt	5,72E-01	4,47E-01	1,75E-03	2,90E-02	0,00E+00	9,44E-02	2,34E-02

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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 8 different product groups. 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 tables below.

General characteristics of all products covered by the EPD - part I

Products variants group	Product code	Commercial reference	Material	Description
1	**2CLA880100A1101 (reference product)**	**8801 BL (reference product)**	Recycled PC (94% recycled content) Color: White glossy (BL), White matt (BT)	Rocker 1-gang switch/push button
	2CLA880100A1001	8801 BT		
	2CLA880120A1101	8801.2 BL		Rocker 2P switch
	2CLA880120A1001	8801.2 BT		
	2CLA880130A1101	8801.3 BL		Rocker switch/push-button with lens
	2CLA880130A1001	8801.3 BT		
	2CLA880140A1101	8801.4 BL		Rocker 2P switch w/lens
	2CLA880140A1001	8801.4 BT		
	2CLA880400A1101	8804 BL		Rocker bell symbol
	2CLA880400A1001	8804 BT		
	2CLA880420A1101	8804.2 BL		Rocker light symbol
	2CLA880420A1001	8804.2 BT		
	2CLA880430A1101	8804.3 BL		Rocker bell symbol with lens
	2CLA880430A1001	8804.3 BT		
	2CLA880440A1101	8804.4 BL		Rocker light symbol with lens
	2CLA880440A1001	8804.4 BT		
2	2CLA880100A1501	8801 NT	Recycled PC (95% recycled content) Color: Black matt (NT), Grey matt (GN), Dune (DN)	Rocker 1-gang switch/push button
	2CLA880100A1601	8801 GN		
	2CLA880100A6201	8801 DN		
	2CLA880120A1501	8801.2 NT		Rocker 2P switch
	2CLA880120A1601	8801.2 GN		
	2CLA880120A6201	8801.2 DN		
	2CLA880130A1501	8801.3 NT		Rocker switch/push-button with lens
	2CLA880130A1601	8801.3 GN		
	2CLA880130A6201	8801.3 DN		
	2CLA880140A1501	8801.4 NT		Rocker 2P switch w/lens
	2CLA880140A1601	8801.4 GN		
	2CLA880140A6201	8801.4 DN		
	2CLA880400A1501	8804 NT		Rocker bell symbol
	2CLA880400A1601	8804 GN		
	2CLA880400A6201	8804 DN		
	2CLA880420A1501	8804.2 NT		Rocker light symbol
	2CLA880420A1601	8804.2 GN		
	2CLA880420A6201	8804.2 DN		
	2CLA880430A1501	8804.3 NT		Rocker bell symbol with lens
	2CLA880430A1601	8804.3 GN		
	2CLA880430A6201	8804.3 DN		
	2CLA880440A1501	8804.4 NT		Rocker light symbol with lens
	2CLA880440A1601	8804.4 GN		
	2CLA880440A6201	8804.4 DN		

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Products covered

General characteristics of all products covered by the EPD - part II

Products variants group	Product code	Commercial reference	Material	Description
3	2CLA881100A1101 2CLA881100A1001	8811 BL 8811 BT	Recycled PC (94% recycled content) Color: White glossy (BL), White matt (BT)	Rocker 2-gang switch/push-button
	2CLA884400A1101 2CLA884400A1001	8844 BL 8844 BT		Rocker for blind switch/push-button
4	2CLA881100A1501 2CLA881100A1601 2CLA881100A6201	8811 NT 8811 GN 8811 DN	Recycled PC (95% recycled content) Color: Black matt (NT), Grey matt (GN), Dune (DN)	Rocker 2-gang switch/push-button
	2CLA884400A1501 2CLA884400A1601 2CLA884400A6201	8844 NT 8844 GN 8844 DN		Rocker for blind switch/push-button
5	2CLA883210A1101 2CLA883210A1001	8832.1 BL 8832.1 BT	Recycled PC (94% recycled content) Color: White glossy (BL), White matt (BT)	Rocker WL 1 channel
6	2CLA883210A1501 2CLA883210A1601 2CLA883210A6201	8832.1 NT 8832.1 GN 8832.1 DN	Recycled PC (95% recycled content) Color: Black matt (NT), Grey matt (GN), Dune (DN)	Rocker WL 1 channel
7	2CLA883220A1101 2CLA883220A1001	8832.2 BL 8832.2 BT	Recycled PC (94% recycled content) Color: White glossy (BL), White matt (BT)	Rocker WL 2 channel
8	2CLA883220A1501 2CLA883220A1601 2CLA883220A6201	8832.2 NT 8832.2 GN 8832.2 DN	Recycled PC (95% recycled content) Color: Black matt (NT), Grey matt (GN), Dune (DN)	Rocker WL 2 channel

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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	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total		0.990	0.926	0.915	0.307	0.298	0.327	0.309
GWP- fossil		0.990	0.919	0.908	0.298	0.288	0.315	0.298
GWP-biogenic		0.999	1.056	1.055	0.702	0.701	0.735	0.689
GWP-luluc		0.999	1.832	1.832	0.793	0.792	1.421	1.416
ODP		0.984	0.958	0.940	0.431	0.415	0.471	0.440
AP		0.995	0.952	0.947	0.276	0.271	0.299	0.285
EP-freshwater		0.998	1.001	1.000	0.550	0.548	0.574	0.557
EP-marine		0.995	0.938	0.933	0.357	0.353	0.375	0.361
EP-terrestrial		0.995	0.943	0.937	0.307	0.302	0.328	0.313
POCP		0.992	0.961	0.952	0.354	0.346	0.378	0.356
ADP-minerals & metals		0.997	1.061	1.057	0.237	0.234	0.285	0.277
ADP-fossil		0.987	0.905	0.891	0.280	0.268	0.301	0.280
WDP		0.990	2.878	2.866	1.711	1.701	2.844	2.813
PERE		0.996	1.443	1.438	1.178	1.174	1.513	1.444
PERM		1.000	0.999	0.999	4.313	4.313	4.319	3.983
PERT		0.997	1.393	1.389	1.530	1.527	1.828	1.729
PENRE		0.987	0.905	0.891	0.280	0.268	0.301	0.280
PENRM		0.984	0.817	0.799	0.173	0.158	0.175	0.147
PENRT		0.986	0.893	0.877	0.265	0.252	0.283	0.261
SM	1.000	1.007	1.072	1.080	0.627	0.634	0.638	0.645
RSF		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
FW		0.988	2.280	2.266	1.582	1.570	2.269	2.229
HWD		1.000	1.006	1.006	0.056	0.055	0.061	0.059
N-HWD		0.999	1.017	1.016	0.620	0.619	0.640	0.593
RWD		0.999	1.163	1.162	0.603	0.602	0.732	0.719
CfRu		1.000	1.000	1.000	1.000	1.000	1.000	1.000
MfR		1.000	0.997	0.997	0.626	0.626	0.633	0.633
MfER		1.000	1.003	1.003	0.681	0.681	0.688	0.626
EE		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
Biogenic C, packaging		1.000	1.000	1.000	1.312	1.312	1.312	1.312
Tot PE		0.988	0.953	0.953	0.416	0.404	0.468	0.437
Efp		0.989	0.966	0.966	0.313	0.303	0.331	0.311
IrHH		0.997	0.937	0.937	0.260	0.257	0.316	0.309
EXT FW		0.989	0.996	0.996	0.354	0.344	0.380	0.362
HTX CE		0.997	1.021	1.021	0.131	0.128	0.148	0.142
HTX N-CE		0.992	1.043	1.043	0.460	0.452	0.497	0.477
IrLS		0.998	1.061	1.061	2.089	2.087	2.140	1.962

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Extrapolation Factors

Manufacturing stage

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

Impact category	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total		0.986	0.892	0.877	0.080	0.067	0.107	0.081
GWP- fossil		0.987	0.895	0.881	0.190	0.178	0.210	0.188
GWP-biogenic		1.000	0.986	0.986	1.387	1.387	1.379	1.392
GWP-luluc		0.999	1.904	1.904	0.774	0.773	1.456	1.450
ODP		0.979	0.945	0.922	0.340	0.320	0.390	0.351
AP		0.994	0.942	0.935	0.198	0.192	0.224	0.207
EP-freshwater		0.997	1.001	0.998	0.454	0.452	0.488	0.462
EP-marine		0.994	0.917	0.910	0.226	0.220	0.248	0.229
EP-terrestrial		0.993	0.930	0.923	0.218	0.212	0.242	0.224
POCP		0.990	0.950	0.939	0.269	0.259	0.296	0.270
ADP-minerals & metals		0.996	1.072	1.068	0.155	0.151	0.212	0.201
ADP-fossil		0.985	0.888	0.871	0.213	0.198	0.237	0.212
WDP		0.984	3.853	3.835	2.221	2.206	3.940	3.894
PERE		0.996	1.508	1.503	1.249	1.245	1.633	1.553
PERM		1.000	0.999	0.999	4.313	4.313	4.319	3.983
PERT		0.996	1.443	1.439	1.638	1.634	1.974	1.862
PENRE		0.985	0.888	0.871	0.213	0.198	0.237	0.212
PENRM		0.984	0.817	0.799	0.173	0.158	0.175	0.147
PENRT		0.984	0.877	0.859	0.206	0.192	0.226	0.201
SM	1.000	1.007	1.072	1.080	0.627	0.634	0.638	0.645
RSF		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
FW		0.969	4.268	4.234	2.922	2.893	4.670	4.569
HWD		1.000	1.007	1.006	0.030	0.030	0.036	0.033
N-HWD		0.997	1.038	1.035	0.481	0.478	0.518	0.396
RWD		0.998	1.310	1.308	0.612	0.610	0.851	0.827
CfRu		1.000	1.000	1.000	1.000	1.000	1.000	1.000
MfR		1.000	0.919	0.919	0.139	0.139	0.141	0.141
MfER		1.000	0.999	0.999	0.669	0.669	0.676	0.260
EE		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
Biogenic C, packaging		1.000	1.000	1.000	1.312	1.312	1.312	1.312
Tot PE		0.986	0.945	0.945	0.380	0.366	0.438	0.402
Efp		0.986	0.955	0.955	0.236	0.222	0.257	0.230
IrHH		0.997	0.922	0.922	0.180	0.177	0.247	0.239
EXT FW		0.987	0.994	0.994	0.224	0.212	0.256	0.233
HTX CE		0.996	1.023	1.023	0.073	0.070	0.092	0.084
HTX N-CE		0.988	1.063	1.063	0.338	0.327	0.391	0.361
IrLS		0.998	1.077	1.077	2.465	2.463	2.528	2.301

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Extrapolation Factors

Distribution stage

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

Impact category	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total								
GWP- fossil								
GWP-biogenic								
GWP-luluc								
ODP								
AP								
EP-freshwater								
EP-marine								
EP-terrestrial								
POCP								
ADP-minerals & metals								
ADP-fossil								
WDP								
PERE								
PERM								
PERT								
PENRE								
PENRM								
PENRT								
SM	1.000	1.000	1.004	1.004	0.669	0.669	0.676	0.676
RSF								
NRSF								
FW								
HWD								
N-HWD								
RWD								
CfRu								
MfR								
MfER								
EE								
Biogenic C, product								
Biogenic C, packaging								
Tot PE								
Efp								
IrHH								
EXT FW								
HTX CE								
HTX N-CE								
IrLS								

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Extrapolation Factors

Installation stage

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

Impact category	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total					1.307	1.307	1.307	1.307
GWP- fossil					1.294	1.294	1.294	1.294
GWP-biogenic					1.312	1.312	1.312	1.312
GWP-luluc					1.312	1.312	1.312	1.312
ODP					1.310	1.310	1.310	1.310
AP					1.308	1.308	1.308	1.308
EP-freshwater					1.310	1.310	1.310	1.310
EP-marine					1.309	1.309	1.309	1.309
EP-terrestrial					1.309	1.309	1.309	1.309
POCP					1.308	1.308	1.308	1.308
ADP-minerals & metals					1.305	1.305	1.305	1.305
ADP-fossil					1.308	1.308	1.308	1.308
WDP					1.312	1.312	1.312	1.312
PERE					1.309	1.309	1.309	1.309
PERM					1.000	1.000	1.000	1.000
PERT					1.309	1.309	1.309	1.309
PENRE					1.308	1.308	1.308	1.308
PENRM					1.000	1.000	1.000	1.000
PENRT					1.308	1.308	1.308	1.308
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
NRSF					1.000	1.000	1.000	1.000
FW					1.311	1.311	1.311	1.311
HWD					1.306	1.306	1.306	1.306
N-HWD					1.294	1.294	1.294	1.294
RWD					1.303	1.303	1.303	1.303
CfRu					1.000	1.000	1.000	1.000
MfR					1.307	1.307	1.307	1.307
MfER					1.285	1.285	1.285	1.285
EE					1.000	1.000	1.000	1.000
Biogenic C, product					1.000	1.000	1.000	1.000
Biogenic C, packaging					1.000	1.000	1.000	1.000
Tot PE					1.308	1.308	1.308	1.308
Efp					1.306	1.306	1.306	1.306
IrHH					1.304	1.304	1.304	1.304
EXT FW					1.311	1.311	1.311	1.311
HTX CE					1.302	1.302	1.302	1.302
HTX N-CE					1.308	1.308	1.308	1.308
IrLS					1.309	1.309	1.309	1.309

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Extrapolation Factors

Use stage

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

Impact category	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total								
GWP- fossil								
GWP-biogenic								
GWP-luluc								
ODP								
AP								
EP-freshwater								
EP-marine								
EP-terrestrial								
POCP								
ADP-minerals & metals								
ADP-fossil								
WDP								
PERE								
PERM								
PERT								
PENRE								
PENRM								
PENRT								
SM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
RSF								
NRSF								
FW								
HWD								
N-HWD								
RWD								
CfRu								
MfR								
MfER								
EE								
Biogenic C, product								
Biogenic C, packaging								
Tot PE								
Efp								
IrHH								
EXT FW								
HTX CE								
HTX N-CE								
IrLS								

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Extrapolation Factors

End-of-life stage

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

Impact category	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total			1.005	1.005	0.576	0.576	0.586	0.586
GWP- fossil			1.005	1.005	0.574	0.574	0.583	0.583
GWP-biogenic			1.005	1.005	0.625	0.625	0.636	0.636
GWP-luluc			1.004	1.004	0.534	0.534	0.543	0.543
ODP			1.004	1.004	0.555	0.555	0.564	0.564
AP			1.004	1.004	0.529	0.529	0.538	0.538
EP-freshwater			1.004	1.004	0.507	0.507	0.516	0.516
EP-marine			1.005	1.005	0.575	0.575	0.584	0.584
EP-terrestrial			1.004	1.004	0.536	0.536	0.545	0.545
POCP			1.004	1.004	0.546	0.546	0.555	0.555
ADP-minerals & metals			1.004	1.004	0.561	0.561	0.570	0.570
ADP-fossil			1.004	1.004	0.541	0.541	0.551	0.551
WDP			1.003	1.003	0.427	0.427	0.435	0.435
PERE			1.004	1.004	0.533	0.533	0.543	0.543
PERM			1.000	1.000	1.000	1.000	1.000	1.000
PERT			1.004	1.004	0.533	0.533	0.543	0.543
PENRE			1.004	1.004	0.541	0.541	0.551	0.551
PENRM			1.000	1.000	1.000	1.000	1.000	1.000
PENRT			1.004	1.004	0.541	0.541	0.551	0.551
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
NRSF			1.000	1.000	1.000	1.000	1.000	1.000
FW			1.004	1.004	0.473	0.473	0.481	0.481
HWD			1.002	1.002	0.203	0.203	0.207	0.207
N-HWD			1.005	1.005	0.618	0.618	0.628	0.628
RWD			1.004	1.004	0.521	0.521	0.530	0.530
CfRu			1.000	1.000	1.000	1.000	1.000	1.000
MfR			1.004	1.004	0.538	0.538	0.547	0.547
MfER			1.004	1.004	0.538	0.538	0.547	0.547
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
Tot PE			1.004	1.004	0.540	0.540	0.550	0.550
Efp			1.004	1.004	0.484	0.484	0.492	0.492
IrHH			1.004	1.004	0.521	0.521	0.530	0.530
EXT FW			1.005	1.005	0.563	0.563	0.573	0.573
HTX CE			1.004	1.004	0.507	0.507	0.516	0.516
HTX N-CE			1.004	1.004	0.528	0.528	0.537	0.537
IrLS			1.005	1.005	0.575	0.575	0.585	0.585

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Extrapolation Factors

Module D - Net benefits and loads

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

Impact category	1st group of products variants	2nd group of products variants	3rd group of products variants	4th group of products variants	5th group of products variants	6th group of products variants	7th group of products variants	8th group of products variants
GWP-total		0.988	0.789	0.776	-0.164	-0.175	-0.165	-0.177
GWP- fossil		0.988	0.784	0.771	0.030	0.019	0.028	0.017
GWP-biogenic		0.997	1.042	1.039	-11.587	-11.590	-11.587	-11.590
GWP-luluc		0.954	0.938	0.887	6.381	6.337	6.378	6.334
ODP		0.976	0.739	0.712	0.107	0.084	0.103	0.080
AP		0.993	0.833	0.825	0.130	0.123	0.129	0.122
EP-freshwater		0.999	0.935	0.934	0.687	0.687	0.689	0.688
EP-marine		0.993	0.806	0.798	0.166	0.159	0.165	0.158
EP-terrestrial		0.992	0.811	0.802	0.147	0.139	0.146	0.138
POCP		0.992	0.827	0.818	0.228	0.220	0.226	0.219
ADP-minerals & metals		1.000	0.996	0.995	0.121	0.121	0.121	0.121
ADP-fossil		0.980	0.740	0.718	-0.061	-0.080	-0.065	-0.084
WDP		1.007	0.773	0.781	-0.048	-0.041	-0.047	-0.040
PERE		0.868	0.816	0.669	19.371	19.245	19.353	19.225
PERM		1.000	1.000	1.000	-10.759	-10.759	-10.759	-10.759
PERT		1.299	1.415	1.749	-78.859	-78.574	-78.818	-78.528
PENRE		0.980	0.740	0.718	-0.061	-0.080	-0.065	-0.084
PENRM		0.967	0.642	0.605	-0.367	-0.399	-0.373	-0.406
PENRT		0.978	0.724	0.700	-0.111	-0.132	-0.115	-0.136
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
NRSF		1.000	1.000	1.000	1.000	1.000	1.000	1.000
FW		1.009	0.741	0.750	-0.159	-0.151	-0.158	-0.149
HWD		1.000	1.000	1.000	0.034	0.034	0.034	0.034
N-HWD		1.000	1.000	1.000	0.507	0.507	0.507	0.507
RWD		1.000	1.002	1.002	0.895	0.895	0.900	0.900
CfRu		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
MfER		1.000	1.000	1.000	1.227	1.227	1.227	1.227
EE		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
Biogenic C, packaging		1.000	1.000	1.000	1.000	1.000	1.000	1.000
Tot PE		0.977	0.722	0.696	0.145	0.123	0.141	0.118
Efp		0.995	0.861	0.855	0.205	0.200	0.204	0.199
IrHH		0.996	0.800	0.796	0.113	0.109	0.113	0.109
EXT FW		0.977	0.878	0.853	-0.106	-0.128	-0.110	-0.133
HTX CE		1.000	0.998	0.998	0.036	0.035	0.036	0.035
HTX N-CE		0.999	0.986	0.986	0.493	0.493	0.494	0.493
IrLS		1.019	1.025	1.046	-32.055	-32.037	-32.053	-32.035

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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 reach in marine end compartment
EP-terrestrial	Eutrophication potential - Accumulated Exceedance
POCP	Formation potential of tropospheric ozone
ADP-minerals & metals	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	
SM	Use of secondary materials
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Net use of fresh water

Waste category indicators	
HWD	Hazardous waste disposed
N-HWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed

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

Optional indicators	
Tot PE	Total use of primary energy during the life cycle
Efp	Emissions of Fine particles
IrHH	Ionizing radiation, human health
ETX FW	Ecotoxicity, freshwater
HTX CE	Human toxicity, carcinogenic effects
HTX N-CE	Human toxicity, non-carcinogenic effects
IrLS	Impact related to Land use / soil quality

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