Product Environmental Profile

P3 Switch Disconnector with I5 Enclosure and Neutral Block

Representative product	P3-100/I5/SVB-SW/N (Y7-207376) PSR Product Category: Disconnectors
Description of the product	Eaton's Switch Disconnector are designed to turn off all or part of an electrical installation by disconnecting the installation or part of the installation of all electrical energy for safety reasons. These switch disconnectors have total 3+N poles with I5 Enclosure and STOP Function.
Homogeneous Environmental Families Covered	The PEP concerns following product offerings from Eaton Moeller® series P3 switch disconnector, as mentioned below: P3-100/I5/SVB-SW/N (Y7-207376) (Reference) P3-100/I5/SVB/N (Y7-207379), P3-80/I5/SVB/N (Y7-400985), P3-80/I5/SVB-SW/N (Y7-400989) *[The product market is spread globally. Different scenarios are studied considering distribution in UK and outside Europe and separate extrapolation factors are given in this PEP considering Europe market as reference]
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, and rated current 100A, ensuring isolation characterised by a rated voltage 6000V AC, and with IP Rating of IP65, according to the appropriate use scenario, and during the reference service life of the product of 20 years."
Company information	Eaton Production International GmbH, Claylands Avenue, Dukeries Industrial Estate, Workshop, United Kingdom, S81 7DJ, Email: productstewardship-es@eaton.com

Constituent Materials			
Reference product mass	1.71E+00 kg (With packaging)		
Category PEP Material	Materials	Mass (kg)	Percentage (%)
Plastic	Polycarbonate	9.96E-01	58.1%
Plastic	Polyamide	2.80E-01	16.4%
Other	Cardboard	1.92E-01	11.2%
Metal	Stainless Steel	1.47E-01	8.6%
Metal	Copper	4.60E-02	2.7%
Plastic	Phenolic Resin	1.33E-02	0.8%
Metal	Steel	9.52E-03	0.6%
Metal	Zinc	9.25E-03	0.5%
Metal	Silver	8.32E-03	0.5%
Plastic	Polybutylene Terephthalate	6.70E-03	0.4%
Other	Paper	5.00E-03	0.3%
Plastic	Nitrile Rubber	3.80E-04	<0.1%
Other	Glue	1.34E-04	<0.1%
Other	Other	8.37E-05	<0.1%
Total		1.71E+00	100.0%

Substance Assessment
The representative product is compliant with the EU-RoHS Directive (2011/65/EU) without any exemption and the product doesn't contain any 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 in United Kingdom, holding management systen 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 85.82% if it is properly dismantled prior to shredding. The rate is calculated based on "ECO'DEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).

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 with database version CODDE-2024-06. 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 Production International GmbH, United Kingdom, plant. Energy model used: United Kingdom
Distribution Phase	Distribution of the product in its packaging from Eaton's last logistics platform to the installation place is considered in Europe.
Installation Phase	Product is installed in Europe. Treatment of packaging waste is considered in this phase as per country specific statistics given in PSR. Energy model used: Europe
Use Phase	Reference lifetime: 20 Years Usage profile: The product has power loss of 30 W at full load condition. For industrial and commercial applications under low voltage scenario considering 50% of the loading rate and 30% use time rate, total losses are 394.2 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	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module D
Climate change – total (GWP)	kg CO2 eq.	1.55E+02	1.37E+01	4.08E-01	5.66E-01	1.39E+02	1.41E+00	-6.29E+00
Climate change - fossil fuels (GWP-f)	kg CO2 eq.	1.54E+02	1.37E+01	4.08E-01	2.45E-01	1.39E+02	1.40E+00	-6.39E+00
Climate change – biogenic (GWP-b)	kg CO2 eq.	5.22E-01	-6.39E-02	0.00E+00	3.22E-01	2.56E-01	8.51E-03	9.94E-02
Climate change - land use and land use transformation (GWP-lu)	kg CO2 eq.	1.48E-03	1.48E-03	0.00E+00	0.00E+00	0.00E+00	2.38E-07	-1.27E-03
Ozone depletion (ODP)	kg eq. CFC-11	1.47E-06	7.70E-07	6.27E-10	4.13E-09	6.73E-07	2.47E-08	-4.04E-07
Acidification (AP)	mole of H+ eq.	7.96E-01	7.40E-02	2.59E-03	7.02E-04	7.12E-01	7.18E-03	-2.78E-02
Freshwater eutrophication (EP-fw)	kg P eq.	9.79E-04	2.80E-04	1.53E-07	2.89E-06	3.66E-04	3.31E-04	-6.45E-05

Mandatory environmental impact indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module D
Marine aquatic eutrophication (EP-m)	kg of N eq.	1.04E-01	1.43E-02	1.21E-03	3.14E-04	8.67E-02	1.20E-03	-4.89E-03
Terrestrial eutrophication (EP-t)	mole of N eq.	1.59E+00	1.72E-01	1.33E-02	2.11E-03	1.39E+00	1.43E-02	-4.18E-02
Photochemical ozone formation (POCP)	kg of NMVOC eq.	3.27E-01	4.64E-02	3.36E-03	4.96E-04	2.73E-01	3.78E-03	-1.36E-02
Depletion of abiotic resources – elements (ADPe)	kg eq. Sb	1.19E-02	1.18E-02	1.61E-08	1.18E-08	4.92E-05	1.04E-05	-4.47E-03
Depletion of abiotic resources - fossil fuels (ADP-f)	MJ	3.87E+03	3.04E+02	5.71E+00	2.20E+00	3.51E+03	4.82E+01	-1.36E+02
Water scarcity (WDP)	m3 of eq.. deprivation worldwide	1.48E+01	3.65E+00	1.55E-03	2.59E-02	1.06E+01	4.41E-01	-2.16E+00

Inventory Flow Indicators: Mandatory

Inventory flow indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module D
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	9.73E+02	4.16E+01	7.61E-03	4.14E-01	9.28E+02	2.68E+00	-5.12E+00
Use of renewable primary energy resources used as raw materials	MJ	4.42E+00	4.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.24E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	9.77E+02	4.60E+01	7.61E-03	4.14E-01	9.28E+02	2.68E+00	-8.36E+00
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	3.82E+03	2.62E+02	5.71E+00	2.20E+00	3.51E+03	4.82E+01	-1.01E+02
Use of non-renewable primary energy resources used as raw materials	MJ	4.27E+01	4.27E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.56E+01
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	3.87E+03	3.04E+02	5.71E+00	2.20E+00	3.51E+03	4.82E+01	-1.36E+02
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	3.47E-01	8.54E-02	3.62E-05	1.59E-03	2.50E-01	1.03E-02	-5.03E-02
Hazardous waste disposed of	kg	5.58E+01	4.82E+01	0.00E+00	1.21E-02	6.09E+00	1.54E+00	-2.21E+01

Inventory flow indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module D
Non-hazardous waste disposed of	kg	2.91E+01	5.15E+00	1.44E-02	7.92E-02	2.35E+01	4.02E-01	-3.02E+00
Radioactive waste disposed of	kg	8.00E-03	2.46E-03	1.02E-05	1.38E-05	5.38E-03	1.38E-04	-1.63E-03
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	1.87E+00	3.05E-01	0.00E+00	1.62E-01	0.00E+00	1.40E+00	0.00E+00
Materials for energy recovery	kg	3.16E-02	5.32E-05	0.00E+00	1.78E-02	0.00E+00	1.38E-02	0.00E+00
Exported energy	MJ by energy vector	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 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.	8.42E-02	8.42E-02	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	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module D
Emission of fine particles	incidence of diseases	6.60E-06	7.94E-07	2.11E-08	4.13E-09	5.73E-06	4.84E-08	-3.26E-07
Ionizing radiation, human health	kBq of U235 eq.	2.33E+02	2.81E+01	9.96E-04	4.78E+00	2.00E+02	7.96E-01	-1.39E+01
Ecotoxicity, fresh water	CTUe	2.94E+03	2.67E+03	2.68E-01	3.20E+00	2.62E+02	8.39E+00	-2.25E+03
Human toxicity, cancer effects	CTUh	2.82E-06	2.78E-06	7.19E-12	2.31E-08	1.75E-08	4.51E-10	-1.51E-06
Human toxicity, non-cancer effects	CTUh	9.38E-07	4.89E-07	1.39E-10	6.94E-10	4.17E-07	3.08E-08	-2.52E-07
Impacts related to land use/soil quality	-	9.50E+00	4.82E+00	0.00E+00	6.33E-04	3.85E+00	8.31E-01	-3.53E+00
Total use of primary energy during the life cycle	MJ	4.84E+03	3.50E+02	5.71E+00	2.62E+00	4.44E+03	5.09E+01	-1.44E+02

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

Multiplying Factors for Manufacturing, distribution, installation, End of Life and Module-D phase Phase for Europe region:

Part No.	Description	Extrapolation Factors for Manufacturing, distribution, installation, End of Life and Module-D phase
Y7-207376(Reference)	P3-100/I5/SVB-SW/N	1.00
Y7-207379	P3-100/I5/SVB/N	1.00
Y7-400985	P3-80/I5/SVB/N	1.00
Y7-400989	P3-80/I5/SVB-SW/N	1.00

Multiplying Factors for Use Phase for Europe region:

Part No.	Description	Extrapolation Factor for Use Phase (Only B6)
Y7-207376(Reference)	P3-100/I5/SVB-SW/N	1.00
Y7-207379	P3-100/I5/SVB/N	1.00
Y7-400985	P3-80/I5/SVB/N	1.00
Y7-400989	P3-80/I5/SVB-SW/N	1.00

Three models were studied based on the geographical sales regions as Europe, United Kingdom, and Outside Europe (India), extrapolation factor is derived considering Europe as reference region.

Factors for Manufacturing, Distribution, Installation, End of Life and Module-D phase for different geographical sales regions

Product	Geographical regions	Phases	GWP (kg CO_2 eq.)	GWP-f (kg CO_2 eq.)	GWP-b (kg CO_2 eq.)	GWP-lu (kg CO_2 eq.)	ODP (kg CFC-11 eq.)	AP (mol H+ eq.)	EP-fw (kg P eq.)	EP-m (kg N eq.)	EP-t (mol N eq.)	POCP (kg NMVOC eq.)	ADP-e (kg Sb eq.)	ADP-f (MJ)	WDP (m^3 eq.)
Y7-207376 (Reference)	Europe (Reference)	All Phase	1.00												
	United Kingdom	Manufacturing, EoL, Module-D	1.00												
		Installation	0.99	0.98	1.00	1.00	1.00	0.96	1.00	0.99	1.01	0.97	0.90	0.95	0.98
		Distribution	0.29												
	Outside Europe	Manufacturing	1.00												
		Distribution	1.34	1.34	1.00	1.00	1.14	7.00	1.23	3.56	3.55	3.63	1.22	1.22	1.17
		Installation	0.67	0.28	0.96	1.00	0.59	0.60	0.02	0.33	0.65	0.59	0.42	0.58	0.11
		End of Life	0.52	0.52	0.17	0.00	2.04	0.72	0.00	1.12	1.20	1.01	0.00	0.28	0.11

Factors for use phase for different geographical regions

Product	Geographical regions	ADP-e (kg Sb eq.)	ADP-f (MJ)	AP (mol H+ eq.)	EP-fw (kg P eq.)	EP-m (kg N eq.)	EP-t (mol N eq.)	GWP (kg CO_2 eq.)	GWP-b (kg CO_2 eq.)	GWP-f (kg CO_2 eq.)	GWP-lu (kg CO_2 eq.)	ODP (kg CFC-11 eq.)	POCP (kg NMVOC eq.)	WDP (m^3 eq.)
Y7-207376 (Reference)	Europe (Reference)	1.00												
	Germany	1.09	0.86	1.50	0.54	1.34	1.39	1.07	0.73	1.07	1.00	1.43	1.35	1.28
	UK	0.79	0.75	0.68	0.79	0.69	1.17	0.71	1.19	0.71	1.00	0.82	0.61	0.66
	Austria	1.65	0.23	0.44	0.01	0.40	0.63	0.37	0.65	0.37	1.00	0.37	0.36	1.10
	Netherlands	0.79	0.77	0.80	0.18	0.95	0.98	1.14	1.33	1.14	1.00	1.01	0.94	0.92
	India	0.60	2.47	5.87	0.16	5.13	3.64	3.93	0.25	3.94	1.00	4.74	5.44	2.69
	Czech Republic	0.45	1.66	2.35	1.77	2.05	1.77	1.59	0.44	1.59	1.00	2.02	2.12	1.20
	Finland	0.73	0.86	0.91	1.59	0.68	1.42	0.39	0.61	0.39	1.00	0.71	0.56	0.54
	Denmark	0.83	0.35	1.16	0.04	0.98	1.66	0.56	0.90	0.56	1.00	1.30	0.86	0.58

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Registration Number	EATO-00163-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	06-2024	*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 »			