



xPole - PLS6/M Miniature Circuit Breaker

Representative product	Eaton Moeller series xPole - PLS6/M Miniature Circuit Breaker (242247) PLSM-B13/1N-MW Product Category: Circuit-Breakers			
Description of the product	The PLSM miniature circuit breakers are protective devices equipped with both a thermal and an electromagnetic release that are available in 1+N pole version. These Eaton miniature circuit breakers are compatible with AC applications with rated currents from 6 A to 32 A, and they are available with tripping characteristics B, C and D. The switching capacity of the PLSM is 10 kA.			
Homogeneous Environmental Families Covered	The PEP concerns the following product offerings from Eaton xPole Miniature Circuit Breaker as mentioned below:			
	242270	PLSM-C13/1N-MW	242769	PLS6-D25/1N-MW
	242249	PLSM-B16/1N-MW	242761	PLS6-D6/1N-MW
	242272	PLSM-C16/1N-MW	173835	PLSM-B10/1N-GV
	173818	PLS6-B10/1N-GV	242245	PLSM-B10/1N-MW
	242720	PLS6-B10/1N-MW	150575	PLSM-B13/1N-GV
	242722	PLS6-B13/1N-MW	150576	PLSM-B16/1N-GV
	173822	PLS6-B16/1N-GV	242250	PLSM-B20/1N-MW
	242724	PLS6-B16/1N-MW	173838	PLSM-C10/1N-GV
	242725	PLS6-B20/1N-MW	242268	PLSM-C10/1N-MW
	242726	PLS6-B25/1N-MW	150577	PLSM-C13/1N-GV
	242727	PLS6-B32/1N-MW	150578	PLSM-C16/1N-GV
	242718	PLS6-B6/1N-MW	242273	PLSM-C20/1N-MW
	173821	PLS6-C10/1N-GV	242288	PLSM-D10/1N-MW
	242743	PLS6-C10/1N-MW	242290	PLSM-D13/1N-MW
	242745	PLS6-C13/1N-MW	242292	PLSM-D16/1N-MW
	173825	PLS6-C16/1N-GV	242293	PLSM-D20/1N-MW
	242747	PLS6-C16/1N-MW	242243	PLSM-B6/1N-MW
	242748	PLS6-C20/1N-MW	242266	PLSM-C6/1N-MW

	242749 PLS6-C25/1N-MW 242750 PLS6-C32/1N-MW 242741 PLS6-C6/1N-MW 242763 PLS6-D10/1N-MW 242765 PLS6-D13/1N-MW 242767 PLS6-D16/1N-MW 242768 PLS6-D20/1N-MW	242286 PLSM-D6/1N-MW 242251 PLSM-B25/1N-MW 242274 PLSM-C25/1N-MW 242294 PLSM-D25/1N-MW 242252 PLSM-B32/1N-MW 242275 PLSM-C32/1N-MW
Functional unit	Protect the installation from overloads and short circuits in a circuit with rated voltage of 230V, rated current 13A, with 1 pole plus neutral, a rated breaking capacity 10KA, and the tripping curve B in the Household/Commercial application area, according to the appropriate use scenario, and during the reference service life of the product of 20 years.	
Company information	Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania, 437157 Email: productstewardship-es@eaton.com	

Constituent materials			
Reference product mass	1.63E-01 kg (with packaging)		
Category pep material	Material constituent	Mass (kg)	% contribution
Plastics	Polyamide 6	6.17E-02	37.8%
Metals	Steel	4.94E-02	30.2%
Metals	Stainless steel	1.50E-02	9.2%
Metals	Copper	1.38E-02	8.4%
Others	Cardboard	1.16E-02	7.1%
Plastics	Polyamide 6.6 with 30% glass fibers	3.06E-03	1.9%
Others	Wood	2.43E-03	1.5%
Plastics	Polymethyl methacrylate	1.61E-03	1.0%
Metals	Ferronickel	1.06E-03	0.7%
Plastics	Phenolic resin	9.41E-04	0.6%
Plastics	Polyethylene terephthalate	8.07E-04	0.5%
Plastics	Polybutylene terephthalate	6.41E-04	0.4%
Plastics	Polyamide 66	5.56E-04	0.3%
Plastics	Polyethylene low density	3.94E-04	0.2%
Others	Paper	2.92E-04	0.2%
Others	Miscellaneous	9.31E-05	<0.1%
Total		1.63E-01	100%

Substance Assessment

The representative product is compliant with the EU-RoHS Directive (2011/65/EU) with exemption and the product does contain Lead as Substance-of-Very-High-Concern (SVHC) on the Candidate List of the EU-REACH Regulation (1907/2006/EC).

Additional Environmental Information	
Manufacturing	The reference product is assembled at an Eaton plant Romania holding management system certifications according to ISO 14001 standards.
Distribution	Eaton is committed to minimizing weight and volume of product and packaging with focus to optimize transport efficiency.
Installation	The installation process does not require any energy consumption and there is no waste other than the obsolete product packaging generated during this step.
Use	The product does not require maintenance during Use Phase. .
End of life	The recyclability rate of the overall product is 43.70%, The rate is calculated based on the method described in Table 7 PCR-ed4-EN-2021 09 06 Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment's.

Environmental Impacts	
The calculation of the environmental impacts is the result of the Product's Life Cycle Analysis in accordance with ISO 14040/44, covering the entire lifecycle, i.e., "Cradle-to-Grave" including the following life cycle phases: production, distribution, installation, use and end of life. System modelling was carried out using the commercial LCA software EIME v6.2.5-3 with database version CODDE-2024-04 Updated on 2024-06-04 Indicators Set: PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0	
Manufacturing Phase	The product is assembled as well as packed at Eaton facility Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania, 437157. Energy model used: Europe
Distribution Phase	Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in Europe is considered as per PCR rules.
Installation Phase	Product is installed in Europe. Installation of product and treatment of packaging waste are considered in this phase. There is no energy consumption for reference product. Energy model used: Europe
Use Phase	Reference lifetime: 20 Years Usage profile: The product has power loss of 2.9 W at full load condition. For residential and commercial applications considering 15% of the loading rate and 30% of the use time rate, total losses are 3.43 kWh over the 20 years. Product do not require any maintenance/replacement during useful life. Energy Model Used: Europe
End of life Phase	Product disposed with WEEE guidelines. Energy model used: Europe
Module-D	Module D is calculated according to PCR-ed4-EN-2021 09 06 based on the materials recycled and the modelled end-of-life scenario. It expresses the net benefits and loads beyond the boundaries of the system and are not to be included in the life cycle totals.

Environmental Impact Indicators: Mandatory

Mandatory environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B6 - Operational energy use	C1-C4 - End of life	D - Benefits and loads beyond the system boundaries
Climate change – total (GWP)	kg CO2 eq.	2.64E+00	1.16E+00	3.73E-02	2.09E-02	1.21E+00	2.10E-01	-2.29E-01
Climate change - fossil fuels (GWP-f)	kg CO2 eq.	2.62E+00	1.16E+00	3.73E-02	1.45E-02	1.21E+00	2.02E-01	-2.41E-01
Climate change – biogenics (GWP-b)	kg CO2 eq.	1.68E-02	-2.77E-04	1.52E-07	6.41E-03	2.22E-03	8.45E-03	1.24E-02
Climate change - land use and land use transformation (GWP-lu)	kg CO2 eq.	2.09E-07	1.18E-07	5.63E-08	5.55E-10	0.00E+00	3.37E-08	0.00E+00
Ozone depletion (ODP)	kg eq. CFC-11	7.43E-08	6.37E-08	4.52E-10	1.95E-10	5.86E-09	4.09E-09	-4.65E-08
Acidification (AP)	mole of H+ eq.	1.43E-02	7.08E-03	5.88E-05	4.12E-05	6.19E-03	9.25E-04	-2.66E-03
Freshwater eutrophication (EP-fw)	kg P eq.	1.03E-04	4.45E-05	1.39E-07	2.96E-07	3.18E-06	5.45E-05	-6.87E-07
Marine aquatic eutrophication (EP-m)	kg of N eq.	1.74E-03	8.01E-04	1.07E-05	1.66E-05	7.54E-04	1.59E-04	-1.62E-04
Terrestrial eutrophication (EP-t)	mole of N eq.	2.28E-02	8.59E-03	1.17E-04	1.22E-04	1.21E-02	1.89E-03	-1.81E-03
Photochemical ozone formation (POCP)	kg of NMVOC eq.	5.80E-03	2.80E-03	3.78E-05	2.81E-05	2.37E-03	5.63E-04	-7.00E-04
Depletion of abiotic resources – elements (ADPe)	kg eq. Sb	1.31E-04	1.29E-04	1.33E-08	6.11E-10	4.28E-07	1.73E-06	-1.05E-04
Depletion of abiotic resources - fossil fuels (ADP-f)	MJ	7.09E+01	2.76E+01	6.61E-01	1.44E-01	3.05E+01	1.19E+01	-4.89E+00
Water scarcity (WDP)	m3 of eq.. deprivation worldwide	6.60E-01	4.60E-01	1.34E-03	9.30E-04	9.26E-02	1.05E-01	-1.61E-01

Inventory Flow Indicators: Mandatory

Inventory flow indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B6 - Operational energy use	C1-C4 - End of life	D - Benefits and loads beyond the system boundaries
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	9.07E+00	8.80E-01	2.09E-03	2.84E-02	8.08E+00	8.88E-02	-3.50E-02
Use of renewable primary energy resources used as raw materials	MJ	2.55E-01	2.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.85E-01

Inventory flow indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B6 - Operational energy use	C1-C4 - End of life	D - Benefits and loads beyond the system boundaries
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	9.33E+00	1.13E+00	2.09E-03	2.84E-02	8.08E+00	8.88E-02	-2.20E-01
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	6.87E+01	2.55E+01	6.61E-01	1.44E-01	3.05E+01	1.19E+01	-4.89E+00
Use of non-renewable primary energy resources used as raw materials	MJ	2.11E+00	2.11E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.59E-03
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	7.09E+01	2.76E+01	6.61E-01	1.44E-01	3.05E+01	1.19E+01	-4.89E+00
Use of secondary materials	kg	0.00E+00	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	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
Net use of fresh water	m3	1.54E-02	1.07E-02	3.12E-05	2.22E-05	2.18E-03	2.46E-03	-3.75E-03
Hazardous waste disposed of	kg	3.96E+00	3.73E+00	1.56E-04	1.16E-03	5.30E-02	1.72E-01	-5.61E+00
Non-hazardous waste disposed of	kg	8.46E-01	5.97E-01	3.46E-03	5.56E-03	2.04E-01	3.56E-02	-1.57E-01
Radioactive waste disposed of	kg	2.26E-04	1.71E-04	2.74E-06	7.75E-07	4.68E-05	4.35E-06	-7.23E-05
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
Materials for recycling	kg	8.73E-02	2.57E-02	0.00E+00	9.15E-04	0.00E+00	6.07E-02	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	0.00E+00
Exported energy	MJ by energy vector	7.74E-03	1.91E-03	0.00E+00	1.31E-03	0.00E+00	4.52E-03	0.00E+00
Biogenic carbon content of the product	kg of C.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	kg of C.	5.07E-03	5.07E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Environmental Impact Indicators: Optional

Optional Environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B6 - Operational energy use	C1-C4 - End of life	D - Benefits and loads beyond the system boundaries
Emission of fine particles	Incidence of diseases	1.23E-07	6.76E-08	5.05E-10	2.52E-10	4.99E-08	5.05E-09	-1.08E-07
Ionizing radiation, human health	kBq of U235 eq.	7.78E+00	6.02E+00	1.32E-03	2.35E-03	1.74E+00	1.92E-02	-2.30E+00

Optional Environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B6 - Operational energy use	C1-C4 - End of life	D - Benefits and loads beyond the system boundaries
Ecotoxicity, fresh water	CTUe	1.61E+03	1.60E+03	1.09E+00	1.95E-01	2.28E+00	2.71E+00	-1.28E+00
Human toxicity, cancer effects	CTUh	1.75E-07	1.73E-07	7.30E-12	1.39E-09	1.52E-10	7.77E-11	-6.52E-07
Human toxicity, non-cancer effects	CTUh	7.83E-08	6.88E-08	1.39E-10	4.22E-11	3.63E-09	5.74E-09	-2.77E-08
Impacts related to land use/soil quality	-	2.87E-01	9.25E-02	1.59E-04	5.15E-05	3.35E-02	1.61E-01	-1.25E-04
Total use of primary energy during the life cycle	MJ	8.02E+01	2.87E+01	6.63E-01	1.72E-01	3.86E+01	1.20E+01	-5.12E+00

To evaluate the environmental impact of other products covered by this PEP, multiply the impact figures by

Factors for Manufacturing, Distribution, Installation, End-of-Life, and Module-D Phase

Multiplying Factors and Use Phase Energy Consumption for homogenous products.

Part Number	Description	Manufacturing, Distribution, Installation, end-of-life and Module-D Phase	Use Phase
242247 (Reference)	PLSM-B13/1N-MW	1	1.00
242270	PLSM-C13/1N-MW	1	1.00
242249	PLSM-B16/1N-MW	1	0.90
242272	PLSM-C16/1N-MW	1	0.90
173818	PLS6-B10/1N-GV	1	0.72
242720	PLS6-B10/1N-MW	1	0.72
242722	PLS6-B13/1N-MW	1	1.00
173822	PLS6-B16/1N-GV	1	0.90

Part Number	Description	Manufacturing, Distribution, Installation, end-of- life and Module-D Phase	Use Phase
242724	PLS6-B16/1N-MW	1	0.90
242725	PLS6-B20/1N-MW	1	1.24
242726	PLS6-B25/1N-MW	1	1.21
242727	PLS6-B32/1N-MW	1	1.52
242718	PLS6-B6/1N-MW	1	0.69
173821	PLS6-C10/1N-GV	1	0.59
242743	PLS6-C10/1N-MW	1	0.59
242745	PLS6-C13/1N-MW	1	1.00
173825	PLS6-C16/1N-GV	1	0.90
242747	PLS6-C16/1N-MW	1	0.90
242748	PLS6-C20/1N-MW	1	1.24
242749	PLS6-C25/1N-MW	1	1.21
242750	PLS6-C32/1N-MW	1	1.52
242741	PLS6-C6/1N-MW	1	0.55
242763	PLS6-D10/1N-MW	1	0.59
242765	PLS6-D13/1N-MW	1	0.76

Part Number	Description	Manufacturing, Distribution, Installation, end-of- life and Module-D Phase	Use Phase
242767	PLS6-D16/1N-MW	1	0.90
242768	PLS6-D20/1N-MW	1	0.76
242769	PLS6-D25/1N-MW	1	1.00
242761	PLS6-D6/1N-MW	1	0.55
173835	PLSM-B10/1N-GV	1	0.72
242245	PLSM-B10/1N-MW	1	0.72
150575	PLSM-B13/1N-GV	1	1.00
150576	PLSM-B16/1N-GV	1	0.90
242250	PLSM-B20/1N-MW	1	1.24
173838	PLSM-C10/1N-GV	1	0.59
242268	PLSM-C10/1N-MW	1	0.59
150577	PLSM-C13/1N-GV	1	1.00
150578	PLSM-C16/1N-GV	1	0.90
242273	PLSM-C20/1N-MW	1	1.24
242288	PLSM-D10/1N-MW	1	0.59
242290	PLSM-D13/1N-MW	1	0.76

Part Number	Description	Manufacturing, Distribution, Installation, end-of- life and Module-D Phase	Use Phase
242292	PLSM-D16/1N-MW	1	0.90
242293	PLSM-D20/1N-MW	1	0.76
242243	PLSM-B6/1N-MW	1	0.69
242266	PLSM-C6/1N-MW	1	0.55
242286	PLSM-D6/1N-MW	1	0.55
242251	PLSM-B25/1N-MW	1	1.21
242274	PLSM-C25/1N-MW	1	1.21
242294	PLSM-D25/1N-MW	1	1.00
242252	PLSM-B32/1N-MW	1	1.52
242275	PLSM-C32/1N-MW	1	1.52

This Product Environmental Profile and its content is based on information available to us. It refers to the product at the date of issue. We make no express or implied representations or warranties with respect to the information contained herein.			
Registration Number	EATO-00346-V01.01-EN	Drafting rules	PCR-ed4-EN-2021 09 06
Verifier accreditation Number	VH54	Supplemented by	PSR-0005-ed3.1-EN-2023 12 08
Date of issue	09-2025	Information and reference documents	www.pep-ecopassport.org
		Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14025: 2006			
Internal	X	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 and EN 50693:2019			
The components of the present PEP may not be compared with components from any other program.			
Document complies with ISO 14025: 2006 « Environmental labels and declarations. Type III environmental declarations »			