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

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

Representative product	NZMH3-AE600-NA (Y7-269304) Product Category - Circuit Breaker
Description of the product	Eaton Moeller series NZM molded case circuit breaker with electronic trip unit is designed to protect the installation from overload and short circuits. It is used in unearthed supply systems up to 600 V. with high switching capacity and Rated short Circuit breaking capacity at 600 V is 50kA
Homogeneous Environmental Families Covered	The PEP concerns following product offerings from Eaton Moeller series NZM molded case circuit breaker with electronic trip unit as mentioned below: • Series: NZM Circuit Breaker • Switching Capacity: H (High), L (Limiter), N (Normal), S (Strong) • Rated Current – 250 A,400 A,600 A • No. of Poles: 3 • Region: North America
Functional unit	"Protect the installation from overloads and short circuits in a circuit with rated voltage 600V, rated current 600A, with 3 poles, a rated breaking capacity 50 kA, and IP20 Rating, in the Industrial 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	7.41E+00 Kg (With packaging)		
Category PEP Material	**Material constituent**	**Mass (kg)**	**% Contribution**
Metals	Copper	1.80E+00	24.3%
Metals	Steel	1.50E+00	20.2%
Plastics	Unsaturated polyester resin	1.24E+00	16.8%
Plastics	Polycarbonate	9.01E-01	12.2%
Metals	Stainless steel	5.68E-01	7.7%
Plastics	Polyamide	3.87E-01	5.2%
Other	Cardboard	2.28E-01	3.1%
Plastics	Polyethylene low density (PE-LD)	1.86E-01	2.5%
Plastics	Polyethersulfone	1.70E-01	2.3%
Plastics	Polyurethane	1.39E-01	1.9%
Other	Wood	1.17E-01	1.6%
Other	Electronics	8.32E-02	1.1%
Metals	Silver	2.46E-02	0.3%
Other	Glass Fiber	1.98E-02	0.3%
Plastics	Polybutylene terephthalate	1.82E-02	0.2%
Other	Miscellaneous	2.59E-02	0.3%
Total		7.41E+00	100.0%

Substance Assessment
The representative product is compliant with the EU-RoHS Directive (2011/65/EU) with exemption and the product does contain lead and Perfluoro butane 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	For End of Life, 100% incineration without energy recovery is considered 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 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.
Use Phase	Reference lifetime: 20 Years Usage profile: The product has power loss of 108W at full load condition. For Industrial applications considering 50% of the loading rate and 30% of the use time rate, total losses are 1419.12kWh 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 disposed with WEEE guidelines.

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
Climate change – total (GWP)	kg CO2 eq.	7.39E+02	5.26E+01	2.36E+00	7.55E-01	6.80E+02	3.57E+00
Climate change - fossil fuels (GWP-f)	kg CO2 eq.	7.37E+02	5.22E+01	2.36E+00	2.01E-01	6.79E+02	3.56E+00
Climate change – biogenics (GWP-b)	kg CO2 eq.	1.86E+00	3.29E-01	0.00E+00	5.54E-01	9.72E-01	9.35E-03
Climate change - land use and land use transformation (GWP-lu)	kg CO2 eq.	1.25E-03	1.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ozone depletion (ODP)	kg eq. CFC-11	9.13E-06	6.11E-06	3.10E-09	7.93E-09	2.70E-06	3.13E-07
Acidification (AP)	mole of H+ eq.	3.83E+00	6.40E-01	7.84E-02	1.31E-03	3.09E+00	2.49E-02
Freshwater eutrophication (EP-fw)	kg P eq.	5.86E-03	4.64E-03	8.17E-07	1.53E-07	1.22E-03	5.23E-06
Marine aquatic eutrophication (EP-m)	kg of N eq.	4.58E-01	4.05E-02	1.87E-02	3.28E-04	3.92E-01	6.50E-03
Terrestrial eutrophication (EP-t)	mole of N eq.	5.42E+00	4.60E-01	2.05E-01	4.29E-03	4.67E+00	8.34E-02

Mandatory environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B6 - Operational energy use	C1-C4 - End of life
Photochemical ozone formation (POCP)	kg of NMVOC eq.	1.53E+00	1.70E-01	5.27E-02	9.19E-04	1.29E+00	1.86E-02
Depletion of abiotic resources – elements (ADPe)	kg eq. Sb	3.89E-02	3.88E-02	8.49E-08	1.50E-08	9.08E-05	2.41E-07
Depletion of abiotic resources - fossil fuels (ADP-f)	MJ	1.66E+04	1.40E+03	3.01E+01	3.69E+00	1.51E+04	6.03E+01
Water scarcity (WDP)	m3 of eq.. deprivation worldwide	7.28E+01	4.07E+01	7.84E-03	8.73E-03	3.18E+01	3.24E-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
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	1.70E+03	5.37E+01	3.85E-02	2.69E-01	1.64E+03	3.45E+00
Use of renewable primary energy resources used as raw materials	MJ	7.22E+00	7.22E+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	6.09E+01	3.85E-02	2.69E-01	1.64E+03	3.45E+00
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	1.65E+04	1.31E+03	3.01E+01	3.69E+00	1.51E+04	6.03E+01
Use of non-renewable primary energy resources used as raw materials	MJ	9.05E+01	9.05E+01	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	1.66E+04	1.40E+03	3.01E+01	3.69E+00	1.51E+04	6.03E+01
Use of secondary materials	kg	2.48E-05	2.48E-05	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
Net use of fresh water	m3	1.70E+00	9.48E-01	1.82E-04	3.32E-04	7.42E-01	9.12E-03
Hazardous waste disposed of	kg	4.64E+02	4.38E+02	0.00E+00	2.04E-01	1.47E+01	1.15E+01
Non-hazardous waste disposed of	kg	1.23E+02	2.09E+01	7.27E-02	2.91E-02	1.01E+02	4.63E-01
Radioactive waste disposed of	kg	4.78E-02	2.34E-02	5.06E-05	1.19E-05	2.42E-02	2.24E-04
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	1.85E+00	1.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	4.99E-03	4.99E-03	0.00E+00	0.00E+00	0.00E+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
Exported energy	MJ by energy vector	3.93E-05	3.93E-05	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
Biogenic carbon content of the associated packaging	kg of C.	1.50E-01	1.50E-01	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
Emission of fine particles	incidence of diseases	2.83E-05	5.14E-06	4.15E-07	9.03E-09	2.26E-05	1.68E-07
Ionizing radiation, human health	kBq of U235 eq.	1.37E+03	7.02E+02	4.93E-03	8.03E-02	6.66E+02	1.19E+00
Ecotoxicity, fresh water	CTUe	7.05E+03	6.00E+03	1.42E+00	5.39E+00	9.32E+02	1.09E+02
Human toxicity, cancer effects	CTUh	7.96E-06	7.82E-06	3.55E-11	4.33E-11	7.99E-08	6.66E-08
Human toxicity, non-cancer effects	CTUh	8.94E-06	6.82E-06	7.84E-10	1.78E-09	2.07E-06	5.61E-08
Impacts related to land use/soil quality	-	2.91E+01	1.65E+01	0.00E+00	3.73E-03	1.25E+01	8.87E-02
Total use of primary energy during the life cycle	MJ	1.83E+04	1.46E+03	3.01E+01	3.96E+00	1.68E+04	6.37E+01

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

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

Part Number	Product Description	Extrapolation Factors for Manufacturing, distribution, installation, End of Life phase	Use Phase Extrapolation Factors
Y7-269304 (Reference)	NZMH3-AE600-NA (Reference)	1	1.00
Y7-269335	NZMH3-VE250-NA	1	0.17
Y7-269336	NZMH3-VE400-NA	1	0.44
Y7-269337	NZMH3-VE600-NA	1	1.00
Y7-269299	NZMN3-AE250-NA	1	0.17
Y7-269300	NZMN3-AE400-NA	1	0.44
Y7-269301	NZMN3-AE600-NA	1	1.00
Y7-269332	NZMN3-VE250-NA	1	0.17
Y7-269333	NZMN3-VE400-NA	1	0.44
Y7-269334	NZMN3-VE600-NA	1	1.00
Y7-269302	NZMH3-AE250-NA	1	0.17
Y7-269303	NZMH3-AE400-NA	1	0.44

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		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: 2010 « Environmental labels and declarations. Type III environmental declarations »			