Product Environmental Profile

Combined Protection 4P 6kA C-63A 7M



Company information

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A question concerning the Product Environmental Profile:
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References covered

SP425G; SP432G; SP440G; SP450G; SP463G

Methodology

PEP has been performed according to the PCR version PEP-PCR-ed4-2021 09 06 and PSR version PSR-0005-ed3-2023 06 06 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
SP463G

Use scenario based on :
PSR product Category : PSR-0005-ed3-2023 06 06
3.2. Circuit-breakers / 3.13. Surge arresters - low lotage system

Functional unit

This product is a combination of 2 functions:
- 1) Protect the installation from overloads and short circuits in a circuit with rated voltage 240V-415V, rated current 63A, with 4p poles, a rated breaking capacity Icn=6KA, and the tripping curve C in the Industrial application area, according to the appropriate use scenario during 20 years.
- 2) Protect, against direct and indirect effects of lightning or against transient overvoltages, electronic equipment connected to networks with a rated operational voltage of up to 1000 V AC or 1500 V DC, via a surge arrester of type T2, with 4 poles, according to the appropriate use scenario during 20 years. This protection is ensured in accordance with the following parameters : Uc 275V, In 5kA, Up 1,3 kV, F 50-60Hz, IP20.

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	177.05	20.5%	Copper	172.68	20.0%	Glass	80.35	9.3%
PBT	13.73	1.6%	Steel	172.37	20.0%	Cardboard	71.60	8.3%
PC	8.46	1.0%	Stainless steel	12.61	1.5%	Zinc oxide	24.37	2.8%
PA6	7.89	0.9%	Aluminium	7.81	0.9%	Wood	20.48	2.4%
PE-LD	4.10	0.5%	Zinc	7.12	0.8%	Melamine cyanurate	15.91	1.8%
Other	7.01	0.8%	Other	12.34	1.4%	Other	45.69	5.3%
Total mass of reference product with raw material packaging :			**861.56 g**					

Total mass of reference product (Product + packaging)	**818.994 g**

System Boudaries

The environmental information included in the PEP covers all the stages of the life cycle, from "cradle to grave".

Manufacturing			Distribution	Installation	Use							End of life				Module D
Raw material extraction and processing	Transport to the manufacturer	Manufacturing	Distribution to the place of operation	Installation on the place of operation	Use or application of the product installed	Maintenance	Repair	Replacement	Restoration	Energy requirements during the use stage	Water requirements during the use stage	Deinstallation	Transport to the waste treatment site	Treatment of waste in view of its reuse, recovery and/or recycling	Disposal	Benefits and loads beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Life cycle stages																

Manufacturing

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

This phase takes into account raw materials, manufacturing processes, production offcuts and their end-of-life treatment, upstream transport of materials and sub-assemblies to the manufacturing site, and transport from the manufacturing site to the final logistics platform.

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.

This phase taken into account the transport of the finished product, including packaging, to its place of use.

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.

This phase only take into account the impact of the the packaging waste treatment is taken into account.

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 5.00000 W in active mode during 30% of the time. This corresponds to a total energy consumption of 262.800 kWh for the use span of 20 years.

Energy model of the use phase :
Europe

Consumables and maintenance :
None

End of life

Considering the complexity of the recycling channels for electric and electronic equipment impacts, we rely mainly on ESR modules (datasets for WEEE product end of life).

The recycling potential of the product is: 45%. 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 6.2-22 with the database version CODDE® 2024-04 .

Indicators set : Indicators for PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v1.0

PEP representative of the covered products marketed in: Europe

Energy models considered for each phase

Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4
Europe	-	Europe	Europe	Europe

Environmental impact indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Acidification (PEF-AP)	mole H+ eq	1.05E-01	9.70E-04	1.92E-04	5.09E-01	1.52E-02	6.31E-01	-1.28E-01
Climate change - Total (PEF-GWP)	kg CO2 eq.	9.67E+00	1.44E-01	7.86E-02	9.26E+01	1.28E+00	1.04E+02	-1.24E+00
Climate change-Biogenic (PEF-GWPb)	kg CO2 eq.	-7.77E-03	0.00E+00	1.48E-02	1.70E-01	4.44E-02	2.22E-01	-2.35E-02
Climate change-Fossil (PEF-GWPf)	kg CO2 eq.	9.68E+00	1.44E-01	6.38E-02	9.25E+01	1.24E+00	1.04E+02	-1.22E+00
Climate change-Land use and land use change (PEF-GWPlu)	kg CO2 eq.	1.24E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-05	0.00E+00
Ecotoxicity, freshwater (PEF-CTUe)	CTUe	3.64E+03	9.41E-02	9.19E-01	1.75E+02	1.03E+01	3.83E+03	-2.10E+01
EF-particulate Matter (PEF-PM)	Incidence of diseases	6.16E-07	7.40E-09	1.06E-09	3.82E-06	4.17E-08	4.49E-06	-1.94E-07
Eutrophication, freshwater (PEF-Epf)	kg P eq.	7.21E-04	5.39E-08	8.74E-07	2.44E-04	1.31E-05	9.79E-04	-8.12E-03
Eutrophication marine (PEF-Epm)	kg N eq.	7.24E-03	4.27E-04	8.46E-05	5.78E-02	5.98E-03	7.15E-02	-3.99E-03
Eutrophication, terrestrial (PEF-Ept)	mole of N eq.	7.79E-02	4.68E-03	5.26E-04	9.29E-01	1.04E-02	1.02E+00	-5.05E-02
Human toxicity, cancer (PEF-CTUh-c)	CTUh	3.61E-07	2.53E-12	7.03E-09	1.16E-08	3.95E-08	4.19E-07	-1.39E-08
Human toxicity, non-cancer (PEF-CTUh-nc)	CTUh	9.32E-07	4.89E-11	2.05E-10	2.78E-07	6.91E-08	1.28E-06	-9.48E-07
Ionising radiation, human health (PEF-IR)	kg Bq U235 eq.	1.63E+02	3.50E-04	9.49E-03	1.33E+02	4.13E-02	2.96E+02	-7.81E-02
Land use (PEF-LU)	No dimension	2.03E+00	0.00E+00	1.70E-04	2.56E+00	2.22E+00	6.82E+00	-1.82E+01
Ozone depletion (PEF-ODP)	kg CFC-11 eq.	1.68E-06	2.20E-10	8.17E-10	4.49E-07	7.66E-08	2.21E-06	-5.63E-08
Photochemical ozone formation - human health (PEF-POCP)	kg of NMVOC eq.	2.82E-02	1.18E-03	1.23E-04	1.82E-01	3.01E-03	2.14E-01	-1.51E-02
Resource use, fossils (PEF-ADPf)	MJ	2.08E+02	2.00E+00	6.05E-01	2.34E+03	9.51E+00	2.56E+03	-1.18E+01
Resource use, minerals and metals (PEF-ADPe)	kg Sb eq	4.35E-03	5.66E-09	1.48E-09	3.28E-05	1.73E-06	4.39E-03	-2.39E-04
Water use (PEF-WU)	m3 eq.	-4.38E+02	5.46E-04	4.75E-03	7.10E+00	2.04E+02	-2.27E+02	-8.21E+02

Resource use indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Net use of fresh water	m^3	-1.02E+01	1.27E-05	1.11E-04	1.67E-01	5.57E+00	-4.46E+00	-1.94E+01
Total use of primary energy	MJ	2.16E+02	2.01E+00	6.85E-01	2.96E+03	1.05E+01	3.19E+03	-1.56E+01
Total use of non renewable primary energy resources	MJ	2.08E+02	2.00E+00	6.05E-01	2.34E+03	9.51E+00	2.56E+03	-1.18E+01
Total use of renewable primary energy resources	MJ	7.91E+00	2.68E-03	8.07E-02	6.19E+02	9.87E-01	6.28E+02	-3.78E+00
Use of non-renewable primary energy, excluding non renewable primary energy resources used as raw materials	MJ	2.00E+02	2.00E+00	6.05E-01	2.34E+03	9.51E+00	2.55E+03	-1.18E+01
Use of non-renewable primary energy resources as raw materials	MJ	8.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+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	0.00E+00
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	kg	6.18E+00	2.68E-03	8.07E-02	6.19E+02	9.87E-01	6.26E+02	-3.78E+00
Use of renewable primary energy resources as raw materials	MJ	1.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	2.41E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E-05	0.00E+00

Waste category indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Hazardous waste disposed	kg	3.55E+01	0.00E+00	1.55E-03	4.06E+00	4.71E-02	3.96E+01	-1.68E-18
Non-hazardous waste disposed	kg	2.28E+00	5.04E-03	2.61E-02	1.56E+01	1.92E-02	1.80E+01	-3.35E-18
Radioactive waste disposed	kg	1.01E-03	3.59E-06	3.13E-06	3.59E-03	5.82E-07	4.60E-03	0.00E+00

Output flow indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	6.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.90E-03	0.00E+00
Materials for energy recovery	kg	9.34E-03	0.00E+00	5.24E-03	0.00E+00	0.00E+00	1.46E-02	0.00E+00
Materials for recycling	kg	1.93E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.93E-01	0.00E+00

Biogenic carbon content

Packaging	Unit	Cardboard	Paper	Wood	Sum
Biogenic carbon content (ratio)	%	2.80E+01	3.78E+01	3.95E+01	
Mass	kg	7.16E-02	3.83E-03	2.05E-02	9.59E-02
Biogenic carbon content (declared unit)	kg of C	2.00E-02	1.45E-03	8.09E-03	2.96E-02
Biogenic carbon content (functional unit)	kg of C	2.00E-02	1.45E-03	8.09E-03	2.96E-02
Source		ADEME	APESA/RECORD	EN 16485	

Product	Unit	Cardboard	Paper	Wood	Sum
Mass	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content (declared unit)	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content (functional unit)	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Extrapolation rules

Extrapolation rule for USE phase only:

REFERENCE	SP425G	SP432G	SP440G	SP450G	SP463G
Coef	0.55	0.68	0.75	0.85	1

Verification

Registration N°: HAGE-00814-V01.01-EN	Drafting Rules	PEP-PCR-ed4-2021 09 06
	Supplemented by	PSR-0005-ed3-2023 06 06
Verifier accreditation N°: VH36	Information and reference documents: www.pep-ecopassport.org	
Date of issue: 6-2024	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 or EN 50693:2019 The elements of the present PEP cannot be compared with elements from another program.		
Document in compliance with ISO 14025 : 2006 « 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.