Product Environmental Profile

MCB 1P 10kA C-16A 1M (China/Australia)



Company information

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References covered

Ref product composition: GAM P rc m

GAM=MC,MCU,MD,MDU,MN,MNU,MR,MS,MT,MU,MW,MX,MY,NC,NT
P=1,2,3,4,5,6,7
rc=00,01,02,03,04,05,06,08,10,13,15,16,20,25,30,32,35,40,45,50,60,63
m= all letters

Methodology

PEP has been performed according to the PCR version PEP–PCR–ed3-2015 04 02 and PSR version PSR-0005-ed2-2016 03 29 issued by the PEP ecopassport program.
For further information, please see the website of the program www.pep-ecopassport.org

Reference product

Reference product identification
NC116A

PSR product Category :
3.1. Circuit-breakers

Functional unit

Protect during 20 years the installation against overloads and short-circuits in circuit with assigned voltage 230V-400V and rated current 16A. This protection is ensured in accordance with the following parameters:
- Number of poles 1P
- Rated breaking capacity 10KA
- Tripping curve C

The functional unit is based on the use scenario recommended by the PCR for the category of the reference product.

Materials and substances

All useful measures have been adopted to ensure that the materials used in the composition of the product do not contain any substances banned by the legislation in force at the time of marketing.

Plastics			Metals			Others		
	g	%		g	%		g	%
PA66	28.48	25.3%	Steel	53.41	47.5%	Cardboard + Paper	7.49	6.7%
PA6	1.43	1.3%	Copper	5.13	4.6%	Glass	7.45	6.6%
PBT	0.31	0.3%	Steel	3.61	3.2%	Talc	0.23	0.2%
PC	0.05	<0.1%	Invar	1.20	1.1%	PPS	0.12	0.1%
Epoxy resin	0.04	<0.1%	Stainless steel	0.87	0.8%	Other	0.42	0.4%
Other	0.06	<0.1%	Other	2.18	1.9%			
Total mass of reference product :			**112.516 g**					

Manufacturing

These products are manufactured by a site that has received an environmental certification ISO 14001.

Distribution

The packaging has been designed in accordance with current regulations. In particular, the European directive 94/62/CE relative to packaging and packaging waste.
The used packaging is 100% recyclable or recoverable.
Packaging and logistic flows are continuously improved in order to reduce their impact.

Installation

Installation processes
The processes to install the product are not considered in this study because of their weak impact compared to the other life cycles steps.

Installation elements (non delivered with the product)
Elements non delivered with the product and needed to install the product are not considered.

Use

For the considered scenario, the product has an average power of 0.600 W in active mode during 30% of the time. This corresponds to a total energy consumption of 31.536 kWh for the use span of 20 years.

Energy model of the use phase :
Australia

Consumables and maintenance :
None

End of life

Considering the complexity and the lack of knowledge of the electric and electronic recycling channel and processes, the standard scenario set in the PCR is considered.

The recycling potential of the product is: 59%. The calculation of this rate is based on the method of the IEC/TR 62635.

Environmental impacts

Evaluation of the environmental impact covers the following life cycle stages: raw materials + manufacturing (RMM), distribution (D), installation (I), use (U) and end of life (EoL).

All calculations are done with EIME software version 5.9.1 with the database version CODDE-2020-12 .

PEP representative of the covered products marketed in: Europe

Energy models considered for each phase

Manufacturing RMM	Distribution D	Installation I	Use U	End Of Life EoL
China	Australia	Australia	Australia	Australia

Environmental impact indicators

Indicators	Unit	Manufacturing RMM	Distribution D	Installation I	Use U	End Of Life EoL	GLOBAL
Global Warming	kg CO_2 eq.	6.75E-01	3.09E-02	1.07E-02	3.21E+01	1.35E-02	3.28E+01
Ozone Depletion	kg CFC-11 eq.	6.11E-08	5.81E-11	2.65E-11	2.55E-07	8.41E-10	3.17E-07
Acidification of soil and water	kg SO2 eq	1.31E-03	4.80E-04	2.01E-06	3.48E-02	3.75E-05	3.66E-02
Eutrophication	kg PO_4^{3-} eq.	2.88E-04	5.71E-05	2.04E-05	9.18E-03	2.63E-05	9.57E-03
Photochemical Ozone Creation	kg C_2H_4 eq.	1.67E-04	2.54E-05	2.59E-06	4.11E-03	4.31E-06	4.31E-03
Depletion of abiotic resources - elements	kg Sb eq	8.37E-05	1.18E-09	1.67E-11	1.41E-07	5.26E-10	8.39E-05
Depletion of abiotic resources – fossil fuels	MJ	8.18E+00	4.15E-01	6.24E-03	4.85E+02	1.40E-01	4.94E+02
Water Pollution	m^3	1.35E+02	4.86E+00	6.13E-01	1.60E+03	1.34E+00	1.74E+03
Air Pollution	m^3	1.41E+02	2.64E+00	4.93E-02	3.33E+03	1.68E+00	3.47E+03

Resource use indicators

Indicators	Unit	Manufacturing RMM	Distribution D	Installation I	Use U	End Of Life EoL	GLOBAL
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	3.37E-01	5.46E-04	8.27E-06	2.69E+01	1.40E-03	2.73E+01
Use of renewable primary energy resources as raw materials	MJ	2.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-03
Total use of renewable primary energy resources	MJ	3.39E-01	5.46E-04	8.27E-06	2.69E+01	1.40E-03	2.73E+01
Use of non-renewable primary energy, excluding non renewable primary energy resources used as raw materials	MJ	1.95E+01	4.17E-01	6.81E-03	4.98E+02	1.80E-01	5.18E+02
Use of non-renewable primary energy resources as raw materials	MJ	9.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.54E-01
Total use of non renewable primary energy resources	MJ	2.05E+01	4.17E-01	6.81E-03	4.98E+02	1.80E-01	5.19E+02
Total use of primary energy	MJ	2.08E+01	4.17E-01	6.81E-03	5.25E+02	1.81E-01	5.46E+02
Use of secondary materials	kg	4.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.61E-02
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net fresh water use	m^3	4.49E-02	2.59E-06	2.82E-07	3.58E-02	1.79E-05	8.08E-02

Waste category indicators

Indicators	Unit	Manufacturing RMM	Distribution D	Installation I	Use U	End Of Life EoL	GLOBAL
Hazardous waste disposed	kg	1.96E-01	1.03E-03	7.55E-03	5.82E+00	4.39E-02	6.07E+00
Non-hazardous waste disposed	kg	1.02E+00	0.00E+00	7.86E-06	1.03E+00	1.26E-01	2.18E+00
Radioactive waste disposed	kg	6.99E-05	7.26E-07	2.28E-08	1.92E-04	2.23E-06	2.65E-04

Output flow indicators

Indicators	Unit	Manufacturing RMM	Distribution D	Installation I	Use U	End Of Life EoL	GLOBAL
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	5.42E-02	0.00E+00	0.00E+00	0.00E+00	6.60E-02	1.20E-01
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

Extrapolation rules:

For MANUFACTURING / DISTRIBUTION / INSTALLATION / EOL:

	0.5 A	1 A	2 A	3 A	3.5 A	4 A	5 A	6 A	7.5 A	10 A	13 A	15 A	16 A	20 A	25 A	30 A	32 A	35 A	40 A	45 A	50 A	60 A	63 A
1P	1.1	1.2	1.2	1.1	1.1	1.2	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.1	1.2		1.2
2P	2.2	2.3	2.3	2.3	2.3	2.3	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.3	2.2	2.3	2.2	2.4	2.4	2.4
3P	3.3	3.4	3.4	3.4	3.4	3.4	3.3	2.9		2.9	3.1	3.5	3.0	3.0	3.1	3.4	3.5	3.5	3.4	3.4	3.6		3.7
4P	4.4	4.5	4.6	4.4	4.4	4.4	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.2	4.6	4.6	4.6	4.7	4.5	4.8	4.9	4.9

For USE:

	0.5 A	1 A	2 A	3 A	3.5 A	4 A	5 A	6 A	7.5 A	10 A	13 A	15 A	16 A	20 A	25 A	30 A	32 A	35 A	40 A	45 A	50 A	60 A	63 A
1 P	0.06	0.06	0.74	1.06	0.77	1.07	1.71	0.72	0.99	1.00	1.22	1.27	1.44	1.66	1.93	1.71	2.43	2.15	2.67	3.54	2.87		4.10
2 P	1.3	1.2	1.6	2.2	1.1	2.1	2.2	1.4	1.4	2.1	2.5	2.2	2.9	3.1	3.7	3.6	4.0	4.5	5.3	3.8	4.6	7.4	6.6
3 P	1.9	1.8	2.4	3.3	2.4	3.2	5.2	2.2		3.2	3.6	3.8	4.4	4.8	5.2	5.4	6.8	5.6	10.3		8.2	9.3	10.0
4 P	2.5	2.4	3.1	4.4	3.4	4.3	7.0	2.9	4.1	4.4	4.9	5.1	5.9	6.4	7.5	7.3	7.7	6.4	11.8	8.1	10.9		13.6

Verification

Registration N°: HAGE-00651-V01.01-EN	Drafting Rules PEP–PCR–ed3-2015 04 02
	Supplemented by PSR-0005-ed2-2016 03 29
Verifier accreditation N°: VH36	Information and reference documents: www.pep-ecopassport.org
Date of issue: 10-2021	Validity period: 5 years
Independent verification of the declaration and data, in compliance with ISO 14025 : 2010 Internal ● External ○	
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 »	

Nota :

The picture has no contractual value.

All numerical values indicated in this document may vary and depend of many factors such as the tolerance related to materials, the usage and environment conditions of the products, installation characteristics ... , real values for a product in a concrete application may therefore change.

The usage time mentioned in this document is an average duration chosen for the need of the calculations. This value cannot be assimilated to the minimum, average or real life time.

The responsibility of the company, issuing this document, can never be engaged if differences would be noticed between the values given by this document and real ones, whatever the causes and/or consequences would be.