



Photo is the representative for AZ MCB family

Miniature Circuit Breaker (AZ Series)

Representative product	AZ-B20 (Y7-174480) Product Category: Circuit Breaker
Description of the product	Eaton AZ series miniature circuit breaker is equipped with a high level of rated switching capacity up to 25 kA. These guarantee a reliable protection against overload and short-circuits for applications in which high short-circuits can occur.
Homogeneous Environmental Families Covered	The PEP concerns following product offerings from Eaton Moeller series MCB as mentioned below: - Series: AZ, PLHT, mMCT - Rated Current: 20 A, 25 A, 32 A, 40 A, 50A, 63 A, 80 A, 100 A, 125 A - No. of Poles: 1, 2, 3, 3N, 4 - Tripping Characteristics: B, C, D
Functional unit	"Protect the installation from overloads and short circuits in a circuit with rated voltage 230V, rated current 20A, with 1P, a rated breaking capacity 25 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 Electric doo, Rumski drum 13, 22000 Sremska-Mitrovica, Serbia Email: productstewardship-es@eaton.com

Constituent Materials			
Reference product mass	2.50E-01Kg (With packaging)		
Category PEP Material	Material constituent	Mass (kg)	% Contribution
Metals	Steel	8.66E-02	34.6%
Plastic	Polyamide 6	6.13E-02	24.5%
Metals	Copper	5.83E-02	23.3%
Metals	Stainless steel	1.21E-02	4.8%
Plastic	Polyamide 6.6 (PA 6.6) With 30% Glass Fiber	8.29E-03	3.3%
Others	Cardboard	7.22E-03	2.9%
Others	Paper	5.84E-03	2.3%
Plastic	Polyamide 6.6 (PA 6.6)	5.34E-03	2.1%
Others	Wood	3.24E-03	1.3%
Metals	Ferro Nickel	8.18E-04	0.3%
Plastic	Polyethylene low density (PE-LD) film	4.70E-04	0.2%
Metals	Silver	4.34E-04	0.2%
Others	Label	4.08E-04	0.2%
Total		2.50E-01	100.0%

Substance Assessment
The representative product is compliant with the EU-RoHS Directive (2011/65/EU) and the product doesn't contain any substances 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 in Sremska-Mitrovica, Serbia 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 recyclability rate of the overall product is 50.63% based on the method described in IEC/TR 62635, Edition 1.0/2012-10 "Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment".

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 v6.2.4 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 Electric doo, Rumski drum 13, 22000 Sremska-Mitrovica, Serbia Energy model used: Serbia
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 PSR 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 2.7 W at full load condition. For Industrial applications considering 50% of the loading rate and 30% of the use time rate, total losses are 35.48 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: 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 CO ₂ eq.	1.48E+01	1.88E+00	5.62E-02	2.48E-02	1.25E+01	3.60E-01	-4.05E-01
Climate change - fossil fuels (GWP-f)	kg CO ₂ eq.	1.48E+01	1.90E+00	5.62E-02	1.68E-02	1.25E+01	3.37E-01	-4.14E-01
Climate change - biogenics (GWP-b)	kg CO ₂ eq.	3.88E-02	-1.50E-02	2.30E-07	8.00E-03	2.30E-02	2.28E-02	9.06E-03
Climate change - land use and land use transformation (GWP-lu)	kg CO ₂ eq.	3.94E-07	1.80E-07	8.50E-08	6.46E-10	0.00E+00	1.28E-07	0.00E+00
Ozone depletion (ODP)	kg eq. CFC-11	1.93E-07	1.23E-07	6.82E-10	2.23E-10	6.06E-08	8.37E-09	-8.00E-08
Acidification (AP)	mole of H ⁺ eq.	8.61E-02	2.00E-02	8.88E-05	4.70E-05	6.41E-02	1.87E-03	-7.83E-03
Freshwater eutrophication (Ep-fw)	kg P eq.	3.80E-04	1.20E-04	2.10E-07	3.35E-07	3.29E-05	2.27E-04	-1.25E-06

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
Marine aquatic eutrophication (Ep-m)	kg of N eq.	9.42E-03	1.31E-03	1.61E-05	1.89E-05	7.80E-03	2.72E-04	-3.15E-04
Terrestrial eutrophication (Ep-t)	mole of N eq.	1.43E-01	1.43E-02	1.77E-04	1.39E-04	1.25E-01	3.31E-03	-3.58E-03
Photochemical ozone formation (POCP)	kg of NMVOC eq.	3.09E-02	5.28E-03	5.71E-05	3.22E-05	2.46E-02	9.62E-04	-1.53E-03
Depletion of abiotic resources - elements (ADP-e)	kg eq. Sb	6.87E-04	6.75E-04	2.01E-08	7.04E-10	4.42E-06	7.28E-06	-3.63E-04
Depletion of abiotic resources - fossil fuels (ADP-f)	MJ	3.82E+02	4.71E+01	9.98E-01	1.64E-01	3.16E+02	1.84E+01	-8.57E+00
Water scarcity (WDP)	m³ eq. deprivation worldwide	2.72E+00	1.48E+00	2.02E-03	1.06E-03	9.58E-01	2.81E-01	-4.20E-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	8.50E+01	1.15E+00	3.15E-03	3.45E-02	8.35E+01	2.37E-01	-1.91E-01
Use of renewable primary energy resources used as raw materials	MJ	6.86E-01	6.86E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.12E-01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	8.57E+01	1.84E+00	3.15E-03	3.45E-02	8.35E+01	2.37E-01	-4.02E-01
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	3.80E+02	4.47E+01	9.98E-01	1.64E-01	3.16E+02	1.84E+01	-8.56E+00
Use of non-renewable primary energy resources used as raw materials	MJ	2.40E+00	2.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.29E-03
Total use of non-renewable primary energy resources (primary energy and primary	MJ	3.82E+02	4.71E+01	9.98E-01	1.64E-01	3.16E+02	1.84E+01	-8.57E+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
energy resources used as raw materials)								
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	m ³	6.35E-02	3.44E-02	4.71E-05	2.52E-05	2.25E-02	6.55E-03	-9.78E-03
Hazardous waste disposed of	kg	1.33E+01	1.24E+01	2.35E-04	1.38E-03	5.48E-01	2.64E-01	-1.20E+01
Non-hazardous waste disposed of	kg	3.44E+00	1.25E+00	5.22E-03	6.49E-03	2.11E+00	6.18E-02	-2.85E-01
Radioactive waste disposed of	kg	1.10E-03	5.93E-04	4.13E-06	8.86E-07	4.85E-04	1.29E-05	-1.20E-04
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	1.65E-01	4.89E-02	0.00E+00	1.20E-03	0.00E+00	1.15E-01	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	1.66E-02	4.49E-03	0.00E+00	1.64E-03	0.00E+00	1.05E-02	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.	7.00E-03	7.00E-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	6.82E-07	1.55E-07	7.62E-10	2.88E-10	5.16E-07	1.02E-08	-1.94E-07
Ionizing radiation, human health	kBq U ²³⁵ eq.	4.16E+01	2.35E+01	1.99E-03	2.69E-03	1.80E+01	3.27E-02	-9.62E+00
Ecotoxicity, fresh water	CTUe	1.71E+03	1.68E+03	1.64E+00	2.22E-01	2.36E+01	8.02E+00	-3.06E+00
Human toxicity, cancer effects	CTUh	1.63E-07	1.60E-07	1.10E-11	1.57E-09	1.57E-09	3.11E-10	-1.04E-06
Human toxicity, non-cancer effects	CTUh	2.84E-07	2.27E-07	2.10E-10	4.82E-11	3.76E-08	1.95E-08	-9.56E-08
Impacts related to land use/soil quality	-	1.35E+00	3.28E-01	2.41E-04	5.94E-05	3.46E-01	6.77E-01	-8.58E-05
Total use of primary energy during the life cycle	MJ	4.68E+02	4.90E+01	1.00E+00	1.98E-01	3.99E+02	1.86E+01	-8.97E+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 Module-D Phase:

Model	MCB Series	No. of poles	Rated current range (A)	Tripping characteristics	Multiplying factor for all current ranges
Baseline	AZ-B20	1P	20 A	B	1.00
Other homogeneous environmental family	AZ	1P	20A, 25A, 32A, 40A, 50A, 63A, 80A, 100A, 125A	B, C, D	1.00
		2P			2.00
		3P			3.00
		3+N			4.00
		4P			4.00
	mMCT	1P	20A, 25A, 32A, 40A, 50A, 63A, 80A, 100A, 125A	B, C, D	1.00
		2P			2.00
		3P			3.00
		3+N			4.00
		4P			4.00
	PLHT	1P	20A, 25A, 32A, 40A, 50A, 63A, 80A	Similar to D	1.00
		3P			3.00
		4P			4.00

Multiplying Factors for Use Phase for homogenous products:

Series	Tripping characteristics	Rated Current(A)	Heat dissipation, Current-dependent (W)					Multiplying factor for Use phase				
			1 Pole	2 Pole	3 Pole	3N Pole	4 Pole	1 Pole	2 Pole	3 Pole	3N Pole	4 Pole
AZ	B	20	2.70	5.40	8.10	8.10	10.80	1.00	2.00	3.00	3.00	4.00
		25	2.80	5.60	8.40	8.40	11.20	1.04	2.07	3.11	3.11	4.15
		32	3.80	7.60	11.40	11.40	15.20	1.41	2.81	4.22	4.22	5.63
		40	4.40	8.80	13.20	13.20	17.60	1.63	3.26	4.89	4.89	6.52
		50	5.10	10.20	15.30	15.30	20.40	1.89	3.78	5.67	5.67	7.56
		63	5.20	10.40	15.60	15.60	20.80	1.93	3.85	5.78	5.78	7.70
		80	7.10	14.20	21.30	21.30	28.40	2.63	5.26	7.89	7.89	10.52
		100	9.10	18.20	27.30	27.30	36.40	3.37	6.74	10.11	10.11	13.48
		125	11.90	23.80	35.70	35.70	47.60	4.41	8.81	13.22	13.22	17.63
	C	20	2.70	5.40	8.10	8.10	10.80	1.00	2.00	3.00	3.00	4.00
		25	2.80	5.60	8.40	8.40	11.20	1.04	2.07	3.11	3.11	4.15
		32	3.80	7.60	11.40	11.40	15.20	1.41	2.81	4.22	4.22	5.63
		40	4.40	8.80	13.20	13.20	17.60	1.63	3.26	4.89	4.89	6.52
		50	5.10	10.20	15.30	15.30	20.40	1.89	3.78	5.67	5.67	7.56
		63	5.20	10.40	15.60	15.60	20.80	1.93	3.85	5.78	5.78	7.70
		80	7.10	14.20	21.30	21.30	28.40	2.63	5.26	7.89	7.89	10.52
		100	9.10	18.20	27.30	27.30	36.40	3.37	6.74	10.11	10.11	13.48
		125	11.90	23.80	35.70	35.70	47.60	4.41	8.81	13.22	13.22	17.63

Series	Tripping characteristics	Rated Current(A)	Heat dissipation, Current-dependent (W)					Multiplying factor for Use phase				
			1 Pole	2 Pole	3 Pole	3N Pole	4 Pole	1 Pole	2 Pole	3 Pole	3N Pole	4 Pole
	D	20	2.70	5.40	8.10	8.10	10.80	1.00	2.00	3.00	3.00	4.00
		25	2.80	5.60	8.40	8.40	11.20	1.04	2.07	3.11	3.11	4.15
		32	3.80	7.60	11.40	11.40	15.20	1.41	2.81	4.22	4.22	5.63
		40	4.40	8.80	13.20	13.20	17.60	1.63	3.26	4.89	4.89	6.52
		50	5.10	10.20	15.30	15.30	20.40	1.89	3.78	5.67	5.67	7.56
		63	5.20	10.40	15.60	15.60	20.80	1.93	3.85	5.78	5.78	7.70
		80	7.10	14.20	21.30	21.30	28.40	2.63	5.26	7.89	7.89	10.52
		100	9.10	18.20	27.30	27.30	36.40	3.37	6.74	10.11	10.11	13.48
mMct	B	20	2.70	5.40	8.10	8.10	10.80	1.00	2.00	3.00	3.00	4.00
		25	2.80	5.60	8.40	8.40	11.20	1.04	2.07	3.11	3.11	4.15
		32	3.80	7.60	11.40	11.40	15.20	1.41	2.81	4.22	4.22	5.63
		40	4.40	8.80	13.20	13.20	17.60	1.63	3.26	4.89	4.89	6.52
		50	5.10	10.20	15.30	15.30	20.40	1.89	3.78	5.67	5.67	7.56
		63	5.20	10.40	15.60	15.60	20.80	1.93	3.85	5.78	5.78	7.70
		80	7.10	14.20	21.30	21.30	28.40	2.63	5.26	7.89	7.89	10.52
		100	9.10	18.20	27.30	27.30	36.40	3.37	6.74	10.11	10.11	13.48
		125	11.90	23.80	35.70	35.70	47.60	4.41	8.81	13.22	13.22	17.63
	C	20	2.70	5.40	8.10	8.10	10.80	1.00	2.00	3.00	3.00	4.00
		25	2.80	5.60	8.40	8.40	11.20	1.04	2.07	3.11	3.11	4.15
		32	3.80	7.60	11.40	11.40	15.20	1.41	2.81	4.22	4.22	5.63
		40	4.40	8.80	13.20	13.20	17.60	1.63	3.26	4.89	4.89	6.52
		50	5.10	10.20	15.30	15.30	20.40	1.89	3.78	5.67	5.67	7.56
		63	5.20	10.40	15.60	15.60	20.80	1.93	3.85	5.78	5.78	7.70
		80	7.10	14.20	21.30	21.30	28.40	2.63	5.26	7.89	7.89	10.52
		100	9.10	18.20	27.30	27.30	36.40	3.37	6.74	10.11	10.11	13.48
		125	11.90	23.80	35.70	35.70	47.60	4.41	8.81	13.22	13.22	17.63
	D	20	2.70	5.40	8.10	8.10	10.80	1.00	2.00	3.00	3.00	4.00
		25	2.80	5.60	8.40	8.40	11.20	1.04	2.07	3.11	3.11	4.15
		32	3.80	7.60	11.40	11.40	15.20	1.41	2.81	4.22	4.22	5.63
		40	4.40	8.80	13.20	13.20	17.60	1.63	3.26	4.89	4.89	6.52
		50	5.10	10.20	15.30	15.30	20.40	1.89	3.78	5.67	5.67	7.56
		63	5.20	10.40	15.60	15.60	20.80	1.93	3.85	5.78	5.78	7.70
		80	7.10	14.20	21.30	21.30	28.40	2.63	5.26	7.89	7.89	10.52
		100	9.10	18.20	27.30	27.30	36.40	3.37	6.74	10.11	10.11	13.48
		125	11.90	23.80	35.70	35.70	47.60	4.41	8.81	13.22	13.22	17.63
PHLT	Similar to D	20	2.70	-	-	-	-	1.00	-	-	-	-
		25	2.80	-	-	-	-	1.04	-	-	-	-
		32	3.80	-	-	-	-	1.41	-	-	-	-
		40	4.40	-	-	-	-	1.63	-	-	-	-
		50	5.10	-	-	-	-	1.89	-	-	-	-
		63	5.20	-	-	-	-	1.93	-	-	-	-

Series	Tripping characteristics	Rated Current(A)	Heat dissipation, Current-dependent (W)					Multiplying factor for Use phase				
			1 Pole	2 Pole	3 Pole	3N Pole	4 Pole	1 Pole	2 Pole	3 Pole	3N Pole	4 Pole
		80	-	-	21.30	-	28.40	-	-	7.89	-	10.52

For part numbers intended for industrial application as well, the Use Phase (B6) impacts of commercial/residential application of specific part number should be multiplied by **11.11** to calculate impacts for Industrial application of that specific part number. The impact for other phases remains the same for all applications.

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.

Registration Number	EATO-00259-V01.01-EN	Drafting rules	PCR-ed4-EN-2021 09 06
Verifier accreditation Number	VH53	Supplemented by	PSR-0005-ed3.1-EN-2023 08 12
Date of issue	02-2025	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 »			