



NONMETALLIC CORRUGATED PA6 CONDUIT
ADAPTAFLEX - CP*, PACH*, PACS*, PAFH*, PAFS*

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
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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.



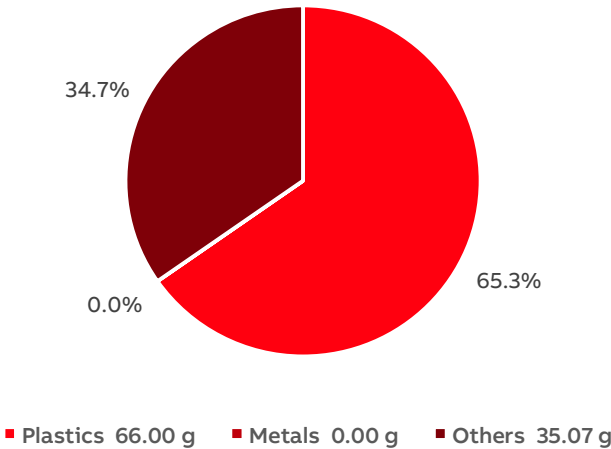
General Information

Reference product	CP-AF20A-NL.
Description of the product	The main function of the conduit system is to protect the cabling of electrical installations. This product falls under the following product category: Cable trunking systems and conduit systems; conduit systems for cable: flexible conduit systems. This product is compliant with standards EN 61386-1 and EN 61386-22.
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 212.52 mm² includes the profile and accessories that are representative of standard use.
Other products covered	Conduit product family. Full list of products covered by this PEP on page 12. All conduits are made of polyamide 6 with the same production process. Conduits vary in diameters, lengths, and color.

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	2/14



Constituent Materials



Total weight of Reference product with packaging	101.07	g
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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	65.3	–	–	carton	14.9
				wood	19.8

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	3/14



Additional Environmental Information

Manufacturing	The manufacturing stage includes the production of conduits from granulate PA6 through extrusion process, as well as the production of packaging, and storage of product. The production occurs at the ABB factory located in Coleshill, GB, 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, which is an average of 132 km by lorry and 878 km by ship. Packaging includes carton 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, with assumption of 100 km transport to end of life scenario, 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.

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	4/14



Environmental Impacts

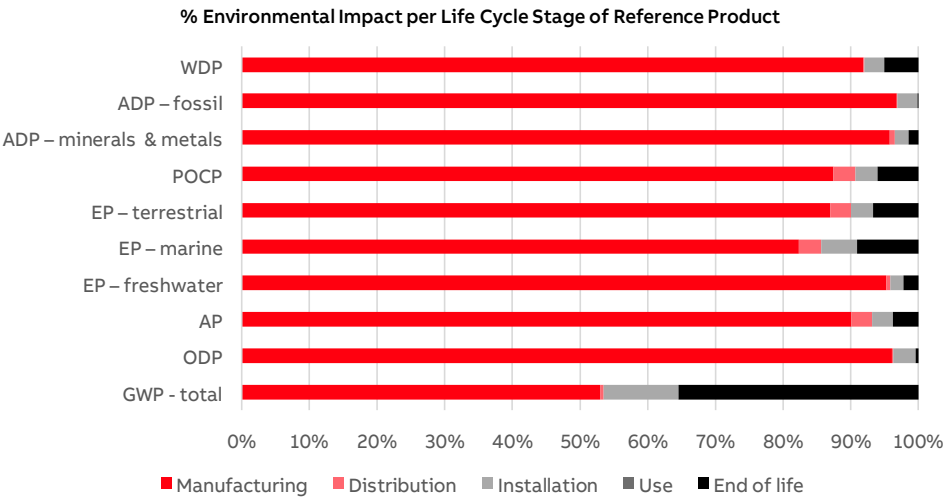
Reference lifetime	20 years
Product category	Cable management solutions - cable trunking systems and counduit systems - flexible conduit systems
Installation elements	No installation materials are required in the life cycle of the product.
Use scenario	No material and energy consumption occur during the use stage. No maintenance phase is planned for the conduits.
Geographical representativeness	Datasets used are representative of Europe; good quality geographical representativeness
Technological representativeness	Technological representativeness is of excellent quality, using primary data of energy consumption from manufacturing location.
Software and database used	SimaPro 9.6.0.1 and ecoinvent 3.10

Energy model used

Manufacturing	Electricity, medium voltage {GB} market for electricity, medium voltage Cut-off, U
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.

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	5/14

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.	4.32E-01	2.29E-01	2.35E-03	4.78E-02	0.00E+00	1.53E-01	1.21E-02
GWP-fossil	kg CO ₂ eq.	4.53E-01	2.84E-01	2.35E-03	1.33E-02	0.00E+00	1.53E-01	-1.41E-02
GWP-biogenic	kg CO ₂ eq.	-2.10E-02	-5.55E-02	-1.02E-07	3.45E-02	0.00E+00	1.32E-05	2.63E-02
GWP-luluc	kg CO ₂ eq.	1.71E-04	1.66E-04	1.07E-06	3.08E-06	0.00E+00	1.23E-06	-7.48E-05
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	3.53E-11	5.38E-10	0.00E+00	7.00E-11	-5.05E-10
ODP = Depletion potential of the stratospheric ozone layer								
AP	H+ eq.	9.82E-04	8.85E-04	3.03E-05	2.94E-05	0.00E+00	3.75E-05	-7.05E-05
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	kg P eq.	2.38E-05	2.27E-05	1.41E-07	4.62E-07	0.00E+00	5.26E-07	-8.49E-06
EP-marine	kg N eq.	2.29E-04	1.88E-04	7.55E-06	1.20E-05	0.00E+00	2.08E-05	-2.33E-05
EP-terrestrial	mol N eq.	2.68E-03	2.33E-03	8.36E-05	8.66E-05	0.00E+00	1.80E-04	-2.17E-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.	7.70E-04	6.73E-04	2.54E-05	2.51E-05	0.00E+00	4.66E-05	-7.19E-05
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	kg Sb eq.	6.50E-07	6.23E-07	4.79E-09	1.30E-08	0.00E+00	9.49E-09	-5.53E-08
ADP-fossil	MJ	5.28E+00	5.11E+00	2.48E-03	1.57E-01	0.00E+00	7.30E-03	-1.13E-01
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	m ³ eq. depr.	9.83E-02	9.04E-02	1.33E-04	2.87E-03	0.00E+00	4.94E-03	-4.39E-03
WDP = Water Deprivation potential								

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	6/14

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	1.62E+00	1.61E+00	3.56E-04	1.09E-02	0.00E+00	1.34E-03	-3.28E-01
PERM	MJ	5.59E-01	5.59E-01	0.00E+00	1.01E-05	0.00E+00	0.00E+00	-1.49E-01
PERT	MJ	2.18E+00	2.17E+00	3.56E-04	1.09E-02	0.00E+00	1.34E-03	-4.77E-01
PENRE	MJ	3.16E+00	3.05E+00	2.48E-03	9.50E-02	0.00E+00	7.31E-03	-1.10E-01
PENRM	MJ	2.12E+00	2.06E+00	0.00E+00	6.17E-02	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.28E+00	5.11E+00	2.48E-03	1.57E-01	0.00E+00	7.31E-03	-1.10E-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	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	2.99E-03	2.73E-03	3.97E-06	8.59E-05	0.00E+00	1.74E-04	-1.68E-04
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	6.50E-06	5.74E-06	1.98E-07	1.40E-07	0.00E+00	4.25E-07	-9.15E-07
Non- hazardous waste disposed	kg	3.07E-02	1.71E-02	1.79E-03	9.45E-03	0.00E+00	2.37E-03	-3.34E-03
Radioactive waste disposed	kg	4.07E-06	3.92E-06	5.74E-09	1.33E-07	0.00E+00	1.68E-08	-6.17E-07

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	7/14

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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	1.33E-02	3.14E-03	0.00E+00	1.01E-02	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	2.43E-02	2.43E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	8/14

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	7.45E+00	7.28E+00	2.84E-03	1.68E-01	0.00E+00	8.65E-03	-5.87E-01
Emissions of fine particles	incidence of diseases	8.07E-09	7.39E-09	1.63E-10	2.72E-10	0.00E+00	2.49E-10	-8.25E-10
Ionizing radiation, human health	kBq U235 eq.	8.07E-09	1.09E-02	2.35E-05	2.90E-04	0.00E+00	6.64E-05	-2.33E-03
Ecotoxicity (fresh water)	CTUe	8.07E-09	3.78E+00	8.96E-03	1.34E-01	0.00E+00	3.13E-01	-1.24E-01
Human toxicity, car-cinogenic effects	CTUh	8.07E-09	3.75E-10	1.10E-11	8.35E-12	0.00E+00	3.92E-11	-8.41E-11
Human toxicity, non- carcinogenic effects	incidence of diseases	8.07E-09	1.50E-09	2.09E-11	7.00E-11	0.00E+00	5.15E-10	-2.10E-10
Impact related to land use/soil quality		8.07E-09	5.75E+00	2.18E-02	2.61E-02	0.00E+00	1.84E-02	-2.41E+00

Other indicators

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

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	9/14

Extrapolation Factors

For other products covered by this PEP, than the Reference product, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of a given indicator for the Reference product by the extrapolation factors provided in the tables below, with the following equations:

Manufacturing Stage: $y = r_o \cdot (a \cdot x + b)$

Where:

- y is the selected environmental indicator;
- r_o is the environmental indicator of the reference product
- a, b are the extrapolation factors from the table below
- x is the extrapolation variable, and is defined as either m (product mass), p (packaging mass), or t (total mass = $m+p$)

Environmental indicator	Extrapolation factor (a)	Extrapolation constant (b)	Extrapolation variable (x)
GWP-total	1.54E+01	0.00E+00	product mass
GWP-fossil	1.56E+01	4.30E-03	product mass
GWP-biogenic	2.81E+01	1.09E-01	packaging mass
GWP-luluc	1.50E+01	2.52E-02	product mass
ODP	1.56E+01	1.70E-03	product mass
AP	1.55E+01	7.10E-03	product mass
EP-freshwater	1.50E+01	1.50E-02	product mass
EP-marine	1.55E+01	1.00E-02	product mass
EP-terrestrial	1.55E+01	9.50E-03	product mass
POCP	1.55E+01	1.49E-02	product mass
ADP-minerals & metals	1.55E+01	1.03E-02	product mass
ADP-fossil	1.56E+01	9.00E-04	product mass
WDP	1.56E+01	6.40E-03	product mass
PERE	1.55E+01	2.74E-02	product mass
PERM	2.82E+01	1.11E-01	packaging mass
PERT	2.78E+01	5.46E-02	packaging mass
PENRE	1.55E+01	7.51E-03	product mass
PENRM	1.55E+01	7.51E-03	product mass
PENRT	1.55E+01	7.51E-03	product mass
FW	1.55E+01	7.51E-03	product mass
Hazardous waste disposed	1.54E+01	2.21E-02	product mass
Non-hazardous waste disposed	1.54E+01	2.20E-02	product mass
Radioactive waste disposed	1.55E+01	7.51E-03	product mass
Materials for energy recovery	1.55E+01	7.51E-03	product mass
Emissions of Fine particles	1.55E+01	7.51E-03	product mass
Ionizing radiation, human health	1.55E+01	7.51E-03	product mass
Ecotoxicity, freshwater	1.55E+01	7.51E-03	product mass
Human toxicity, carcinogenic effects	1.56E+01	7.41E-02	product mass
Human toxicity, non-carcinogenic effects	1.54E+01	1.40E-02	product mass
Impact related to Land use /soil quality	1.55E+01	1.12E-01	product mass
Biogenic C	2.79E+01	9.90E-02	packaging mass

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	10/14

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Extrapolation Factors

Extrapolation equations for all other life cycle stages, for all environmental indicators. Here, the extrapolation variables are m (product mass), p (packaging mass), or $m + p$ (total mass), and $r0$ refers to the reference product environmental impact for a given impact category.

Distribution Stage	$y = 10.12 * r0 * (m + p)$
Installation Stage	$y = r0 * (10.55 * (m + p) + 0.019)$
End of Life Stage	$y = 15.61 * r0 * m$
Benefits	$y = 28.73 * r0 * p$

There are no extrapolation factors for use stage, as all products in this family have no use phase.

A full list of all the products and the relevant variables for extrapolation is shown on Page 12.

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	11/14

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	Product weight (kg/m)	Packaging weight (kg/m)
CP-AF20A	6.40E-02	1.50E-02
CP-AF20A-NL	6.41E-02	1.50E-02
CP-AF20A-SF	6.41E-02	1.50E-02
CP-AF25A	1.05E-01	3.00E-02
CP-AF25A-NL	1.05E-01	3.00E-02
CP-AT21-BLY	6.41E-02	1.50E-02
CP-AT28-BLY	1.05E-01	3.00E-02
CP-AT34-BLY	1.44E-01	3.00E-02
PACH17/BL/100FT	6.00E-02	1.73E-02
PACH21/BL/100FT	8.14E-02	9.08E-03
PACH21/BL/50M	8.08E-02	8.77E-03
PACH28/BL/100FT	1.34E-01	1.44E-02
PACH28/BL/50M	1.33E-01	1.50E-02
PACH42/BL/25M	2.02E-01	3.51E-02
PACH54/BL/25M	2.68E-01	6.01E-02
PACH54/BL/50M	2.63E-01	5.26E-02
PACS21/BL/50M	6.77E-02	8.77E-03
PACS25/BL/25M	8.36E-02	1.50E-02
PACS25/BL/50M	8.28E-02	1.31E-02
PACS28/BL/25M	1.04E-01	1.75E-02
PACS28/BL/50M	1.03E-01	1.50E-02
PACS34/BL/100FT	1.39E-01	2.16E-02
PACS34/BL/10M	1.44E-01	2.34E-02
PACS34/BL/25M	1.40E-01	2.34E-02
PACS34/BL/50M	1.38E-01	2.63E-02
PACS34/BL/OKK/25M	6.99E-02	1.17E-02
PACS42/BL/10M	1.76E-01	4.38E-02
PACS42/BL/25M	1.71E-01	4.67E-02

Product Name	Product weight (kg/m)	Packaging weight (kg/m)
PACS42/BL/50FT	1.74E-01	4.31E-02
PACS42/BL/50M	1.70E-01	3.51E-02
PACS54/BL/10M	2.50E-01	8.77E-02
PACS54/BL/25M	2.43E-01	6.01E-02
PACS54/BL/50M	2.40E-01	5.26E-02
PAFH16/BL/50M	4.75E-02	5.84E-03
PAFS10/BL/50M	2.02E-02	2.06E-03
PAFS13/BL/10M	3.05E-02	5.84E-03
PAFS13/BL/50M	2.93E-02	3.19E-03
PAFS16/BL/100FT	3.97E-02	7.67E-03
PAFS16/BL/10M	4.10E-02	2.63E-02
PAFS16/BL/25M	3.98E-02	5.84E-03
PAFS16/BL/50M	3.94E-02	5.84E-03
PAFS16/BL/OKK/50M	3.94E-02	5.84E-03
PAFS21/BL/100FT	6.20E-02	4.31E-04
PAFS21/BL/100M	6.13E-02	4.38E-03
PAFS21/BL/10M	6.41E-02	1.17E-02
PAFS21/BL/25M	6.22E-02	1.05E-02
PAFS21/BL/350M	6.11E-02	1.86E-02
PAFS21/BL/50M	6.16E-02	8.77E-03
PAFS21/BL/OKK/50M	6.16E-02	8.77E-03
PAFS25/BL/50M	7.68E-02	1.31E-02
PAFS28/BL/100FT	1.02E-01	1.44E-02
PAFS28/BL/100M/DRUM	1.01E-01	6.50E-02
PAFS28/BL/10M	1.05E-01	2.34E-02
PAFS28/BL/25M	1.02E-01	1.75E-02
PAFS28/BL/50M	1.01E-01	1.50E-02
PAFS34/BL/10M	1.44E-01	2.34E-02

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN	1	en	12/14
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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)

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00644-V01.01-EN		1 en	13/14

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Verifier accreditation number:	VH44	Information and reference documents:	www.pep-ecopassport.org
Date of issue:	08.2024	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"			

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
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