

PMA EPD - Corrugated Conduits – XPCS

PEP ecopassport®

Product Environmental Profile



Product Environmental Profile - PEP Ecopassport.
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"

ORGANIZATION		CONTACT INFORMATION			
ABB EU		Oscar Sarmiento Penuela, oscar.sarmiento-penuela@ch.abb.com			
ADDRESS		WEBSITE			
ABB PMA AG - Uster CH		abb.com			
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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.



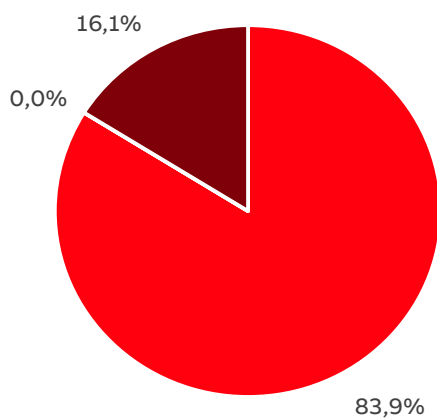
General Information

Reference product	XPCSG-23BG.50
Description of the product	The main function of the conduit system is to protect the cabling of electrical installations.
Functional unit	To accommodate and protect the wiring and wiring accessories along 1 metre for a Reference Service Life of the product of 20 years. The installation trunking system with cross-section 376.5 mm ² includes the profile and accessories that are representative of standard use.
Other products covered	The XPCS multilayer conduit with green inner layer.

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Constituent Materials



■ Plastics 100,51 g ■ Metals 0,00 g ■ Others 19,33 g

Total weight of Reference product with packaging 119,84 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	49,1	-	-	carton	8,6
PA12	26,8	-	x	-	x
PA	8,1	-	x	wood	7,5

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Additional Environmental Information

Manufacturing	The manufacturing stage includes the production of multilayer (PA6 and PA12) conduits and its packaging. The production occurs at the ABB factory located in Uster, CH, which serves as manufacturer's last logistic platform.
Distribution	The transport distance is considered as a weighted average distance from ABB factory in Uster to global customers. Packaging includes carton made from 60% recycled material and reusable wood pallets.
Installation	During installation, the disposal of packaging, as well as the manufacture, transport, and disposal of 3% scrap of the conduit were considered.
Use	No energy consumption, no maintenance operations needed.
End of life	The default end of life scenario, 100% incineration without energy recovery, was applied, in accordance with PEP guidelines.
Benefits and loads beyond the system boundaries	Benefits and loads beyond the system boundaries (Module D) have been considered.

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Environmental Impacts

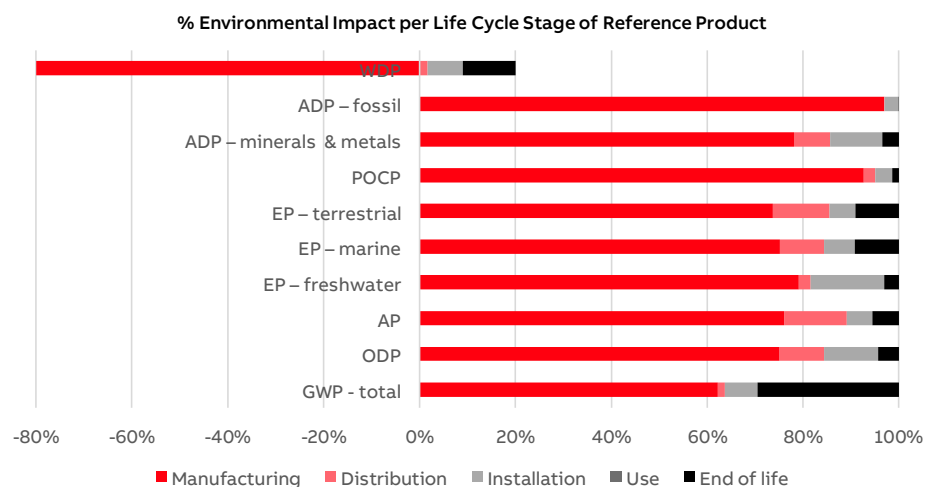
Reference lifetime	20 years
Product category	Cable management solutions - cable trunking systems and conduit systems.
Installation elements	No installation materials are required in the life cycle of the product.
Use scenario	No material and energy consumption occur during the use stage. No maintenance phase is planned for the conduits.
Geographical representativeness	Europe
Technological representativeness	Technological representativeness refers to the specific production process for primary data.
Software and database used	SimaPro 9.6 and ecoinvent 3.10

Energy model used

Manufacturing	Electricity, medium voltage [CH] market for Cut-off, S
Installation	No energy consumption occur during the installation stage.
Use	No energy consumption occur during the use stage.
End of life	No energy consumption during the end of life stage.

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Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Benefits
GWP-total	kg CO ₂ eq.	8,12E-01	5,05E-01	1,21E-02	5,48E-02	0,00E+00	2,40E-01	1,62E-03
GWP-fossil	kg CO ₂ eq.	8,02E-01	5,17E-01	1,21E-02	3,35E-02	0,00E+00	2,40E-01	-1,83E-03
GWP-biogenic	kg CO ₂ eq.	5,10E-03	-1,62E-02	-8,71E-08	2,12E-02	0,00E+00	3,66E-05	3,45E-03
GWP-luluc	kg CO ₂ eq.	4,27E-03	4,10E-03	3,99E-06	1,60E-04	0,00E+00	1,26E-06	-4,62E-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.	2,20E-09	1,65E-09	2,05E-10	2,49E-10	0,00E+00	9,52E-11	-4,95E-11
ODP = Depletion potential of the stratospheric ozone layer								
AP	H+ eq.	9,59E-04	7,29E-04	1,26E-04	5,15E-05	0,00E+00	5,31E-05	-6,47E-06
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	kg P eq.	2,11E-05	1,67E-05	5,27E-07	3,23E-06	0,00E+00	6,62E-07	-6,46E-07
EP-marine	kg N eq.	3,33E-04	2,50E-04	3,07E-05	2,13E-05	0,00E+00	3,07E-05	-1,63E-06
EP-terrestrial	mol N eq.	2,87E-03	2,12E-03	3,40E-04	1,57E-04	0,00E+00	2,60E-04	-1,70E-05
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.	4,50E-03	4,17E-03	1,06E-04	1,58E-04	0,00E+00	6,67E-05	-7,47E-06
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	kg Sb eq.	3,64E-07	2,84E-07	2,74E-08	3,96E-08	0,00E+00	1,27E-08	-5,09E-09
ADP-fossil	MJ	9,81E+00	9,51E+00	8,61E-03	2,88E-01	0,00E+00	8,03E-03	-1,10E-02
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	m ³ eq. depr.	-1,52E-02	-2,02E-02	4,31E-04	1,85E-03	0,00E+00	2,79E-03	-4,63E-04
WDP = Water Deprivation potential								

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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	1,48E+00	1,44E+00	1,37E-03	3,17E-02	0,00E+00	2,15E-03	-1,96E-02
PERM	MJ	2,48E-01	2,47E-01	0,00E+00	8,88E-04	0,00E+00	0,00E+00	-3,07E-02
PERT	MJ	1,72E+00	1,69E+00	1,37E-03	3,26E-02	0,00E+00	2,15E-03	-5,04E-02
PENRE	MJ	7,16E+00	6,63E+00	1,57E-01	3,29E-01	0,00E+00	5,05E-02	-3,20E-02
PENRM	MJ	3,41E+00	3,31E+00	0,00E+00	9,92E-02	0,00E+00	0,00E+00	-4,76E-04
PENRT	MJ	1,06E+01	9,93E+00	1,57E-01	4,28E-01	0,00E+00	5,05E-02	-3,24E-02

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	Bene- fits
SM	kg	6,78E-03	6,78E-03	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	m ³	7,86E-02	7,60E-02	1,38E-05	2,29E-03	0,00E+00	2,73E-04	-1,93E-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	Bene- fits
Hazardous waste disposed	kg	8,60E-06	5,52E-06	1,02E-06	1,12E-06	0,00E+00	9,39E-07	-1,40E-07
Non- hazardous waste disposed	kg	2,46E-02	1,25E-02	1,52E-04	1,04E-02	0,00E+00	1,53E-03	-1,29E-04
Radioactive waste disposed	kg	8,56E-06	8,39E-06	2,35E-08	1,14E-07	0,00E+00	3,22E-08	-9,35E-08

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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	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	1,26E-02	6,22E-03	0,00E+00	6,42E-03	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	2,91E-03	1,98E-04	0,00E+00	2,71E-03	0,00E+00	0,00E+00	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	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
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	9,93E-03	9,91E-03	0,00E+00	2,59E-05	0,00E+00	0,00E+00	-8,99E-04

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Optional indicators

Environmental indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Benefi- fits
Total use of primary energy during the life cycle	MJ	1,23E+01	1,16E+01	1,58E-01	4,61E-01	0,00E+00	5,27E-02	-8,28E-02
Emissions of fine particles	incidence of diseases	1,98E-08	1,76E-08	7,40E-10	1,22E-09	0,00E+00	3,06E-10	-8,24E-11
Ionizing radiation, human health	kBq U235 eq.	5,20E-02	5,09E-02	9,51E-05	8,80E-04	0,00E+00	1,26E-04	-3,64E-04
Ecotoxicity (fresh water)	CTUe	4,52E+00	3,75E+00	4,05E-02	2,02E-01	0,00E+00	5,22E-01	-1,41E-02
Human toxicity, car-cinogenic effects	CTUh	3,01E-09	2,77E-09	6,06E-11	1,26E-10	0,00E+00	4,89E-11	-1,69E-11
Human toxicity, non-carcinogenic effects	CTUh	1,02E-08	8,90E-09	1,16E-10	4,84E-10	0,00E+00	6,86E-10	-1,78E-11
Impact related to land use/soil quality		-2,13E+01	-2,07E+01	1,23E-02	-6,36E-01	0,00E+00	1,08E-02	-3,06E-01

Other indicators

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

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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 extrapolation factors provided in the tables below, with the following formulas:

Environmental indicator	Extrapolation factor (a)	Extrapolation variable (x)
GWP-total	10.53	product mass
GWP-fossil	10.53	product mass
GWP-biogenic	75.40	packaging mass
GWP-luluc	10.53	product mass
ODP	17.14	packaging mass
AP	10.53	product mass
EP-freshwater	30.98	packaging mass
EP-marine	10.53	product mass
EP-terrestrial	10.53	product mass
POCP	10.53	product mass
ADP-minerals & metals	10.53	product mass
ADP-fossil	10.53	product mass
WDP	9.20	product mass
PERE	10.53	product mass
PERM	54.85	packaging mass
PERT	28.83	packaging mass
PENRE	10.53	product mass
PENRM	10.53	product mass
PENRT	10.53	product mass
SM	75.40	packaging mass
RSF	-	-
NRSF	-	-
FW	10.53	product mass
HWD	28.83	packaging mass
NHWD	10.53	product mass
RWD	10.53	product mass
CRU	-	-
MFR	10.53	product mass
MFE	10.53	product mass
EE	-	-
Emissions of Fine particles	10.53	product mass
Ionizing radiation, human health	10.53	product mass
Ecotoxicity, freshwater	10.53	product mass
Human toxicity, carcinogenic effects	10.53	product mass
Human toxicity, non-carcinogenic effects	10.53	product mass
Impact related to Land use /soil quality	10.53	product mass
Biogenic C	75.40	packaging mass

Manufacturing Stage

$$y = a * r_0 * x$$

Where:

- y is the selected impact category;
- a is the extrapolation factor from the table
- r₀ is the environmental indicator of the reference product
- x is the extrapolation variable, and is defined as either m (product mass), p (packaging mass), or t (total mass = m+p)

All other stages

The extrapolation equations are the same across all impact categories, and r₀ is the environmental indicator of the reference product

Stage	Extrapolation equation
Distribution	$y = 12.39 * r_0 * m$
Installation	$y = 3.01 * r_0 * (m+p)$
End of Life	$y = 9.95 * r_0 * m$
Net benefits and loads	$y = 78.40 * r_0 * p$

In cases where the value of an indicator for the reference product is 0, the extrapolation factor has also been set to 0.

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Extrapolation Factors

The complete list of products covered by this EPD and the relevant variables for extrapolation are shown in the table below.

Product name	Conduit weight (kg/m)	Packaging weight (kg/m)
XPCSG-29BG.50	1.33E-01	3.30E-02
XPCSG-23BG.50*	9.90E-02	1.90E-02
XPCSG-48BG.30	2.28E-01	8.20E-02
XPCSG-36BG.30	1.60E-01	5.60E-02
XPCSG-17BG.50	6.30E-02	1.50E-02
XPCST-17BG.50	6.20E-02	1.50E-02
XPCST-12BG.50	3.80E-02	1.00E-02
XPCST-10BG.50	2.80E-02	6.00E-03
XPCSG-29OG.50	1.33E-01	3.30E-02
XPCSG-23OG.50	9.90E-02	1.90E-02
XPCST-17SG.50	5.70E-02	1.50E-02
XPCST-17BG/S.50	5.70E-02	1.50E-02
XPCST-07BG.100	2.50E-02	4.00E-03
XPCSG-17OG.50	6.30E-02	1.70E-02

Product name	Conduit weight (kg/m)	Packaging weight (kg/m)
XPCSG-56BG.30	3.30E-01	1.89E-01
XPCSG-95BG.10	6.60E-01	3.40E-01
XPCST-12BG.70	3.80E-02	1.30E-02
XPCSG-23BG/S.50	9.90E-02	1.90E-02
XPCST-10OG.50	2.80E-02	8.00E-03
XPCSG-17BG.30	6.30E-02	1.20E-02
XPCSG-48OG.30	2.28E-01	8.20E-02
XPCSG-70BG.10	4.60E-01	2.13E-01
XPCSG-48BG.10	2.28E-01	1.13E-01
XPCST-07BG.100L	2.50E-02	1.20E-02
XPCSG-36OG.30	1.60E-01	5.60E-02
XPCST-17OG.50	6.30E-02	1.70E-02
XPCST-12OG.50	3.80E-02	1.00E-02
XPCSG-17BG.0.3	1.90E-02	1.20E-02
XPCSG-17OG.0.3	1.90E-02	1.20E-02

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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: VH44	Information and reference documents: www.pep-ecopassport.org
Date of issue: 11-2024	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 (DDomain)	
PEP are compliant with XP C08-100-1 :2016 or EN 50693:2019 or NE E38-500 :2022 The components of the present PEP may not be compared with elements from any other program.	
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