

Product Environmental Profile

Residual Current Circuit Breaker family with overcurrent protection 2 poles, B and C tripping curve, voltage 230 V and rated current from 10A to 32A.





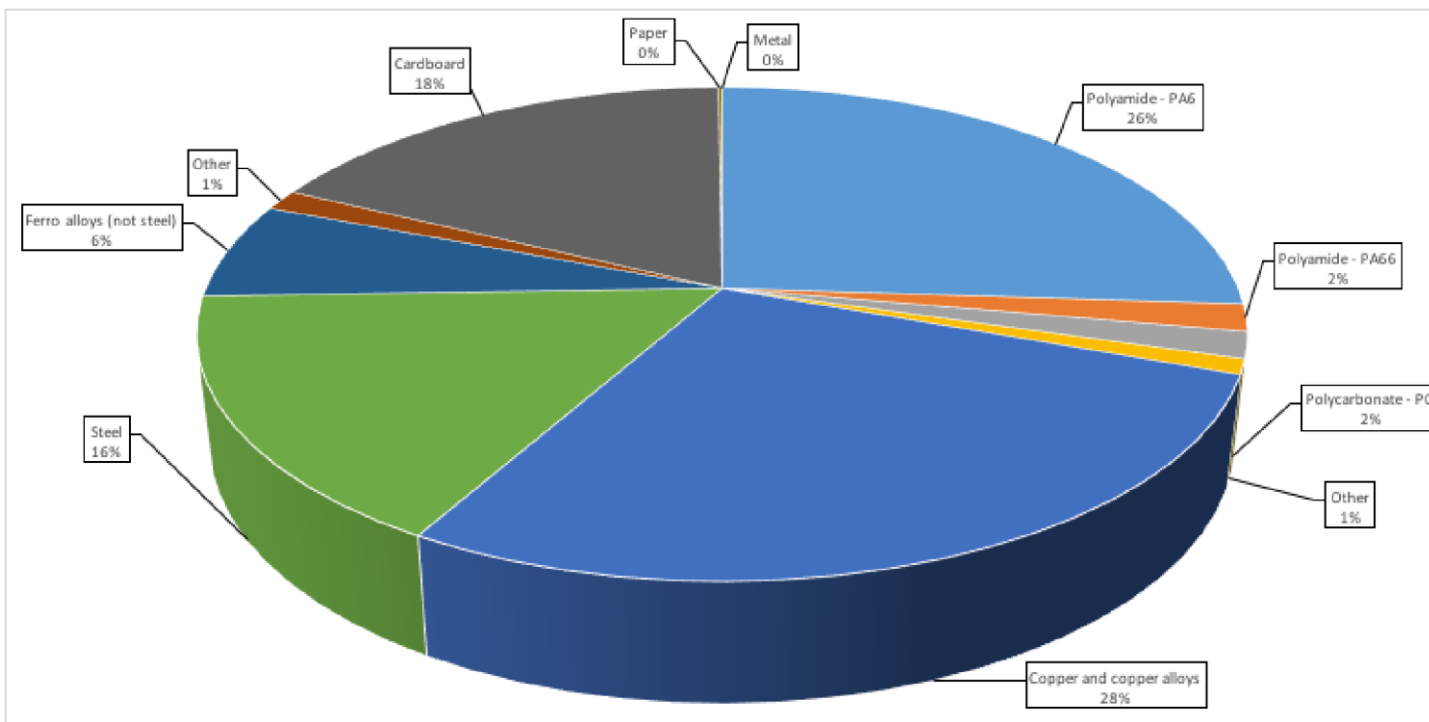
General information

Representative product	Residual Current Circuit Breaker with overcurrent protection 2-pole 10kA, C curve, rated current of 16A.
Description of the product	Circuit breaker used to protect circuit from overloads and short-circuits.
Description of the range	Residual Current Circuit Breaker family with overcurrent protection 2 poles, B and C tripping curve, voltage 230 V and rated current from 10A to 32A.
Functional unit	To protect installation against overloads and short-circuits in circuit with assigned voltage of 230 V and rated current from 10A to 32A during 20 years. This protection is ensured in accordance with the following parameters: <ul style="list-style-type: none"> - number of poles 2 - rated breaking capacity 10kA - tripping curve B - C - degree of protection IP20 alone - IP40 with cabinet.



Constituent materials

Reference product mass The total mass of the product is 264,43g, without its packaging is 216,19g, while the packaging is 48,24g. Composition is shown in chart below.



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2011/65/EU of 8 June 2011) 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.

As the products of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction in an assembly or an installation subject to this Directive. Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website.

<http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page>



Additional environmental information

Residual Current Circuit Breaker with overcurrent protection 2-pole 10kA, tripping curve C, rated current of 16A presents the following relevant environmental aspects.

Manufacturing	Manufactured at a production site complying with the regulations.
Distribution	Weight and volume of the packaging optimized, based on the European Union's packaging directive. Packaging weight is 48,24 g, consisting of cardboard (99,3%) and paper (0,7%).
Installation	Reference product is easily installed using hand tools. It does not require additional components to be installed and in this stage the only waste produced is the packaging.
Use	The product does not produce noise, air pollution, electromagnetic emissions. It does not require special maintenance operations.
End of life	End of life optimized to decrease the amount of waste and allow recovery of the product components and materials. This product contains Plastics with Brominated FR (between 0,88g and 1,76g) that should be separated from the stream of waste so as to optimize end-of-life treatment. The location of these components and other recommendations are given in the End of Life Instruction document which is available on the Schneider-Electric Green Premium website. http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page



Environmental impacts

Reference lifetime	20 years.						
Product category	Circuit breaker.						
Installation elements	No special tools or additional components are needed.						
Use scenario	Load rate is 50% of rated current in continuous operation (16A). Use time rate: 30% of reference lifetime.						
Geographical representativeness	France.						
Technological representativeness	Circuit breaker is used to protect circuit from overloads and short-circuits.						
Energy model used	Manufacturing Electricity, low voltage [RoW] market for Alloc Def, U* from the database Ecoinvent3	Distribution There is not energy used in the stage.	Use Electricity, low voltage [RoW] market for Alloc Def, U* from the database Ecoinvent3	End of Life Electricity, low voltage [RoW] market for Alloc Def, U* from the database Ecoinvent3			
Compulsory indicators	Residual Current Circuit Breaker with overcurrent protection 2-pole 10kA, C curve, rated current of 16A						
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to mineral resources depletion	kg Sb eq	3,89E-04	3,81E-04	3,56E-09	3,09E-10	7,72E-06	6,49E-10
Contribution to the soil and water acidification	kg SO ₂ eq	1,18E-01	5,23E-02	2,44E-03	3,75E-05	6,34E-02	9,11E-05
Contribution to water eutrophication	kg PO ₄ ³⁻ eq	4,77E-02	2,81E-02	2,38E-04	4,21E-05	1,92E-02	1,02E-04
Contribution to global warming	kg CO ₂ eq	1,34E+01	2,76E+00	9,67E-02	4,62E-02	1,05E+01	1,83E-02
Contribution to ozone layer depletion	kg CFC11 eq	9,02E-07	2,74E-07	1,72E-10	1,77E-10	6,27E-07	2,93E-10
Contribution to photochemical oxidation	kg C ₂ H ₄ eq	4,86E-03	2,17E-03	1,14E-04	1,09E-05	2,56E-03	5,17E-06
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Net use of freshwater	m ³	6,12E+01	1,35E+01	7,70E-06	0*	4,77E+01	2,55E-05
Total Primary Energy	MJ	1,78E+02	3,70E+01	1,26E+00	0*	1,39E+02	3,56E-01

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Life cycle assessment is performed with SimaPro v. 8.1.1, using databases: Ecoinvent v.3.0.1 – ELCD v.3.0 – USLCI v. October 2013 – Industry data 2.0 v. March 2014.

The use stage is the life cycle stage which has the greatest impact on the majority indicators (based on compulsory indicators).

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range.

All the family products have the same:

- ✦ materials composition
- ✦ manufacturing processes
- ✦ functionality

and life cycle of the reference product, a part for the use stage because they are characterized by a different current rating, so the current absorption is different and, as consequence, also its impact.

The calculation considering 50% of incoming current rating for the 30% of lifetime usage (20 years) has been made for the other products. The extrapolation factor (EF) is:

$$EF = \frac{En}{Enrp}$$

En represents energy lost by the product

Enrp represents energy lost by the reference product – it is 38,68 kWh

Product reference	En - Energy lost [kWh]	Extrapolation factor
A9N19852	30,48	0,79
A9N19853	37,97	0,98
A9N19854	38,68	1,00
A9N19855	49,41	1,28
A9N19856	59,13	1,53
A9N19857	83,42	2,16
A9N19862	30,48	0,79
A9N19863	37,97	0,98
A9N19864	38,68	1,00
A9N19865	49,41	1,28
A9N19866	59,13	1,53
A9N19867	83,42	2,16

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The extrapolation factor obtained in the last column of the table above is used to determine the environmental impact in the use stage for each product in the range. To obtain the environmental impact of the product follow the instruction:

- ✦ chose the product reference in the first column of the table above
- ✦ identify the correspondent extrapolation factor in the last column of the same table
- ✦ multiply the values in the table beside by the extrapolation factor

All the other stages are constant.

Impact indicators	Unit	Use
Contribution to mineral resources depletion	kg Sb eq	7,72E-06
Contribution to the soil and water acidification	kg SO ₂ eq	6,34E-02
Contribution to water eutrophication	kg PO ₄ ³⁻ eq	1,92E-02
Contribution to global warming	kg CO ₂ eq	1,05E+01
Contribution to ozone layer depletion	kg CFC11 eq	6,27E-07
Contribution to photochemical oxidation	kg C ₂ H ₄ eq	2,56E-03
Resources use	Unit	Use
Net use of freshwater	m3	4,77E+01
Total Primary Energy	MJ	1,39E+02

Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

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Verifier accreditation N°	VH10	Supplemented by	PSR-0005-ed2-EN-2016 03 29
Date of issue Date of review	12/2016 03/2019	Information and reference documents	www.pep-ecopassport.org
		Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14025 : 2010			
Internal		External	X
The PCR review was conducted by a panel of experts chaired by Philippe Osset (SOLINNEN)			
PEP are compliant with XP C08-100-1:2014 The elements of the present PEP cannot be compared with elements from another program.			
Document in compliance with ISO 14025: 2010 «Environmental labels and declarations. Type III environmental declarations»			

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