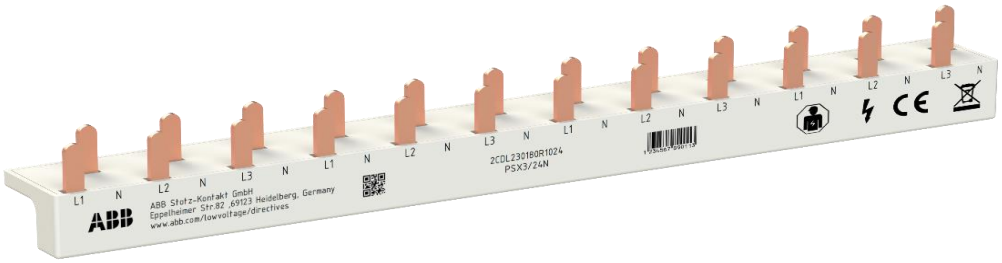
PSX BUSBAR

PEP Ecopassport

Environmental Product Declaration



Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"

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STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00254-V01.01-EN	1	en	1/12

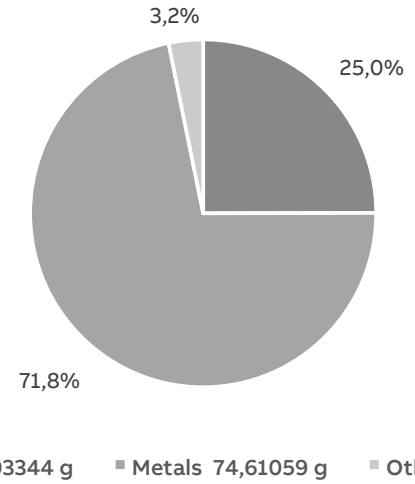
ABB Purpose & Embedding Sustainability

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	PSX3/24– 2CDL230180R1024 busbar
Description of the product	The PSX series is a family of busbars for electrical distribution
Functional unit	One busbar in continuous operation for a period of 20 years, supply-ing electrical power at a voltage of 400 V with usage up to 63 A with a time-of-use rate of 30% with a use time rate of 30%.
Other products covered	PSX3/24N PSX1/24N PSX3/16N PSX1/12N PSX1/8N BSKX

Constituent Materials



Total weight of Reference product	103,9	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%
PA6	25,0	**COPPER**	71,8	**CARDBOARD**	3,2
				PAPER	<0,1

Total weight of the reference product and its packaging is: 107,37g (3,2% box and 0,02% paper)

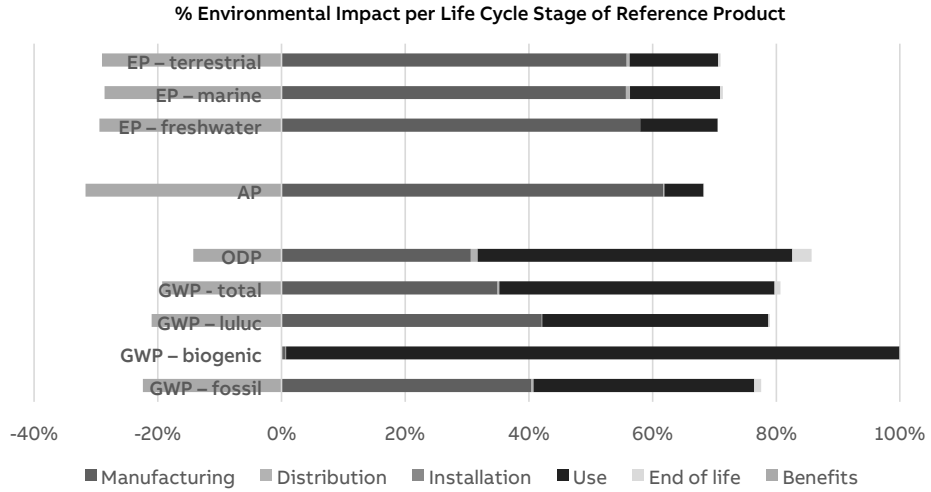
Additional Environmental Information

Manufacturing	Includes the environmental impacts associated with extraction and processing of the raw materials used to produce the product and its pacakging, transport to the manufacturing site and assembly.
Distribution	Includes the transportation in its pacakging from the manufacturer's last logistic platform to the distributor.
Installation	Installation stage includes the installation of the products made manually and packaging.
Use	Energy consumption is calculated by following the PSR. The energy models used in this phase are the specific energy mixes based on ABB distribution. No maintenance is necessary. Reference product consumption over 20 years is 21,78 kWh
End of life	Includes its transportation from the installation site to the final end of life treatment site, and end of life treatment processes. A value of 1000 km transport by lorry is used for the transportation.
Benefits and loads beyond the system boundaries	Potential for reuse, recovery and/or recycling, expressed as net benefits and impacts

Environmental Impacts

Reference lifetime	20 years
Product category	Other equipments
Installation elements	Installation carried out manually. End of life of packaging.
Use scenario	Load time: 30% of rated current in continuous operation (In). Use time rate: 30% of reference lifetime (RLT).
Geographical representativeness	Europe
Technological representativeness	Materials and processes data are specific for the production of PSX3/24– 2CDL230180R1024 busbar and its family
Software and database used	Simapro 9.3.0.3 and Ecoinvent v3.8
Energy model used	
Manufacturing	Germany
Installation	Manually done. Europe
Use	Germany, Switzerland and Netherlands
End of life	Recycling of product

Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
GWP-total	**kg CO_2 eq.**	1,88E+00	1,07E+00	7,77E-03	1,26E-03	1,36E+00	2,95E-02	-5,92E-01
GWP-fossil	**kg CO_2 eq.**	1,45E+00	1,07E+00	7,76E-03	7,56E-04	9,41E-01	2,95E-02	-5,91E-01
GWP-biogenic	**kg CO_2 eq.**	4,25E-01	2,71E-03	3,14E-06	5,01E-04	4,21E-01	2,29E-05	4,09E-04
GWP-luluc	**kg CO_2 eq.**	2,30E-03	1,67E-03	4,38E-06	3,55E-07	1,45E-03	1,07E-05	-8,33E-04
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.**	1,16E-07	4,98E-08	1,68E-09	1,69E-10	8,28E-08	5,07E-09	-2,32E-08
ODP = Depletion potential of the stratospheric ozone layer								
AP	**H+ eq.**	4,14E-02	0,00E+00	1,54E-04	3,06E-06	7,15E-03	9,15E-05	-3,58E-02
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	**kg P eq.**	2,14E-04	1,67E-03	3,90E-08	6,18E-09	6,49E-05	1,85E-07	-1,53E-04
EP-marine	**kg N eq.**	2,65E-03	3,45E-03	3,87E-05	8,94E-07	9,04E-04	2,75E-05	-1,77E-03
EP-terrestrial	**mol N eq.**	3,60E-02	4,79E-02	4,30E-04	9,86E-06	1,23E-02	2,95E-04	-2,49E-02
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 NMVOCeq.**	9,49E-03	1,33E-02	1,14E-04	3,00E-06	2,95E-03	9,01E-05	-6,99E-03
POCP = Formation potential of tropo-spheric ozone								
ADP-minerals & metals	**kg Sb eq.**	8,89E-04	1,66E-03	1,38E-08	1,69E-10	7,34E-05	1,02E-07	-8,48E-04
ADP-fossil	**MJ**	8,20E+01	1,33E+01	1,09E-01	1,12E-02	7,54E+01	3,37E-01	-7,23E+00
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic deple-tion for fossil resources potential								
WDP	**m^3 e depr.**	1,29E+00	1,29E+00	2,81E-04	5,07E-05	6,49E-01	1,26E-03	-6,54E-01
WDP = Water Deprivation potential								

Common base of mandatory indicators

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
PERE	**MJ**	7,10E+01	2,96E+00	1,06E-03	1,91E-04	6,95E+01	5,70E-03	-1,50E+00
PERM	**MJ**	5,59E-02	5,59E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	**MJ**	7,10E+01	3,01E+00	1,06E-03	1,91E-04	6,95E+01	5,70E-03	-1,50E+00
PENRE	**MJ**	8,12E+01	1,25E+01	1,09E-01	1,12E-02	7,54E+01	3,37E-01	-7,23E+00
PENRM	**MJ**	7,85E-01	7,85E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	**MJ**	8,20E+01	1,33E+01	1,09E-01	1,12E-02	7,54E+01	3,37E-01	-7,23E+00

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 re-sources)

Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy re-sources

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
SM	**kg**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	**MJ**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	**MJ**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	**m³**	2,50E-01	3,09E-02	9,63E-06	1,85E-06	2,35E-01	4,70E-05	-1,56E-02

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	Bene-fits
Hazardous waste disposed	**kg**	4,95E-01	3,80E-01	5,20E-03	8,05E-04	2,66E-01	3,03E-02	-1,86E-01
Non- hazardous waste disposed	**kg**	1,02E-03	3,67E-05	7,47E-07	7,49E-08	9,96E-04	2,25E-06	-1,73E-05
Radioactive waste disposed	**kg**	7,10E+01	3,01E+00	1,06E-03	1,91E-04	6,95E+01	5,70E-03	-1,50E+00

Common base of mandatory indicators

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Components for re-use	kg	4,65E-02	4,65E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	9,16E-02	3,97E-03	0,00E+00	2,83E-03	0,00E+00	8,48E-02	0,00E+00
Materials for energy recovery	kg	8,68E-03	0,00E+00	0,00E+00	3,17E-04	0,00E+00	8,37E-03	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Inventory flow indicator – other indicators

Indicator	Unit	End of life
Biogenic carbon content of the product	kg of C	1,00E+00
Biogenic carbon content of the associated packaging	kg of C	1,73E-03

Optional indicators

Environmental indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Total use of primary energy during the life cycle	MJ	2,10E+01	2,10E+01	1,00E+00	2,00E+00	3,00E+00	5,00E+00	6,00E+00
Emissions of fine particles	incidence of diseases	5,70E+01	5,70E+01	7,00E+00	8,00E+00	9,00E+00	1,10E+01	1,20E+01
Ionizing radiation, human health	kBq U235 eq.	9,30E+01	9,30E+01	1,30E+01	1,40E+01	1,50E+01	1,70E+01	1,80E+01
Ecotoxicity (fresh water)	CTUe	1,29E+02	1,29E+02	1,90E+01	2,00E+01	2,10E+01	2,30E+01	2,40E+01
Human toxicity, car-cinogenic effects	CTUh	1,65E+02	1,65E+02	2,50E+01	2,60E+01	2,70E+01	2,90E+01	3,00E+01
Human toxicity, non-carcinogenic effects	incidence of diseases	2,01E+02	2,01E+02	3,10E+01	3,20E+01	3,30E+01	3,50E+01	3,60E+01
Impact related to land use/soil quality	0	2,37E+02	2,37E+02	3,70E+01	3,80E+01	3,90E+01	4,10E+01	4,20E+01

Other indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Environmental Cost Indicator	€	2,100E+01	2,100E+01	1,000E+00	2,000E+00	4,000E+00	5,000E+00	6,000E+00

Extrapolation Factors

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:

* 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	Manufacturing	Distribution	Installation	Use	End of life	Benefits
2CDL230180R1024 (B.I)	1,00	1,00	1,00	1,00	1,00	1,00
2CDL210180R1024 (B.I)	0,71	0,71	1,00	0,68	0,70	0,71
2CDL230180R1016 (B.I)	0,65	0,65	1,41	0,74	0,62	0,65
2CDL210180R1012 (B.I)	0,36	0,36	1,02	0,40	0,34	0,36
2CDL210180R1008 (B.I)	0,25	0,25	1,02	0,29	0,22	0,25
2CDL200180R0013 (C.I)	0,02	0,02	0,17	0,00	0,02	0,02

The impact of the busbar chosen together with the caps is calculated with the following formula:

*Total impact = 2 * N * C.I. + B.I.*

Where: N = number of caps; C.I = extrapolation factor of 1 cap; B.I = extrapolation factor of chosen busbar

The impact of the product on the other countries in which it is distributed has been calculated. Depending on where the product is distributed, the impact of the use phase would have to be multiplied by:

Principal impact indicator	Germany	Netherlands	Switzerland
Climate change	8,91	9,47	1,00
Climate change - Fossil	11,89	13,51	1,00
Climate change - Biogenic	2,24	0,47	1,00
Climate change - Land use and LU change	10,59	3,24	1,00
Ozone depletion	3,70	7,26	1,00
Acidification	4,01	3,95	1,00
Eutrophication, freshwater	27,19	11,28	1,00
Eutrophication, marine	5,39	6,76	1,00
Eutrophication, terrestrial	4,90	5,84	1,00
Photochemical ozone formation	5,18	6,42	1,00
Resource use, minerals and metals	1,35	1,14	1,00
Resource use, fossils	2,04	2,24	1,00
Water use	1,10	2,12	1,00

The impact of principal indicator for the use stage is calculated with the following formula:

*Use stage impact = R.I * E.F*

Where: R.I = impact of selected category; E.F = extrapolation factor of chosen indicator

Always multiply by the same indicator, do not combine them.

Environmental Impact Indicator Glossary

Impact indicators

Indicator	Description	Distri-bution
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 e depr.

Resource use indicators

Indicator	Description	Distri-bution
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)

Registration number:	**Drafting Rules:** PCR-ed4-EN-2021 09 06
ABBG-00254-V01.01-EN	**Supplemented by:** PSR-0005-ed2-EN-2016 03 29
Verifier accreditation number:	**Information and reference documents:**
VH08	www.pep-ecopassport.org
Date of issue: 06-2023	**Validity period:** 5 years
Internal ○	External ◉

Independent verification of the declaration and data, in compliance with ISO 14025: 2010

The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)

PEP are compliant with XP C08-100-1 :2016 or EN 50693:2019
The elements of the present PEP cannot be compared with elements from another program

Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"