

HOME MCB 10KA, 6KA, 4.5KA & 3KA, 0.5 TO 63A, 1 TO 4 POLES, B, C AND D CURVE

## **Product Environmental Profile**

## **Environmental Product Declaration**





Document in compliance with ISO 14025; 2010 "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.

This study is related to ABB STOTZ-KONTAKT GmbH, Heidelberg plant that produces MCBs in different ranges. The plant already has the following certifications besides product standard certifications:

DIN EN ISO 9001, DIN EN ISO 14001, DIN ISO 45001, DIN EN ISO 50001 and ISO/TS 22163

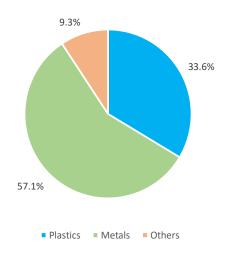


## **General Information**

Reference product	SH201M-C16 Miniature Circuit Breaker - 1P - C - 16 A
Description of the product	SH201M-C16 Miniature Circuit Breaker (MCB), 1 Pole, 16A, C Curve, 10kA allowing their use in residential, commercial, and industrial applications.
Functional unit	Protect during 20 years the installation against overloads and short circuits in circuit with assigned voltage 230/400 V AC and current 16A. This protection is ensured in accordance with the following parameters;  - Number of pole: 1  - Rated Breaking capacity: 10kA  - Tripping Curve: C
Other products covered	It is a "Product family declaration" which covers Miniature Circuit Breaker (MCB) SH200M, SH200, SV200, SH200L, SH200T, SR200T of Home Product Line family with Standard Product Characteristics Rated current In; 0.5A to 63A, Rated Voltage U; 230/400 V AC Pole combination Np; 1 to 4 Pole included 1Pole+ N & 3Pole + N, Rated Breaking Capacity: Icn; 10kA, 6kA, 4.5kA & 3kA Tripping Curve Cd: B,C and D

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# Constituent materials



Plastics			Metals			Others			
Name	Weight We	ight	Name	Weight We	ight	Name	Weight Wei	ght	
	g	%		g	%		g	%	
PA66	36.32	31.2	Steel	55.43	47.7	Corrugated board	10.64	9.2	
РОМ	1.77	1.5	Copper	7.44	6.4	Miscellaneous Other Materia	0.11	0.1	
Miscellaneou: Plastics	s 1.07	0.9	Aluminium	2.82	2.4				
			Miscellaneou Metals	0.66	0.6				

These products comply with actual requirements of EU Directives 2011/65/EU of 8 June 2011 (ROHS) materials and do not contain or only contain in the authorised proportions lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls -PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive.

Manufacturing, distribution, installation, use, and end-of-life (EOL) stages are taken into account in the environmental impact analysis of this study.

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# Additional Environmental Information

Manufacturing	Packaging material used in the product is compliant with applicable regulations. Its estimated recyclability rate is 98% (in % of packaging weight) at the end of life.
Distribution	Is modelled by considering the average distances from manufacturing site to distance at delivery point.
Installation	Does not required any special process. Packaging waste generated as output in installation phase.
Use	MCB is Maintenance free and does not need any special process while in use.
End of life	The recyclability rate of the Reference Product is estimated at 94.3%. The calculation of this weight is based on the method IEC/TR 62635

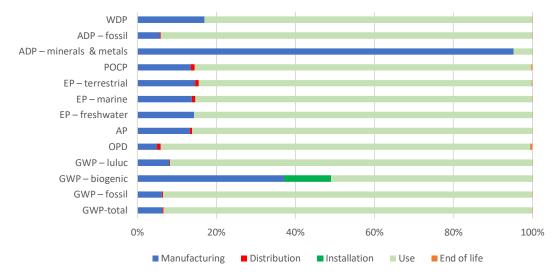


## **Environmental impacts**

Reference lifetime	20 Years
Product category	Circuit Breakers
Installation elements	End of life of MCB packaging considered in Installation phase.
Use scenario	At loading rate 50% of rated current & use time rate 30% of reference lifetime total energy consumption is 32.85 kWh
Geographical representativeness	Global
Technological representativeness	Technology is specific to ABB MCBs which is common for all ABB manufacturing factories at global level
Software and database used	SimaPro 9.4.0.2 and Data base Ecoinvent 3.8
Energy model used	
Manufacturing	Electricity Medium Voltage, Germany
Installation	Electricity High Voltage & Low Voltage, mix of Global
Use	Electricity Medium Voltage, mix of Global
End of life	Electricity High Voltage & Low Voltage, mix of Global

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## Common base of mandatory indicators



% Environmental Impact per Life Cycle Stage of Reference Product

#### **Environmental impact indicators**

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
GWP-total	kg CO₂ eq.	2.09E+01	1.32E+00	5.81E-02	1.12E-02	1.95E+01	3.52E-02
GWP-fossil	kg CO₂ eq.	2.08E+01	1.29E+00	5.80E-02	7.07E-04	1.94E+01	3.52E-02
GWP-biogenic	kg CO₂ eq.	8.80E-02	3.26E-02	3.82E-05	1.05E-02	4.48E-02	5.48E-05
GWP-luluc	kg CO₂ eq.	2.68E-02	2.18E-03	2.80E-05	3.14E-07	2.46E-02	1.60E-05
GWP-fossil = Global GWP-biogenic = Glo GWP-luluc = Global	bal Warming Pot	ential biogen	ic	je			
OPD	kg CFC-11 eq.	1.40E-06	6.93E-08	1.30E-08	1.56E-10	1.31E-06	8.53E-09
OPD = Depletion po	tential of the stra	atospheric oz	one layer				
AP	H+ eq.	9.76E-02	1.29E-02	6.00E-04	3.78E-06	8.39E-02	1.34E-04
AP = Acidification n	otential, Accumu	lated Exceeda	ance				
, ,							2 445 22
· · · · · · · · · · · · · · · · · · ·	kg P eq.	1.30E-02	1.86E-03	3.32E-06	6.05E-08	1.11E-02	3.44E-06
EP-freshwater	kg P eq. kg N eq.	1.30E-02 1.70E-02	1.86E-03 2.34E-03	3.32E-06 1.42E-04	6.05E-08 9.05E-06		3.44E-06 3.36E-05
EP-freshwater EP-marine EP-terrestrial	kg N eq. mol N eq.	1.70E-02 1.60E-01	2.34E-03 2.33E-02	1.42E-04 1.58E-03	9.05E-06 1.14E-05	1.45E-02 1.34E-01	
EP-freshwater EP-marine EP-terrestrial EP-freshwater = Eur EP-marine = Eutrop EP-terrestrial = Eutr	kg N eq. mol N eq. trophication potentia	1.70E-02 1.60E-01 ential, fraction al, fraction of ntial, Accumul	2.34E-03 2.33E-02 n of nutrients reachir lated Exceedance	1.42E-04 1.58E-03 aching freshwate	9.05E-06 1.14E-05 r end compartm mpartment	1.45E-02 1.34E-01 ent	3.36E-05 3.67E-04
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EP-freshwater EP-marine EP-terrestrial EP-freshwater = Eur EP-marine = Eutrop EP-terrestrial = Eutr POCP POCP = Formation ADP-minerals & metals ADP-fossil ADP-minerals & met	kg N eq. mol N eq. trophication poter hication potential rophication potential of tropo kg NMVOC eq. potential of tropo kg Sb eq. MJ tals = Abiotic dep	1.70E-02 1.60E-01 ential, fraction of ntial, Accumul 4.55E-02 0-spheric ozo 6.72E-04 3.20E+02 eletion potent	2.34E-03 2.33E-02 n of nutrients reanutrients reachinated Exceedance 6.15E-03 ne 6.40E-04 1.80E+01 ial for non-fossil	1.42E-04 1.58E-03 aching freshwate ag marine end co 4.42E-04 1.74E-07 8.45E-01	9.05E-06 1.14E-05 r end compartm mpartment 6.39E-06 1.48E-09	1.45E-02 1.34E-01 ent 3.88E-02 3.24E-05 3.00E+02	3.36E-05 3.67E-04 1.31E-04 8.69E-08
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EP-freshwater EP-marine EP-terrestrial EP-freshwater = Eur EP-marine = Eutrop EP-terrestrial = Eutr POCP POCP = Formation   ADP-minerals & metals ADP-fossil ADP-minerals & metals ADP-fossil = Abiotic WDP	kg N eq. mol N eq. trophication potential or prophication potential of tropo kg NMVOC eq. potential of tropo kg Sb eq. MJ tals = Abiotic dep c deple-tion for for m³ e depr. vation potential	1.70E-02 1.60E-01 ential, fraction of ntial, Accumul 4.55E-02 0-spheric ozo 6.72E-04 3.20E+02 eletion potent ossil resource	2.34E-03 2.33E-02 n of nutrients reachin lated Exceedance 6.15E-03 ne 6.40E-04 1.80E+01 ial for non-fossil s potential	1.42E-04 1.58E-03 sching freshwate ng marine end co e 4.42E-04 1.74E-07 8.45E-01 resources	9.05E-06 1.14E-05 r end compartm mpartment 6.39E-06 1.48E-09 1.09E-02 8.22E-05	1.45E-02 1.34E-01 ent 3.88E-02 3.24E-05 3.00E+02	3.36E-05 3.67E-04 1.31E-04 8.69E-08 5.89E-01

### Common base of mandatory indicators

#### Inventory flows indicator - Resource use indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use End of life	
PERE	MJ	3.00E+01	1.85E+00	1.07E-02	1.71E-04	2.81E+01 7.04E-03	
PERM	MJ	1.59E-01	1.59E-01	0.00E+00	0.00E+00	0.00E+00 0.00E+00	
PERT	MJ	3.01E+01	2.00E+00	1.07E-02	1.71E-04	2.81E+01 7.04E-03	
PENRE	MJ	3.19E+02	1.68E+01	8.45E-01	1.09E-02	3.00E+02 5.89E-01	
PENRM	MJ	1.18E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00 0.00E+00	
PENRT	MJ	3.20E+02	1.80E+01	8.45E-01	1.09E-02	3.00E+02 5.89E-01	

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials

PERM = Use of renewable primary energy resources used as raw materials

PERT = Total Use of renewable primary energy resources

 ${\tt PENRE = Use\ of\ non-renewable\ primary\ energy\ excluding\ non-renewable\ primary\ energy\ resources\ used\ as\ raw\ materials}$ 

PENRM = Use of non-renewable primary energy resources used as raw materials

PENRT = Total Use of non-renewable primary energy re-sources)

## Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy re-sources

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use End of life	
SM	kg	0.00E+00	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	
NRSF	МЈ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00 0.00E+00	
FW	m³	1.21E-01	1.93E-02	8.53E-05	2.40E-06	1.02E-01 1.55E-04	

SM = Use of secondary material

RSF = Use of renewable secondary fuels

NRSF = Use of non-renewable secondary fuels

FW = Use of net fresh water

#### Inventory flows indicator - Waste category indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Hazardous waste disposed	kg	4.79E-04	2.40E-04	1.89E-06	2.54E-08	2.36E-04	1.37E-06
Non- hazardous waste disposed	kg	1.31E+00	1.77E-01	3.49E-02	5.10E-03	6.94E-01	3.97E-01
Radioactive waste disposed	kg	8.82E-04	5.59E-05	5.74E-06	7.08E-08	8.17E-04	3.84E-06

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## Common base of mandatory indicators

#### Inventory flows indicator - Output flow indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use End of life
Components for re- use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00 0.00E+00
Materials for recycling	kg	1.59E-02	9.53E-03	0.00E+00	6.33E-03	0.00E+00 0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00 0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00 0.00E+00

#### Inventory flow indicator – other indicators

Indicator	Unit	Total
Biogenic carbon content of the product	kg of C	0.00E+00
Biogenic carbon content of the associated packaging	kg of C	5.32E-03

### **Optional indicators**

#### **Environmental indicators**

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Total use of primary energy during the life cycle	МЈ	3.50E+02	2.00E+01	8.56E-01	1.11E-02	3.29E+02	5.96E-01
Emissions of fine particles	inciden ce of diseas es	4.68E-07	7.31E-08	3.95E-09	8.57E-11	3.87E-07	4.20E-09
lonizing radiation, human health	kBq U235 eq.	2.39E+00	1.58E-01	4.23E-03	5.40E-05	2.23E+00	2.77E-03
Ecotoxicity (fresh water)	CTUe	2.78E+02	1.57E+02	6.31E-01	2.80E-02	1.20E+02	4.82E-01
Human toxicity, car- cinogenic effects	CTUh	6.77E-09	2.87E-09	2.54E-11	2.54E-13	3.86E-09	1.34E-11
Human toxicity, non- carcinogenic effects	CTUh	2.13E-07	9.62E-08	5.95E-10	2.26E-11	1.15E-07	4.60E-10
Impact related to land use/soil quality	kg	2.13E+01	1.94E+00	1.96E-01	3.25E-03	1.89E+01	2.12E-01

#### **Extrapolation of Coefficients**

Extrapolation rules are established according to EN 50693. Results of LCA performed for a reference product extrapolated to other products, these products are belonged to a same homogeneous product family as the reference product. The group of products have the following same characteristics:

- -Same main function, Same product standards,
- -Similar manufacturing technology: same type of materials and manufacturing processes Coefficients factors have been extrapolated with division of environment indicators value of homogeneous product by reference product environment indicator value.

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of the Reference product by the following coefficients:

**Note:** If the coefficient is "1", the impacts of the phase of the life cycle are assimilated to the Reference product, meaning that the impacts are unchanged in comparison to the Reference product.

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**Manufacturing phase:** To calculate environmental impact of covered product nominal value of reference product environment category to be multiplied with corresponding rating Impact category's coefficient, then value to be multiplied by the number of poles.

#### i.e. y=a\*x\*n

Where a= Coefficient of corresponding rating impact category

- y= Homogeneous product environmental category
- x=Nominal value of reference product environmental category
- n=Number of poles including neutral poles

Manufacturing Phas	e Coefficient	Coefficient Rated Current								
Impact category		0.5A, 1A, 1.6A, 2A, 3A & 4A	6A, 8A & 10A	13A & <b>16A</b>	20A, 25A, 32A & 40A	50A & 63				
GWP-total		1.001	0.999	1.000	1.064	1.126				
GWP-fossil		1.002	0.999	1.000	1.064	1.126				
GWP-biogenic		0.996	1.000	1.000	1.061	1.126				
GWP-Iuluc		0.997	1.000	1.000	1.086	1.163				
OPD		1.000	0.999	1.000	1.068	1.129				
<b>ΔP</b>		0.997	0.998	1.000	1.440	1.784				
EP-freshwater		0.970	0.999	1.000	1.251	1.450				
EP-marine		0.996	0.984	1.000	1.122	1.205				
EP-terrestrial		0.985	0.999	1.000	1.168	1.298				
POCP		0.993	0.999	1.000	1.172	1.309				
ADP-minerals & metals		0.972	0.999	1.000	1.217	1.378				
ADP-fossil		1.001	0.999	1.000	1.062	1.124				
WDP		1.023	1.000	1.000	1.145	1.266				
nventory flows indicator -	Resource use indi	icators								
PERE		1.023	0.999	1.000	1.154	1.292				
PERM		1.000	1.000	1.000	1.000	1.000				
PERT		1.021	0.999	1.000	1.142	1.269				
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Impact category	0.5A, 1A, 1.6A, 2A, 3A & 4A	6A, 8A & 10A	13A & <b>16A</b>	20A, 25A, 32A & 40A	50A & 63A
PENRE	1.000	0.999	1.000	1.067	1.133
PENRM	1.014	1.000	1.000	1.000	1.004
PENRT	1.001	0.999	1.000	1.062	1.124
Inventory flows indicator – Indicators descri	ibing the use of s	secondary mater	ials, water, and	d energy re-sou	rces
FW	1.018	1.000	1.000	1.120	1.221
Inventory flows indicator – Waste cate	egory indicato	ors			
Hazardous waste disposed	0.929	0.998	1.000	1.370	1.925
Non- hazardous waste disposed	1.011	0.999	1.000	1.155	1.295
Radioactive waste disposed	1.000	0.999	1.000	1.086	1.173
Inventory flows indicator – Output flo	w indicators				
Materials for recycling	1.023	1.000	1.000	1.000	1.007
Inventory flows indicator – Other indic	cators				
Biogenic carbon content of the associated packaging	1.000	1.000	1.000	1.000	1.000

#### Note:

In above table coefficients are excluded when impact indicators value is zero for reference products. And for Optional Environmental indicators.

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**Distribution, Installation & EOL Phase:** To calculate the environmental impact of covered product nominal value of reference product environment category is to be multiplied with corresponding rating's coefficient, and then value to be multiplied by the number of poles. i.e. **y=a\*x\*n**Where a= Coefficient of corresponding rating

y= Homogeneous product environmental category

x=Nominal value of reference product environmental category,

n=Number of poles including neutral poles

#### Coefficient of Distribution, Installation & EOL Phase

Rated Current	0.5A, 1A, 1.6A, 2A, 3A & 4A	6A, 8A & 10A	13A & <b>16A</b>	20A, 25A, 32A & 40A	50A & 63A
Distribution Phase	1.002	1.000	1.000	1.035	1.074
Installation Phase	1.000	1.000	1.000	1.000	1.000
EOL Phase	1.002	1.000	1.000	1.035	1.074

**Use phase:** To calculate the environmental impact of covered product nominal value of reference product environment category to be multiplied with corresponding rating w.r.t tripping curve's coefficient, and then value to be multiplied by the number of poles. i.e. y=a\*x\*n

Where a= Coefficient of corresponding rating w.r.t tripping curve

y= Homogeneous product environmental category

x=Nominal value of reference product environmental category.

n=Number of poles including neutral poles

#### **Use Phase Coefficient**

					Rated (	Current					
Tripping curve	0.5A	1A	1.6A	2A	ЗА	4A	6A	8A	10A	13A	
В	0.560	0.560	0.640	0.720	0.520	0.720	0.800	0.600	0.840	0.920	
С	0.560	0.560	0.640	0.720	0.520	0.720	0.800	0.600	0.840	0.920	
D	0.440	0.500	0.600	0.660	0.480	0.680	0.760	0.600	0.640	0.880	

Use Phas	Use Phase Coefficient									
Rated Current										
Tripping curve	16A	20A	25A	32A	40A	50A	63A			
В	1.000	1.000	1.280	1.480	1.920	1.300	1.920			
С	1.000	1.000	1.280	1.480	1.920	1.300	1.920			
D	1.000	0.920	1.240	1.440	1.680	1.160	1.920			

Coefficients listed in Manufacturing phase, Distribution phase, Installation phase, Use phase, and End of Life phase (EOL) applicable for entire "home MCB" Product family i.e. SH200M, SH200, SH200L, SH200T, SR200T, SV200 Product ranges correspond to ratings.

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## **Environmental Impact Indicator Glossary**

#### Impact indicators

Indicator	Description	Unit
Global warming potential (GWP) - total	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. The total global warming potential (GWP-total) is the sum of three sub-categories of climate change.  GWP-total = GWP-fossil + GWP-biogenic + GWP- land use and land use change	kg CO₂ eq.
Ozone depletion (OD)	Emissions to air that contribute to the destruction of the stratospheric ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Acidification of soils and water caused by the release of certain gases to the atmosphere, such as nitrogen oxides and sulphur oxides	H+ eq.
Eutrophication (E)	Indicator of the contribution to eutrophication of water by the enrichment of the aquatic ecosystem with nutritional elements, e.g. industrial or domestic effluents, agriculture, etc. This indicator is divided to three: freshwater, marine and terrestrial.	kg P eq., kg N eq., mole N eq.
Photochemical ozone creation (POCP)	Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmosphere (smog) because of the rays of the sun.	kg NMVOC eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.
Depletion of abiotic resources – fossil fuels (ADPf)	The use of non-renewable fossil resources in an unsustainable way (e.g. from material to waste)	MJ (lower heating value)
Water Deprivation potential (WDP)	Deprivation-weighted water consumption. Assesses the potential of water deprivation, to either humans or ecosystems, building on the assumption that the less water remaining available per area, the more likely another user will be deprived.	m³ e depr.

#### Resource use indicators

Indicator	Description	Unit
Total use of primary energy	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy re-sources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

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### **Environmental Impact Indicator Glossary**

#### Inventory flows indicator -Indicators describing the use of secondary materials, water, and

Indicator	Description	Unit
SM = Use of secondary material	Material recovered from previous use by recycling or from waste which substitutes primary materials and use in product.	kg
RSF = Use of renewable secondary fuels	Fuel recovered after a first use or retrieved from waste of renewable fuel, that replaces primary fuels.	МЈ
NRSF = Use of non-renewable secondary fuels	Fuel recovered after a first use or retrieved from waste of non-renewable fuel, that replaces primary fuels.	МЈ
FW = Use of net fresh water	Freshwater use in absolute values	m³

#### Inventory flows indicator - Waste category indicators

Indicator	Description	Unit
Hazardous waste disposed	A hazardous waste is a special type of waste because it cannot be disposed of by common means like other by-products of our everyday lives.	Kg
Non- hazardous waste disposed	Non-hazardous waste is any waste that does not cause harm to people or the environment.	Kg
Radioactive waste disposed	Radioactive waste is a type of hazardous waste that contains radioactive material.	Kg

#### Inventory flows indicator – Output flow indicators

Indicator	Description	Unit
Components for reuse	Material or components leaving the modelled system boundary which is destined for reuse	Kg
Materials for recycling	Material leaving the modelled system boundary which is destined for recycling	Kg
Materials for energy recovery	Material leaving the modelled system boundary which is destined for use in power stations using secondary fuels.	Kg
Exported energy	Energy exported from waste incineration and landfill	МЈ

#### Inventory flow indicator - other indicators

or	Description		<b>Unit</b> kg of C
Biogenic carbon content of the product, and Biogenic carbon content of the associated such as plants or soil. packaging		is the carbon that is stored in biological materials, soil.	
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### **Environmental Impact Indicator Glossary**

#### Inventory flow indicator - other indicators

Indicator	Description	Unit
Total use of primary energy during the life cycle	Sum of the primery renewable and non-renewable energy	MJ
Emissions of fine particles	Indicator of the potential incidence of disease due to particulate matter emissions.	incidence of diseases
lonizing radiation, human health	Damage to human health and ecosystems linked to the emissions of radionuclides.	kBq U235 eq.
Ecotoxicity (fresh water)	Impact on freshwater organisms of toxic substances emitted to the environment.	CTUe
Human toxicity, carcinogenic effects and non-carcinogenic effects	Impact on humans of toxic substances emitted to the environment. Divided into non-cancer and cancer related toxic substances.	CTUh
Impact related to land use/soil quality	Measure of the changes in soil quality (Biotic production, Erosion resistance, Mechanical filtration).	kg

#### References

- Product Category Rules for Electrical, Electronic and HVAC-R Products PEP-PCR-ed4-EN-2021 09 06
- SPECIFIC RULES FOR Electrical switchgear and control gear Solutions PSR-0005-ed2-EN-2016 03 29
- IEC 60947-1 Low-voltage switchgear and controlgear Part 1: General rules
- IEC 60947-2 Low-voltage switchgear and controlgear Part 2: Circuit-breakers
- ISO 14067:2018 Greenhouse gases Carbon footprint of products requirements and guidelines for quantification
- ISO 14044 Environmental management Life cycle assessment Requirements and guidelines
- ISO14040 Environmental management Life cycle assessment Principles and framework
- ISO 14025 Environmental management Life cycle assessment Principles and framework
- IEC/TR 62635 Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment
- IEC 62474 Material declaration for products of and for the electrotechnical industry
- EN 50693:2019 Product category rules for life cycle assessments of electronic and electrical products and systems

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Independent verification of the declaration and data, in compliance with ISO 14025: 2010				
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The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)				
PEP are compliant with XP C08-100-1: 2016 or EN 50693:20	eco			

The elements of the present PEP cannot be compared with elements from another



Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"