PMAFLEX MULTILAYER - XPCSF - CORRUGATED CONDUIT

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"

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STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00842-V01.01-EN	1	en	1/13

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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	XPCSFG-23BO.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 363.05 mm² includes the profile and accessories that are representative of standard use.
Other products covered	The XPCSF multilayer conduit with orange inner layer.

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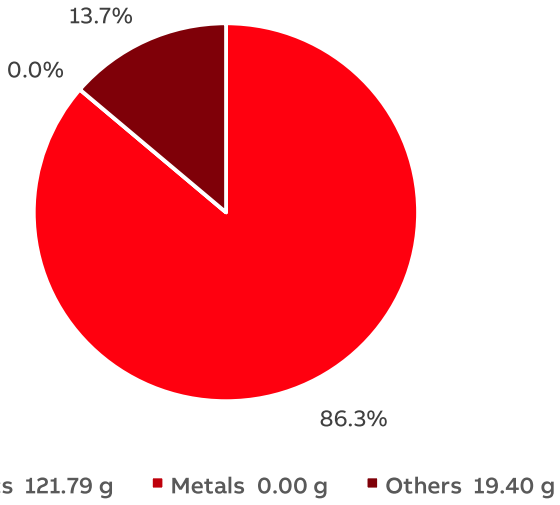
Constituent Materials



Total weight of Reference product with packaging	141.193	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%
PA12	86.3	–	–	**Mg Stearate**	0.0
–	x	–	x	**Wood**	6.4
–	x	–	x	**Carton**	7.3

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Additional Environmental Information

Manufacturing	The manufacturing stage includes the production of multilayer (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 avarage distance from ABB factory in Uster to global customers. Packaging includes carton made from 60% recycled material and resuable 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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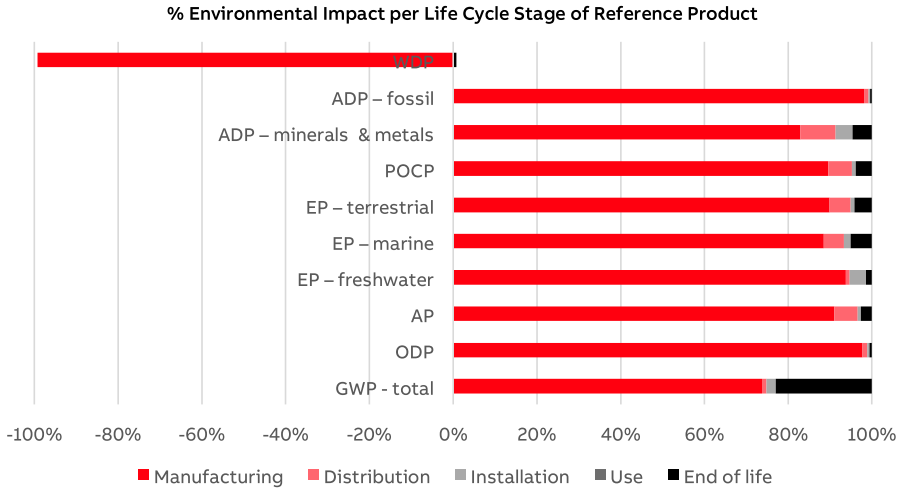
Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
GWP-total	**kg CO_2 eq.**	1.27E+00	9.34E-01	1.36E-02	2.74E-02	0.00E+00	2.91E-01	1.03E-03
GWP-fossil	**kg CO_2 eq.**	1.27E+00	9.52E-01	1.36E-02	1.31E-02	0.00E+00	2.91E-01	-1.90E-03
GWP-biogenic	**kg CO_2 eq.**	-3.94E-03	-1.82E-02	-8.00E-07	1.43E-02	0.00E+00	1.98E-05	2.94E-03
GWP-luluc	**kg CO_2 eq.**	2.25E-04	1.82E-04	4.56E-06	3.63E-05	0.00E+00	2.13E-06	-3.47E-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.**	2.11E-08	2.07E-08	2.35E-10	1.17E-10	0.00E+00	1.27E-10	-5.12E-11
ODP = Depletion potential of the stratospheric ozone layer								
AP	**H+ eq.**	2.57E-03	2.34E-03	1.44E-04	1.99E-05	0.00E+00	6.79E-05	-5.97E-06
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	**kg P eq.**	6.55E-05	6.14E-05	6.09E-07	2.52E-06	0.00E+00	9.65E-07	-5.38E-07
EP-marine	**kg N eq.**	7.43E-04	6.58E-04	3.53E-05	1.23E-05	0.00E+00	3.80E-05	-1.44E-06
EP-terrestrial	**mol N eq.**	7.79E-03	7.00E-03	3.91E-04	7.47E-05	0.00E+00	3.24E-04	-1.51E-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.**	2.14E-03	1.92E-03	1.21E-04	1.92E-05	0.00E+00	8.34E-05	-7.29E-06
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	**kg Sb eq.**	3.79E-07	3.14E-07	3.15E-08	1.54E-08	0.00E+00	1.76E-08	-5.21E-09
ADP-fossil	**MJ**	1.64E+01	1.61E+01	1.80E-01	5.97E-02	0.00E+00	7.10E-02	-3.36E-02
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	**m^3 eq. depr.**	-1.45E+00	-1.46E+00	4.96E-04	1.95E-03	0.00E+00	9.42E-03	-3.89E-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**	1.16E+00	1.15E+00	1.57E-03	9.56E-03	0.00E+00	2.28E-03	-4.15E-02
PERM	**MJ**	2.59E-01	2.59E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.50E-02
PERT	**MJ**	1.42E+00	1.41E+00	1.57E-03	9.56E-03	0.00E+00	2.28E-03	-6.65E-02
PENRE	**MJ**	1.64E+01	1.61E+01	1.80E-01	5.97E-02	0.00E+00	7.10E-02	-3.36E-02
PENRM	**MJ**	4.13E+00	4.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.43E-04
PENRT	**MJ**	2.05E+01	2.02E+01	1.80E-01	5.97E-02	0.00E+00	7.10E-02	-3.40E-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**	6.81E-03	6.81E-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**	-2.99E-02	-3.04E-02	1.59E-05	7.66E-05	0.00E+00	3.29E-04	-1.64E-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**	9.86E-03	4.97E-03	1.66E-04	3.51E-04	0.00E+00	4.37E-03	-4.43E-05
Non- hazardous waste disposed	**kg**	4.44E-01	2.80E-01	1.55E-03	3.10E-02	0.00E+00	1.31E-01	-1.02E-03
Radioactive waste disposed	**kg**	1.17E-05	1.15E-05	2.68E-08	8.55E-08	0.00E+00	2.87E-08	-8.48E-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	1.37E-02	5.90E-03	0.00E+00	7.79E-03	0.00E+00	0.00E+00	-1.42E-06
Materials for energy recovery	kg	3.24E-03	6.49E-04	0.00E+00	2.59E-03	0.00E+00	0.00E+00	-8.41E-05
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	7.41E-03	7.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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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	2.59E+01	2.56E+01	1.82E-01	6.92E-02	0.00E+00	7.33E-02	-1.01E-01
Emissions of fine particles	incidence of diseases	2.06E-08	1.91E-08	8.51E-10	1.83E-10	0.00E+00	4.23E-10	-9.54E-11
Ionizing radiation, human health	kBq U235 eq.	8.45E-02	8.39E-02	1.08E-04	3.35E-04	0.00E+00	1.13E-04	-3.30E-04
Ecotoxicity (fresh water)	CTUe	2.34E+00	1.61E+00	3.55E-02	1.00E-01	0.00E+00	5.85E-01	-7.91E-03
Human toxicity, car-cinogenic effects	CTUh	7.21E-10	5.62E-10	6.93E-11	1.76E-11	0.00E+00	7.23E-11	-1.70E-11
Human toxicity, non-carcinogenic effects	CTUh	2.36E-08	2.25E-08	1.09E-10	1.18E-10	0.00E+00	8.77E-10	-1.34E-11
Impact related to land use/soil quality		2.66E+00	2.59E+00	1.44E-02	4.20E-02	0.00E+00	1.71E-02	-2.52E-01

Other indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-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 life cycle are obtained by multiplying the values of the Reference product by the extrapolation factors provided in the tables below, with the following formulas:

Environmental idicator	Extrapolation factor (a)	Extrapolation variable (x)
GWP-total	8.24	total mass
GWP-fossil	8.40	product mass
GWP-biogenic	57.60	packaging mass
GWP-luluc	11.69	product mass
ODP	8.41	product mass
AP	8.47	product mass
EP-freshwater	9.02	product mass
EP-marine	8.52	product mass
EP-terrestrial	8.47	product mass
POCP	8.54	product mass
ADP-minerals	9.86	product mass
ADP-fossils	8.38	product mass
WDP	8.25	product mass
PERE	10.32	product mass
PERM	47.81	packaging mass
PERT	27.22	packaging mass
PENRE	8.38	product mass
PENRM	70.32	packaging mass
PENRT	10.91	product mass
SM	49.37	packaging mass
RSF	-	-
NRSF	-	-
FW	8.24	product mass
HWD	9.21	product mass
NHWD	8.49	product mass
RWD	8.44	product mass
CRU	-	-
MFR	7.74	total mass
MER	10.47	total mass
EE	-	-
Biogenic C, product	-	-
Biogenic C, packaging	47.89	packaging mass
Total use of primary energy	9.41	product mass
Emissions of fine particles	8.70	product mass
Ionising radiation, human health	8.36	product mass
Ecotoxicity (freshwater)	8.85	product mass
Human toxicity, carcinogenic effects	10.06	product mass
Human toxicity, non-carcinogenic effect	8.35	product mass
Impact related to land use/soil quality	1.30	total mass

Manufacturing Stage

$$y = a * r_0 * x$$

Where:

- y is the selected impact category;
- a is the extrapolation factor from the table
- r_0 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 r_0 is the environmental indicator of the reference product:

Stage	Extrapolation equation
Distribution	$y = 9.15 * r_0 * (m+p)$
Installation	$y = 38 * r_0 * (m+p) + 0.35$
End of Life	$y = 5.98 * r_0 * m + 0.08$
Net benefits and loads	$y = 54.23 * r_0 * p$

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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	Packaging weight (kg/m)	Conduit weight (kg/m)
XPCSFG-17BO.50	1.75E-02	7.62E-02
XPCSFG-23BO.50*	1.94E-02	1.22E-01
XPCSFG-29BO.50	3.36E-02	1.52E-01
XPCSFG-36BO.30	5.66E-02	1.93E-01
XPCSFG-48BO.30	8.46E-02	2.55E-01
XPCSFG-56BO.30	1.90E-01	3.67E-01
XPCSFG-70BO.30	3.01E-01	5.25E-01
XPCSFT-07BO.100	4.15E-03	2.53E-02
XPCSFT-10BO.50	9.50E-03	3.15E-02
XPCSFT-10BO.500	6.08E-03	3.15E-02
XPCSFT-12BO.50	9.92E-03	4.26E-02

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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 eq. 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)

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Registration number: **ABBG-00842-V01.01-EN**	Drafting Rules: ***PCR-ed4-EN-2021 09 06*** ***Supplemented by:*** ***PSR-0003-ed2.1-EN-2023 12 08***
Verifier accreditation number: ***VH44***	Information and reference documents: **www.pep-ecopassport.org**
Date of issue: ***05-2025***	Validity period: **5 years**
Independent verification of the declaration and data, in compliance with ISO 14025: 2006	
Internal: ○	**External:** ◉
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 or NE E38-500 :2022 The components of the present PEP may not be compared with elements from any other program.	
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"	

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