



S3C DSST SERIES

PEP ecopassport®

Product Environmental Profile



Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"

ORGANIZATION		CONTACT INFORMATION			
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ABB Purpose & Embedding Sustainability

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.



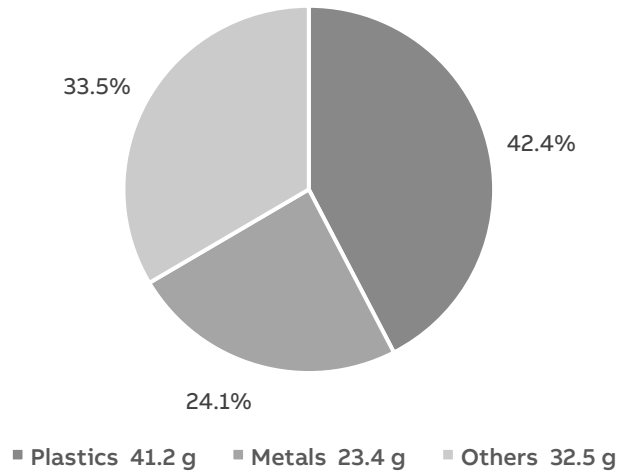
General Information

Reference product	Reference product identification: S3C-A2, 2CDS200982R0002 PSR product category: Other equipment
Description of the product	The DSST (Dual Single Shunt Trip) is an auxiliary switch for the remotely tripping (disconnection) of a circuit breaker.
Functional unit	The functional of the DSST is to protect the circuit breaker with a self-break within 10 ms, and during the reference service life of the product of 10 years in accordance with the IEC 60947-5-1 standard.
Other products covered	The S3C-A2 DSST is the reference product for the S3C product family. Other products of the family are the S3C-A1, S3C-A1L and S3C-A2L. The A1 differs from the A2 only in the weight of the weight of the coil. The difference from A1 to A1L respectively A2 to A2L is the side to be mounted to the circuit breaker. While the variants A1 and A2 are mounted to the circuit breaker via the front, the A1L and A2L are mounted via the back part. This leads to slight differences between the weight of the cases of the A1/2 and the A1/2L versions. The extrapolation factors for the distribution and the end-of-life stage of the S3C-A1, S3C-A1L and S3C-A2L are calculated by dividing them by the weight of the S3C-A2. For the manufacturing stage an extrapolation factor for each indicator is calculated.

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Constituent Materials



**Total weight of Reference product
(incl. packaging)**

97.1

g

Plastics as % of weight		Metals as % of weight		Others as % of weight	
Name and CAS number	Weight%	Name and CAS number	Weight%	Name and CAS number	Weight%
GFRP	39.4	Steel	12.1	Cardboard	31.4
Other plastic	3.0	Copper	8.2	Paper	2.1
–	x	Copper alloys	3.3	–	x
–	x	Aluminium	0.5	–	x

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Life Cycle Stages Information

Manufacturing	The product is manually assembled in Bulgaria. The production site of the products is certified according to ISO 14001.
Distribution	Specific transport distances based on sales data are applied to model the distribution.
Installation	As installation is performed manually, no environmental burdens are associated to this phase besides the disposal of product packaging.
Use	For the S3C-A2, no use-phase is modelled. Due to its function as a shunt trip, the S3C-A2 only uses a negligible amount of power over its lifetime. The power loss from the use stage is cut off. The power consumption for the DSST is 1.5 A at 230 V. The maximum time of one release is 10 ms and a maximum of 600 releases can happen over the lifetime of the DSST. The average amount of releases is unknown. This leads to a maximum of power consumption over the lifetime of 5.75E-4 kWh. This most conservative (not realistic) approximation of power loss amounts to less than 5% of the total electricity use. For all indicator results, the results of the most conservative (not realistic) approximation of power loss are less than 0.1% of the results for the total life cycle of the product. Therefore, the power loss of the use stage is neglected in this study (marked with 0*).
End of life	Due to the lack of knowledge of the disposal pathway, landfilling as proposed standard scenario in the PCR is considered.
Benefits and loads beyond the system boundaries	Not considered

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Environmental Impacts

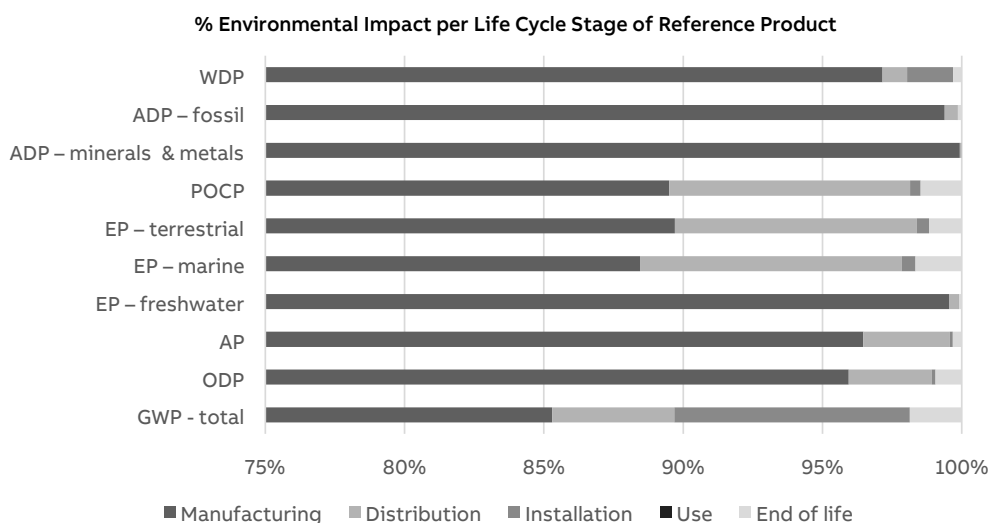
Reference lifetime	10 years
Product category	Electrical switchgear and control gear solutions
Installation elements	Does not require any special installation elements.
Use scenario	No use-stage modelled. See "Life Cycle Stages Information"
Geographical representativeness	Global
Technological representativeness	Represents the actual production technology of the series S3C
Software and database used	SimaPro 9.6.0.1 with ecoinvent 3.10, cut-off and industry data 2.0

Energy model used

Manufacturing	Electricity, medium voltage [BG] market for electricity, medium voltage Cut-off, S
Installation	no energy model used (manual installation)
Use	No use-stage modelled. See "Life Cycle Stages Information"
End of life	no energy model used (landfill)

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Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
GWP-total	kg CO ₂ eq.	6.25E-01	5.33E-01	2.74E-02	5.28E-02	0*	1.17E-02
GWP-fossil	kg CO ₂ eq.	6.16E-01	5.75E-01	2.74E-02	2.72E-03	0*	1.16E-02
GWP-biogenic	kg CO ₂ eq.	7.98E-03	-4.21E-02	6.12E-06	5.01E-02	0*	5.46E-06
GWP-luluc	kg CO ₂ eq.	5.58E-04	5.44E-04	1.08E-05	4.16E-07	0*	2.73E-06
GWP-fossil = Global Warming Potential fossil fuels GWP-biogenic = Global Warming Potential biogenic GWP-luluc = Global Warming Potential land use and land use change							
ODP	kg CFC-11 eq.	1.65E-08	1.58E-08	4.92E-10	2.22E-11	0*	1.56E-10
ODP = Depletion potential of the stratospheric ozone layer							
AP	H+ eq.	1.00E-02	9.65E-03	3.11E-04	1.07E-05	0*	3.25E-05
AP = Acidification potential, Accumulated Exceedance							
EP-freshwater	kg P eq.	5.57E-05	5.54E-05	1.77E-07	1.54E-08	0*	6.41E-08
EP-marine	kg N eq.	9.21E-04	8.14E-04	8.64E-05	4.60E-06	0*	1.53E-05
EP-terrestrial	mol N eq.	1.10E-02	9.89E-03	9.57E-04	4.80E-05	0*	1.30E-04
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment EP-terrestrial = Eutrophication potential, Accumulated Exceedance							
POCP	kg NMVOC eq.	3.41E-03	3.05E-03	2.94E-04	1.29E-05	0*	5.05E-05
POCP = Formation potential of tropospheric ozone							
ADP-minerals & metals	kg Sb eq.	1.13E-04	1.13E-04	5.84E-08	3.05E-09	0*	1.99E-08
ADP-fossil	MJ	6.23E+00	6.19E+00	2.68E-02	2.39E-03	0*	9.47E-03
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential							
WDP	m ³ eq. depr.	1.45E-01	1.41E-01	1.29E-03	2.40E-03	0*	4.51E-04
WDP = Water Deprivation potential							

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Common base of mandatory indicators

* if indicator is "0*", it represents less than 0,01% of the total life cycle of the reference flow

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
PERE	MJ	1.05E+00	1.04E+00	4.88E-03	3.81E-04	0*	1.76E-03
PERM	MJ	4.22E-01	4.22E-01	0.00E+00	0.00E+00	0*	0.00E+00
PERT	MJ	1.47E+00	1.46E+00	4.88E-03	3.81E-04	0*	1.76E-03
PENRE	MJ	8.25E+00	7.76E+00	3.70E-01	1.32E-02	0*	1.14E-01
PENRM	MJ	9.71E-01	9.71E-01	0.00E+00	0.00E+00	0*	0.00E+00
PENRT	MJ	9.23E+00	8.73E+00	3.70E-01	1.32E-02	0*	1.14E-01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials

PERM = Use of renewable primary energy resources used as raw materials

PERT = Total Use of renewable primary energy resources

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials

PENRM = Use of non-renewable primary energy resources used as raw materials

PENRT = Total Use of non-renewable primary energy resources

Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy resources

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0*	0.00E+00
RSF	MJ	0.00E+00	N/A	N/A	N/A	N/A	N/A
NRSF	MJ	0.00E+00	N/A	N/A	N/A	N/A	N/A
FW	m ³	4.04E-03	3.94E-03	3.79E-05	5.64E-05	0*	1.34E-05

SM = Use of secondary material

RSF = Use of renewable secondary fuels

NRSF = Use of non-renewable secondary fuels

FW = Use of net fresh water

Inventory flows indicator – Waste category indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
Hazardous waste disposed	kg	2.33E-02	2.33E-02	0.00E+00	0.00E+00	0*	0.00E+00
Non- hazardous waste disposed	kg	3.35E-03	3.35E-03	0.00E+00	0.00E+00	0*	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0*	0.00E+00

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Common base of mandatory indicators

* if indicator is "0*", it represents less than 0,01% of the total life cycle of the reference flow

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0*	0.00E+00
Materials for recycling	kg	9.24E-03	9.24E-03	0.00E+00	0.00E+00	0*	0.00E+00
Materials for energy recovery	kg	2.06E-03	2.06E-03	0.00E+00	0.00E+00	0*	0.00E+00
Exported energy	MJ	1.13E-02	1.13E-02	0.00E+00	0.00E+00	0*	0.00E+00

Inventory flow indicator – other indicators

Indicator	Unit	Total
Biogenic carbon content of the product	kg of C	0.00E+00
Biogenic carbon content of the associated packaging	kg of C	1.37E-02

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Optional indicators

* if indicator is "0*", it represents less than 0,01% of the total life cycle of the reference flow

Environmental indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
Emissions of fine particles	incidence of diseases	4.12E-08	3.82E-08	2.12E-09	1.13E-10	0*	7.96E-10
Ionizing radiation, human health	kBq U235 eq.	5.03E-02	5.01E-02	1.37E-04	8.04E-06	0*	4.99E-05
Ecotoxicity (fresh water)	CTUe	1.47E+01	1.43E+01	1.04E-01	6.40E-02	0*	2.23E-01
Human toxicity, car-cinogenic effects	CTUh	7.48E-09	7.27E-09	1.50E-10	1.42E-11	0*	4.63E-11
Human toxicity, non-carcinogenic effects	CTUh	1.24E-07	1.22E-07	2.57E-10	1.30E-10	0*	1.38E-09
Impact related to land use/soil quality	kBq U235 eq.	9.28E+00	8.86E+00	2.81E-01	7.68E-03	0*	1.34E-01

Other indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life
No Other indicators used							

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Extrapolation Factors

* if indicator is "0*", it represents less than 0,01% of the total life cycle of the reference flow

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of the Reference product by the following coefficients (for the manufacturing phase the extrapolation the extrapolation factor is given for each indicator):

* if the coefficient is "1", the impacts of the phase of the life cycle are assimilated to the Reference product, meaning that the impacts are unchanged in comparison to the Reference product

Product name	Manu- facturing	Distri- bution	Installation	Use	End of life
S3C-A1	see below ¹⁾	1.01	1.00	1.00	1.01
S3C-A2 L	see below ¹⁾	1.00	1.00	1.00	1.00
S3C-A1 L	see below ¹⁾	1.01	1.00	1.00	1.01

¹⁾ Manufacturing

Impact category	S3C-A1	S3C-A2 L	S3C-A1 L
Climate change	1.01	1.00	1.01
Ozone depletion	1.01	1.00	1.00
Ionising radiation	1.01	1.00	1.01
Photochemical ozone formation	1.04	1.00	1.04
Particulate matter	1.03	1.00	1.03
Human toxicity, non-cancer	1.05	1.00	1.05
Human toxicity, cancer	1.01	1.00	1.01
Acidification	1.06	1.00	1.06
Eutrophication, freshwater	1.04	1.00	1.04
Eutrophication, marine	1.03	1.00	1.03
Eutrophication, terrestrial	1.04	1.00	1.04
Ecotoxicity, freshwater	1.03	1.00	1.02
Land use	1.03	1.00	1.03
Water use, evaporation only	1.04	1.00	1.04
Water use	1.10	1.00	1.10
Resource use, fossils	1.01	1.00	1.01
Resource use, minerals and metals	1.06	1.00	1.06

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Environmental Impact Indicator Glossary

Impact indicators

Indicator	Description	Distribution
Global warming potential (GWP) - total	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. The total global warming potential (GWP-total) is the sum of three sub-categories of climate change. GWP-total = GWP-fossil + GWP-biogenic + GWP- land use and land use change	kg CO ₂ eq.
Ozone depletion (ODP)	Emissions to air that contribute to the destruction of the stratospheric ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Acidification of soils and water caused by the release of certain gases to the atmosphere, such as nitrogen oxides and sulphur oxides	H+ eq.
Eutrophication (E)	Indicator of the contribution to eutrophication of water by the enrichment of the aquatic ecosystem with nutritional elements, e.g. industrial or domestic effluents, agriculture, etc. This indicator is divided to three: freshwater, marine and terrestrial.	kg P eq., kg N eq., mole N eq.
Photochemical ozone creation (POCP)	Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmosphere (smog) because of the rays of the sun.	kg NMVOC eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.
Depletion of abiotic resources – fossil fuels (ADPf)	The use of non-renewable fossil resources in an unsustainable way (e.g. from material to waste)	MJ (lower heating value)
Water Deprivation potential (WDP)	Deprivation-weighted water consumption. Assesses the potential of water deprivation, to either humans or ecosystems, building on the assumption that the less water remaining available per area, the more likely another user will be deprived.	m ³ eq. depr.

Resource use indicators


Indicator	Description	Distribution
Total use of primary energy	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy re-sources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

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Verifier accreditation number: VH50	Information and reference documents: www.pep-ecopassport.org
Date of issue: 05-2024	Validity period: 5 years
Independent verification of the declaration and data, in compliance with ISO 14025: 2006	
Internal: <input type="radio"/>	External: <input checked="" type="radio"/>
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"	
	

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