Powering Business Worldwide	**Product Environmental Profile**	PEP ecopassport®

	**NZM3 Molded Case Circuit Breaker (UL), with PXR Electronic Trip Unit and STD Technology**

Representative product	NZMH3-AX600-NA (Y7-192498) Product Category: Circuit Breaker
Description of the product	Eaton Moeller series NZM molded case circuit breaker with PXR Electronic Trip unit and STD Technology is designed to provide circuit protection for low-voltage distribution systems. The NZM circuit breakers protect entire systems and cables across all levels, from the main distribution board all the way to the load itself and contain Screw Terminal Technology.
Homogeneous Environmental Families Covered	The PEP concerns following product offerings from Eaton Moeller series NZM Circuit Breaker as mentioned below: • Series: NZM3 Circuit Breaker • Switching Capacity: H (High), N (Normal) • Rated Current – Release type AX (LI – system protection, electronic): 250 A,400 A,600 A. • Rated Current – Release type MX (LI motor – motor protection, electronic): 250A,350A,600A • Rated Current – Release type PMX (LI motor – motor protection, electronic, with measuring equipment): 250 A,350 A,600 A • Rated Current – Release type PX (LSI – selectivity and generator protection, electronic, with measuring equipment): 250 A,400 A,600 A • Rated Current – Release type VX (LSI – selectivity and generator protection, electronic): 250 A,400 A,600 A • Additional Function: With or Without Earth Fault Protection (T) (Only present with VX release type) • Region of Usage: NA

Functional unit	"Turn off all or part of an installation by separating the installation or part of the installation of all electrical energy or earth, for safety reasons with a rated voltage 690V AC, and rated current 600A with 3 poles ensuring rated breaking capacity 35 kA, and with IP Rating of IP20, 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	7.01E+00 Kg (With packaging)		
Category PEP Material	**Material constituent**	**Mass (kg)**	**% Contribution**
Metals	Copper	1.44E+00	20.6%
Metals	Steel	1.25E+00	17.8%
Plastics	Unsaturated polyester resin	1.24E+00	17.7%
Plastics	Polycarbonate	7.68E-01	10.9%
Metals	Stainless Steel	5.53E-01	7.9%
Plastics	Polyamide	5.13E-01	7.3%
Others	Cardboard	4.14E-01	5.9%
Plastics	Polyamide 66 With Glass Fiber 30 %	3.08E-01	4.4%
Others	Glass Fiber	2.04E-01	2.9%
Others	Wood	1.17E-01	1.7%
Others	PWB	7.00E-02	1.0%
Metals	Silver	2.82E-02	0.4%
Others	Ferrite Magnet	2.41E-02	0.3%
Others	Paper	1.90E-02	0.3%
Plastics	Polybutylene Terephthalate 70 GF-30	1.60E-02	0.2%
Others	Miscellaneous	4.26E-02	0.6%
Total		**7.01E+00**	**100.0%**

Substance Assessment
The representative product is compliant with the EU-RoHS Directive (2011/65/EU) and the product does contain Lead + Perfluorobutane sulfonic acid (PFBS) and its salts as substance listed 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 Sarbi, 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 requires energy consumption during operation.
End of life	The Product is having 100% incineration without energy recovery as per as per (PSR-0005-ed3.1-EN-2023 08 12)

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 v6.2.2 with database version CODDE-2024-04. 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 plant. Energy model used: Romania
Distribution Phase	Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in North America, United States is considered as per PSR rules.
Installation Phase	Product is installed in North America, United States. Installation of product and treatment of packaging waste are considered in this phase. There is no energy consumption for reference product.
Use Phase	Reference lifetime: 20 Years Usage profile: The product has power loss of 108 W at full load condition. For Industrial applications considering 50% of the loading rate and 30% of the use time rate, total losses are 1419.12 kWh over the 20 years. Product do not require any maintenance/replacement during useful life. Industrial application is considered as per PSR-0005 section 3.2.2. Energy model used: United States
End of life Phase	Product is disposed considering WEEE guidelines with default scenario.
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 CO_2 eq.	7.34E+02	4.71E+01	2.24E+00	1.05E+00	6.80E+02	3.52E+00	0.00E+00
Climate change - fossil fuels (GWP-f)	kg CO_2 eq.	7.32E+02	4.72E+01	2.24E+00	2.02E-01	6.79E+02	3.51E+00	0.00E+00
Climate change - biogenics (GWP-b)	kg CO_2 eq.	1.71E+00	-1.16E-01	0.00E+00	8.47E-01	9.72E-01	8.90E-03	0.00E+00
Climate change - land use and land use transformation (GWP-lu)	kg CO_2 eq.	1.07E-03	1.07E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ozone depletion (ODP)	kg eq. CFC-11	8.09E-06	5.09E-06	2.94E-09	6.97E-09	2.70E-06	2.94E-07	0.00E+00
Acidification (AP)	mole of H+ eq.	3.73E+00	5.43E-01	7.42E-02	1.21E-03	3.09E+00	2.36E-02	0.00E+00
Freshwater eutrophication (Ep-fw)	kg P eq.	5.04E-03	3.81E-03	7.73E-07	1.58E-07	1.22E-03	5.58E-06	0.00E+00
Marine aquatic eutrophication (Ep-m)	kg of N eq.	4.56E-01	4.02E-02	1.77E-02	3.01E-04	3.92E-01	6.15E-03	0.00E+00
Terrestrial eutrophication (Ep-t)	mole of N eq.	5.38E+00	4.37E-01	1.94E-01	3.92E-03	4.67E+00	7.88E-02	0.00E+00
Photochemical ozone formation (POCP)	kg of NMVOC eq.	1.52E+00	1.57E-01	4.98E-02	8.47E-04	1.29E+00	1.76E-02	0.00E+00
Depletion of abiotic resources - elements (ADP-e)	kg eq. Sb	4.42E-02	4.41E-02	8.03E-08	1.44E-08	9.08E-05	2.31E-07	0.00E+00
Depletion of abiotic resources - fossil fuels (ADP-f)	MJ	1.64E+04	1.20E+03	2.84E+01	3.73E+00	1.51E+04	5.83E+01	0.00E+00
Water scarcity (WDP)	m^3 eq. deprivation worldwide	6.66E+01	3.44E+01	7.42E-03	8.35E-03	3.18E+01	3.05E-01	0.00E+00

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	1.69E+03	4.96E+01	3.65E-02	2.77E-01	1.64E+03	3.39E+00	0.00E+00

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 resources used as raw materials	MJ	1.06E+01	1.06E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	1.70E+03	6.02E+01	3.65E-02	2.77E-01	1.64E+03	3.39E+00	0.00E+00
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	1.63E+04	1.12E+03	2.84E+01	3.73E+00	1.51E+04	5.83E+01	0.00E+00
Use of non-renewable primary energy resources used as raw materials	MJ	8.17E+01	8.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	1.64E+04	1.20E+03	2.84E+01	3.73E+00	1.51E+04	5.83E+01	0.00E+00
Use of secondary materials	kg	2.52E-06	2.52E-06	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	m^3	1.55E+00	8.02E-01	1.73E-04	3.25E-04	7.42E-01	8.60E-03	0.00E+00
Hazardous waste disposed of	kg	4.36E+02	4.10E+02	0.00E+00	2.07E-01	1.47E+01	1.08E+01	0.00E+00
Non-hazardous waste disposed of	kg	1.20E+02	1.83E+01	6.88E-02	2.88E-02	1.01E+02	4.44E-01	0.00E+00
Radioactive waste disposed of	kg	4.04E-02	1.60E-02	4.79E-05	1.19E-05	2.42E-02	2.15E-04	0.00E+00
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	1.58E+00	1.58E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	5.00E-03	5.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ by energy vector	3.93E-05	3.93E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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.	2.48E-01	2.48E-01	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	2.77E-05	4.56E-06	3.93E-07	8.46E-09	2.26E-05	1.59E-07	0.00E+00
Ionizing radiation, human health	kBq U^{235} eq.	1.22E+03	5.57E+02	4.67E-03	8.27E-02	6.66E+02	1.16E+00	0.00E+00
Ecotoxicity, fresh water	CTUe	1.01E+04	9.02E+03	1.34E+00	4.76E+00	9.32E+02	1.05E+02	0.00E+00
Human toxicity, cancer effects	CTUh	7.78E-06	7.61E-06	3.36E-11	3.50E-11	7.99E-08	8.36E-08	0.00E+00
Human toxicity, non-cancer effects	CTUh	8.08E-06	5.96E-06	7.42E-10	1.44E-09	2.07E-06	5.50E-08	0.00E+00
Impacts related to land use/soil quality	-	2.60E+01	1.34E+01	0.00E+00	3.85E-03	1.25E+01	8.48E-02	0.00E+00
Total use of primary energy during the life cycle	MJ	1.81E+04	1.26E+03	2.85E+01	4.01E+00	1.68E+04	6.17E+01	0.00E+00

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

Factors for Manufacturing, Installation, End-of-Life, and Phase:

Part No.	Description	Multiplying Factor for all phases except Use Phase
Y7-192498 (Reference)	NZMH3-AX600-NA (Reference)	1.00
Y7-193347	NZMH3-MX250-NA	1.00
Y7-193348	NZMH3-MX350-NA	1.00
Y7-193349	NZMH3-MX450-NA	1.00
Y7-193353	NZMH3-PMX250-NA	1.00
Y7-193354	NZMH3-PMX350-NA	1.00
Y7-193355	NZMH3-PMX450-NA	1.00
Y7-192589	NZMH3-PX250-NA	1.00
Y7-192590	NZMH3-PX400-NA	1.00
Y7-192591	NZMH3-PX600-NA	1.00
Y7-192533	NZMH3-VX250-NA	1.00
Y7-306557	NZMH3-VX250-T-NA	1.00
Y7-192534	NZMH3-VX400-NA	1.00
Y7-306558	NZMH3-VX400-T-NA	1.00
Y7-192535	NZMH3-VX600-NA	1.00
Y7-306560	NZMH3-VX600-T-NA	1.00
Y7-192484	NZMN3-AX250-NA	1.00
Y7-192485	NZMN3-AX400-NA	1.00
Y7-192486	NZMN3-AX600-NA	1.00

Part No.	Description	Multiplying Factor for all phases except Use Phase
Y7-193350	NZMN3-PMX250-NA	1.00
Y7-193351	NZMN3-PMX350-NA	1.00
Y7-193352	NZMN3-PMX450-NA	1.00
Y7-192586	NZMN3-PX250-NA	1.00
Y7-192587	NZMN3-PX400-NA	1.00
Y7-192588	NZMN3-PX600-NA	1.00
Y7-192502	NZMN3-VX250-NA	1.00
Y7-306530	NZMN3-VX250-T-NA	1.00
Y7-192503	NZMN3-VX400-NA	1.00
Y7-306543	NZMN3-VX400-T-NA	1.00
Y7-192504	NZMN3-VX600-NA	1.00
Y7-306556	NZMN3-VX600-T-NA	1.00
Y7-192496	NZMH3-AX250-NA	1.00
Y7-192497	NZMH3-AX400-NA	1.00

Multiplying Factors for Use Phase for homogenous products:

Part No.	Description	Use Phase
Y7-192498 (Reference)	NZMH3-AX600-NA (Reference)	1.00
Y7-193347	NZMH3-MX250-NA	0.17
Y7-193348	NZMH3-MX350-NA	0.34
Y7-193349	NZMH3-MX450-NA	0.56
Y7-193353	NZMH3-PMX250-NA	0.17
Y7-193354	NZMH3-PMX350-NA	0.34
Y7-193355	NZMH3-PMX450-NA	0.56
Y7-192589	NZMH3-PX250-NA	0.17
Y7-192590	NZMH3-PX400-NA	0.44
Y7-192591	NZMH3-PX600-NA	1.00
Y7-192533	NZMH3-VX250-NA	0.17
Y7-306557	NZMH3-VX250-T-NA	0.17
Y7-192534	NZMH3-VX400-NA	0.44
Y7-306558	NZMH3-VX400-T-NA	0.44
Y7-192535	NZMH3-VX600-NA	1.00
Y7-306560	NZMH3-VX600-T-NA	1.00
Y7-192484	NZMN3-AX250-NA	0.17
Y7-192485	NZMN3-AX400-NA	0.44
Y7-192486	NZMN3-AX600-NA	1.00
Y7-193350	NZMN3-PMX250-NA	0.17

Part No.	Description	Use Phase
Y7-193351	NZMN3-PMX350-NA	0.34
Y7-193352	NZMN3-PMX450-NA	0.56
Y7-192586	NZMN3-PX250-NA	0.17
Y7-192587	NZMN3-PX400-NA	0.44
Y7-192588	NZMN3-PX600-NA	1.00
Y7-192502	NZMN3-VX250-NA	0.17
Y7-306530	NZMN3-VX250-T-NA	0.17
Y7-192503	NZMN3-VX400-NA	0.44
Y7-306543	NZMN3-VX400-T-NA	0.44
Y7-192504	NZMN3-VX600-NA	1.00
Y7-306556	NZMN3-VX600-T-NA	1.00
Y7-192496	NZMH3-AX250-NA	0.17
Y7-192497	NZMH3-AX400-NA	0.44

Disclaimer
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.

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Verifier accreditation Number	VH53	Supplemented by	PSR-0005-ed3.1-EN-2023 08 12
Date of issue	10-2024	*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 »			