

EPC CIRCUIT BREAKER

Product Environmental Profile

Environmental Product Declaration



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

ORGANIZATION		CONTACT INFORMATION			
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General Information

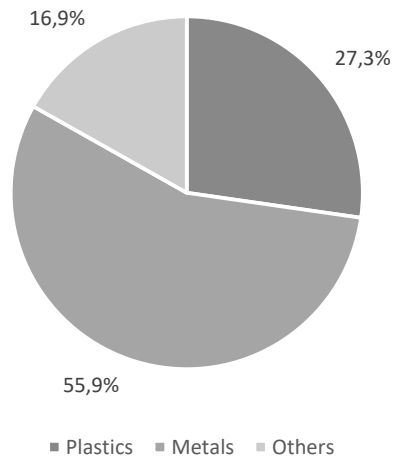
Reference product	EPC 6kA C 16A 2P - 4TQA694287R0000
Description of the product	The EPC series of miniature circuit breaker provides the protection of circuits against overload and short circuit. It is a series of compact MCBs in only 1 or 2 modules, depending on the poles configuration.
Functional unit	Protect during 20 years the installation against overloads and short-circuits in circuit with assigned voltage 400V and rated current 16 A.
Other products covered	EPC Family: 1P+1P in 1M / 6 kA / B and C char up to 20 A (230V) 2P in 1M / 3kA - 10kA / B and C char up to 40 A 3P in 2M / 3kA - 6kA / B and C char up to 32 A 4P in 2M / 3kA - 6kA / B and C char up to 32 A

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Constituent materials

0



Total weight of Reference product

114,31 g

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-%
PA+GF	12,3	STEEL	24,6	AGC + GRAPHITE	6,8
PA	10,5	COPPER	10,5	CARDBOARD	9,3
PPS	1,3	BRASS	1,7	PAPER	0,8
PBT+GF	1,2	STAINLESS STEEL	2,2	-	-
PBT	2,0	OTHER METALS	16,9	-	-

Total weight of the reference product and its packaging: 126,00 g (9,4% box and 0,8% paper)

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Additional Environmental Information

Manufacturing	Includes the environmental impacts associated with extraction and processing of the raw materials used to produce the product and its packaging, transport to the manufacturing site and assembly.
Distribution	Includes the transportation in its packaging from the manufacturer's last logistic platform to the distributor.
Installation	Installation stage includes the installation of the products made manually and packaging.
Use	Energy consumption is calculated by following the PSR. The energy models used in this phase are the specific energy mixes based on distribution. No maintenance is necessary. Reference product consumption over 20 years is 54,61 kwh.
End of life	Includes its transportation from the installation site to the final end of life treatment site, and end of life treatment processes. A value of 1000 km transport by lorry is used for the transportation.
Software and database used	Simapro 9.3.0.3 and Ecoinvent v3.8
Standards	"PCR Product Category Rules for Electrical, Electronic and HVAC-R Products" (PCR-ed3-EN-2015 04 02) and - "PSR Specific Rules for Electrical Switchgear and control gear Solutions"(PSR-0005-ed2-EN—2016 03 29)



Environmental impacts

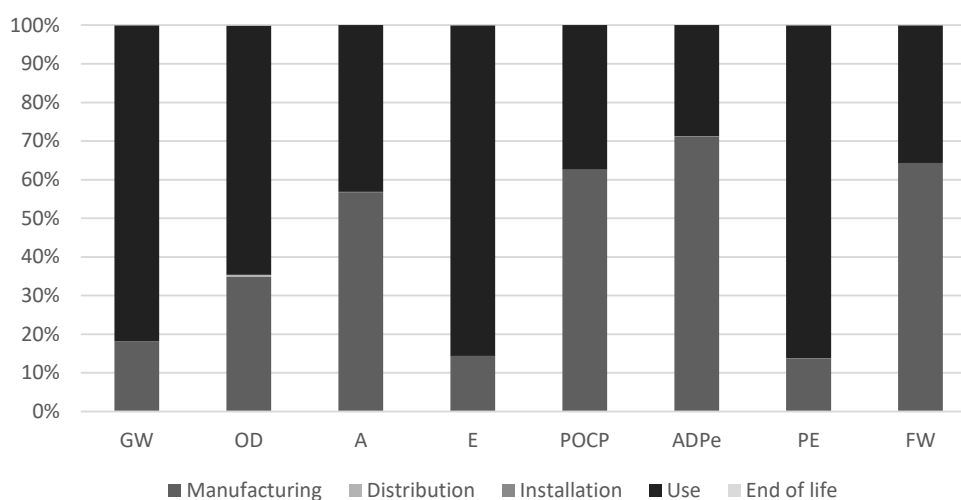
Reference lifetime	20 years
Product category	Circuit Breaker
Installation elements	Installation carried out manually
Use scenario	Global use scenario
Geographical representativeness	Global
Technological representativeness	Materials and processes data are specific for the production of EPC 6kA C 16A 2P - 4TQA694287R0000 and its family
Energy model used	
Manufacturing	A specific mix of trading company has been used (Confidential)
Installation	Manually done. Global
Use	Global use mix electricity (ad hoc)
End of life	Global

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Compulsory Indicators

Impact indicators	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Global warming (GW)	kg CO ₂ eq.	3,25E+01	5,86E+00	3,58E-02	2,11E-03	2,66E+01	2,06E-02
Ozone depletion (OD)	kg CFC-11 eq.	1,37E-06	4,79E-07	6,43E-09	2,17E-10	8,84E-07	2,12E-09
Acidification of soil and water (A)	kg SO ₂ eq.	3,66E-01	2,08E-01	1,26E-04	2,54E-06	1,58E-01	2,48E-05
Eutrophication (E)	kg (PO ₄) ³ eq.	1,08E-01	1,55E-02	3,01E-05	9,39E-06	9,21E-02	9,19E-05
Photochemical ozone creation (POCP)	kg C ₂ H ₄ eq.	1,65E-02	1,03E-02	7,10E-06	1,21E-07	6,15E-03	1,19E-06
Depletion of abiotic resources – elements (ADPe)	kg Sb eq.	6,51E-04	4,63E-04	2,56E-07	4,01E-09	1,87E-04	3,92E-08
Resource use indicators	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Total use of primary energy (PE)	MJ	7,450E+02	1,020E+02	5,580E-01	1,010E-02	6,410E+02	9,900E-02
Net freshwater use (FW)	m ³	1,492E+01	9,590E+00	2,160E-03	2,790E-04	5,320E+00	2,720E-03

% Environmental Impact per Life Cycle Stage of Reference Product



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Optional Indicators

Resource use indicators	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	8,90E+01	2,64E+01	1,06E-02	3,99E-04	6,26E+01	3,90E-03
Use of renewable primary energy resources as raw materials	MJ	5,76E-01	5,76E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources	MJ	8,96E+01	2,70E+01	1,06E-02	3,99E-04	6,26E+01	3,90E-03
Use of non-renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	6,53E+02	7,31E+01	5,48E-01	9,73E-03	5,79E+02	9,51E-02
Use of non-renewable primary energy resources as raw materials	MJ	2,35E+00	2,35E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources	MJ	6,55E+02	7,55E+01	5,48E-01	9,73E-03	5,79E+02	9,51E-02
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+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
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

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Optional Indicators

Waste category indicators	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Hazardous waste disposed	kg	5,50E-04	3,03E-04	3,80E-06	3,42E-08	2,43E-04	3,34E-07
Non-hazardous waste disposed	kg	4,80E+00	2,72E+00	3,06E-02	1,89E-03	2,03E+00	1,85E-02
Radioactive waste disposed	kg	4,56E-03	2,91E-04	3,66E-06	5,72E-08	4,27E-03	5,59E-07
Output flow indicators	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,20E-01	1,93E-02	0,00E+00	9,36E-03	0,00E+00	9,14E-02
Materials for energy recovery	kg	8,82E-03	0,00E+00	0,00E+00	8,19E-04	0,00E+00	8,00E-03
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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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:

Use phase extrapolation factors:

Amperage (A)	1	2	4	6	10	13	15	16	20	25	32	40
2P / 1P+1P	0,28	0,51	0,61	0,75	0,85	0,92	0,94	1,00	1,21	1,67	1,52	2,14
3P	0,42	0,77	0,92	1,13	1,28	1,38	1,41	1,50	1,82	2,51	2,28	3,21
4P	0,56	1,02	1,22	1,50	1,70	1,84	1,88	2,00	2,42	3,34	3,04	4,28


All the others phases extrapolation factors:

Number of poles	Manufacturing	Distribution	Instalation	End of Life
1P+1P	1,11	1,11	1,00	1,11
2P	1,00	1,00	1,00	1,00
3P	1,88	1,88	1,06	1,88
4P	2,40	2,40	1,06	2,40

Product description	Product code
EPC 452 C06	4TQA603181R0000
EPC 452 C10	4TQA603182R0000
EPC 452 C16	4TQA603183R0000
EPC 452 C20	4TQA603184R0000
EPC 452 C25	4TQA603185R0000
EPC 452 C32	4TQA603186R0000
EPC 452 C40	4TQA603187R0000
EPC62 B06	4TQA693673R0000
EPC62 B10	4TQA693674R0000
EPC62 B16	4TQA693675R0000
EPC62 B20	4TQA693676R0000
EPC62 B25	4TQA693677R0000
EPC62 B32	4TQA693827R0000
EPC63 B06	4TQA693828R0000
EPC63 B10	4TQA693829R0000
EPC63 B16	4TQA693830R0000
EPC63 B20	4TQA693831R0000
EPC63 B25	4TQA694264R0000
EPC63 B32	4TQA694265R0000
EPC64 B06	4TQA694266R0000
EPC64 B10	4TQA694267R0000
EPC64 B16	4TQA694268R0000
EPC64 B20	4TQA694269R0000
EPC64 B25	4TQA694270R0000
EPC64 B32	4TQA694271R0000
EPC611 B06	4TQA694272R0000
EPC611 B10	4TQA694273R0000
EPC611 B13	4TQA694274R0000
EPC611 B16	4TQA694275R0000
EPC611 B20	4TQA694276R0000
EPC62 C06	4TQA694285R0000
EPC62 C10	4TQA694286R0000

Product description	Product code
EPC62 C16	4TQA694287R0000
EPC62 C20	4TQA694288R0000
EPC62 C25	4TQA694289R0000
EPC62 C32	4TQA694290R0000
EPC62 C40	4TQA694291R0000
EPC63 C06	4TQA694292R0000
EPC63 C10	4TQA694293R0000
EPC63 C16	4TQA694294R0000
EPC63 C20	4TQA694295R0000
EPC63 C25	4TQA694296R0000
EPC63 C32	4TQA694297R0000
EPC64 C06	4TQA694298R0000
EPC64 C10	4TQA694299R0000
EPC64 C16	4TQA694384R0000
EPC64 C20	4TQA694385R0000
EPC64 C25	4TQA694386R0000
EPC64 C32	4TQA694387R0000
EPC611 C06	4TQA694388R0000
EPC611 C10	4TQA694389R0000
EPC611 C13	4TQA694390R0000
EPC611 C16	4TQA694391R0000
EPC611 C20	4TQA694392R0000
EPC62 B13	4TQA694950R0000
EPC63 B13	4TQA694951R0000
EPC62 C13	4TQA694952R0000
EPC63 C13	4TQA694953R0000
EPC62 B40	4TQA694954R0000
EPC62 C02	4TQA695398R0000
EPC62 C04	4TQA695399R0000
EPC63 C04	4TQA695400R0000
EPC64 C04	4TQA695401R0000

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Verifier accreditation number: VH32	Information and reference documents: www.pep-ecopassport.org	
Date of issue: 21/11/2022	Validity period:	5 years
Independent verification of the declaration and data, in compliance with ISO 14025: 2010		
Internal <input type="radio"/>	External <input checked="" type="radio"/>	
The PCR review was conducted by a panel of experts chaired by Philippe Osset (SOLINNEN)		
PEP are compliant with XP C08-100-1: 2016 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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Environmental Impact Indicator Glossary

Impact indicators	Description	Unit
Global warming (GW)	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. Includes fossil and biogenic	kg CO ₂ eq.
Ozone depletion (OD)	Indicator of emissions to air that contribute to the destruction of the ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Indicator of the potential acidification of soils and water caused by the release of certain gases to the atmosphere	kg SO ₂ 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.	kg (PO ₄) ³ 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 C ₂ H ₄ 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)	Indicator of the depletion of natural fossil resources	MJ (lower heating value)
Water pollution (WP)	Indicator of the quantity of water necessary to dilute the toxic elements poured into water in all the stages of the product life cycle.	m ³
Air pollution (AP)	Indicator of the quantity of air necessary to dilute the toxic elements emitted into the air in all the stages of the product life cycle.	m ³
Resource use indicators	Description	Unit
Total use of primary energy (PE)	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

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