

Product Environmental Profile (PEP)

ACOPTIC - Range UNB1627

Outdoor/indoor PE strippable subscriber connection cable



UNB1627 1 OF T500

Outdoor/indoor PE strippable subscriber connection cable



133,9 g CO₂ eq.

Climate change
- total*



3,56 MJ

Total use of
primary energy*



1,26E-08

kg Sb eq.
Depletion of
abiotic resources
- elements*



3,40 dm³

Net use of
freshwater*

* Results based on the lifecycle analysis of the reference product (UNB1627 1 OF T500), at the scale of the UF, i.e.. the transmission of 1 communication signal (1 OF) over 1 meter of cable.

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The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)	
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019	
The components of the present PEP may not be compared with components from any other program	
Document complies with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"	



The updated version of this document is available on the site www.pep-ecopassport.org and on the site www.acome.com

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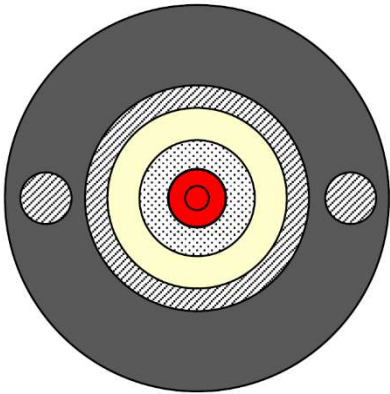
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GENERAL INFORMATIONS

TYPICAL PRODUIT

ACOPTIC® is the ACOME brand for ranges of optical cables for telecom networks. The UNB optical cable ranges are the connection solutions for FTTH subscribers. The products in this range are equipped with a double exterior/interior sheath allowing access to the interior of buildings from the exterior.
The UNB1627 is a compact connection cable that can be used overhead, in ducts or on facades.



Principle cut

- Semi-tight insulation 600 µm
- Intermediate sheath: LSOH material compliant with NF EN 50290-2-27
- Reinforcement elements: FRP / Aramid yarns
- Outer sheath: High density polyethylene compliant with NF EN 50290-2-24

This environmental statement covers the optical cable of the UNB1627 range consisting of an optical fiber (1 OF) with a packaging of 500 meters (T500). The reference product has the following characteristics:

Technical characteristics	
Product category	Communication and data wires and cables
Description	Optical fiber cable – 1 optical fiber – packaging of 500 m
Reference lifetime	20 years
Type of optical fiber	Single mode
Mass	25,407 g including 4,513 g of packaging - measured by FU
Diameter	5 mm
Geographical representativeness	Manufactured in France; Distribution, Installation, Use and End of life in France

Table 1 - Product Description

FUNCTIONAL UNIT

The functional unit studied is "To transmit one communication signal on 1m, at a wavelength of 1310nm for a single-mode optical fiber, for 20 years and at a utilization rate of 100% in accordance with the standards in force such as indicated on the product sheet. as defined in PSR-0001-ed4-EN 2022 11 16.

The duration and rate of use correspond to the "INFRASTRUCTURES - Telecom Networks (fixed and mobile telephone)" application as defined in the table given in Appendix 1 of the specific rules for Wires, Cables et Accessories.

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CONSTITUENT MATERIALS

The total mass of the product is 25,407 g/m including 20,894 g of cable and 4,513 g of packaging.

The constituent materials are:

(the calculations are made for a unit of 1 meter of cable)

Metals/Minerals	7,6%	Plastics	74,5%	Others	0,2%	Packaging	17,8%
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Table 2 - Constituent materials (in percentage)

Use of recycled materials: 12,5%

LIFE CYCLE ASSESSMENT METHODOLOGY

The Life Cycle Assessment on which this Product Environmental Profile (PEP) is based is carried out in compliance with the criteria imposed by PCR-ed4-FR-2021 09 06 of the PEP ecopassport® Program. The functional unit and the distribution, use and waste treatment scenarios comply with the assumptions set out in PSR-0001-ed4-FR-2022 11 16.

The results were obtained using EIME software version 6.0.0 and its most recent database CODDE-02-2023.

MANUFACTURE STAGE

UNB1627 1FO T500 cables are manufactured at the Mortain industrial site (Manche-France) which has received ISO14001 design and manufacturing environmental certification.

Some materials have a European, North American or Asian origin.

The materials necessary for the manufacture of the product, the packaging upstream of the raw materials and the packaging of the finished product have been considered. It is noted that recycled material is used for the manufacture of the drum used for the transport of the finished product.

Upstream transport and transport to the last logistics platform have been taken into account. Truck transport was modeled by a truck with a loading capacity of 27t with a loading rate of 85% and an empty return rate of 20%.

Source PEFCR : https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_guidance_v6.3.pdf

The scrap rate of shaped elements and assembled elements was considered. The ACOME company transmitted the scrap rates obtained during the manufacture of the product.

Waste related to the manufacture of the product has been considered as buried or incinerated in accordance with appendix D of PCR-ed4-FR-2021 09 06.

The energy model used for the Manufacture stage is:

Energy model	Electricity Mix; Low voltage; 2018; France, FR
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DISTRIBUTION STAGE

The distribution of the packaged product from the last logistics platform (ACOME SA factory – Industrial site of Mortain, France) to the place of installation (France) was modeled by transport by truck of 27 tonnes over a distance of 1000km (national transport scenario from PEP-PCR-ed4-FR-2021 09 06).

A truck load rate of 85% and an empty return rate of 20% were considered.

Source PEFCR : https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_guidance_v6.3.pdf

INSTALLATION STAGE

Due to the large variety of possible installation of this product, the installation process is excluded from the scope of the PEP. The determination of the impact of the installation process will be carried out by the users of the PEP, depending on the context of use of the product.

The installation of the product generates packaging whose treatment has been modeled in accordance with PCR-ed4-FR-2021 09 06 and PSR-0001-ed4-FR-2022 11 16. The end of life of the packaging has been modeled as follows :

- Waste collection over 1,000 km via a 27-ton road transporter with a load rate of 85% and an empty return of 20%.
- The processing of packaging waste has been modeled as indicated below, in accordance with appendix D of PCR-ed4-FR-2021 09 06:

Parameter of the "End of life treatment" formula (in %)		Material recovery rate	Landfill	Incineration without energy recovery
Plastics	ABS (3,360 g)	20%	40%	40%
	PE (0,0862 g)	0%	50%	50%
Others	Wood (1,066 g)	0%	50%	50%

Table 3 - End of life scenario for packaging

This end-of-life treatment of the packaging was modeled using European data, French data not being available.

During installation, the laying of the cable generates offcuts and a offcut rate of 5% was considered. This value was chosen in accordance with PSR-0001-ed4-FR-2022 11 16. In this stage, the impact is taken into account:

- The production of product offcuts and their packaging.
- The distribution of product offcuts and their packaging.
- The end of life of product offcuts and their packaging.

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USE STAGE

In accordance with PSR-0001-ed4-FR-2022 11 16 the product belongs to the "Fiber optic cables" family.

In this case, the energy consumed during the use stage is related to the attenuation of the transmitted signals due to the loss of signal energy along the conductors. This attenuation corresponds to the ratio between the energy emitted and the energy received. It is expressed in dB and depends on the type of fiber, the wavelength used and the length of the optical fibers.

According to PSR-0001-ed4-FR-2022 11 16, the energy consumed during the use stage can either be measured or determined by standards. For this study, the determination by the standards was retained on the basis of data from the reference standards (cable performance standard IEC 60793, IEC 60794 and Ethernet standard IEEE 802.3).

Type of optical fiber	Wavelength	Consumed power	Lifetime	Service rate	Nber of OF in the cable
Single mode	1310 nm	0,09 μ W/m	20 years	100%	1 FO

Table 4 - Electricity consumption calculation data

The electricity consumption of the product over the reference lifetime is 0.0158 Wh. The module used to model this energy consumption is:

Energy model	Electricity Mix; Low voltage; 2018; France, FR
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There is no maintenance on this type of product.

END OF LIFE STAGE

The end-of-life treatment of the product was modeled according to the end-of-life scenario of PSR-0001-ed4-FR-2022 11.

- National transport assumption: 1000 km per truck, modeled by a 27 tonne capacity truck (85% load rate and 20% empty return rate).
- A step of grinding / separation of materials.
- Landfilling of materials at 50% and incineration at 50%:
 - o For plastics (20.8615 g).
 - o For inert materials (Silica: 0.0325 g).

NET BENEFITS AND EXPENSES BEYOND SYSTEM BOUNDARIES (MODULE D ACCORDING TO EN 15804)

In accordance with the methodological requirements of PCR ed.4 (cf §2.2.8), the benefits of recycling taking place throughout the life cycle [A1-B7]* have been considered in Module D. These benefits correspond to the avoided impacts thanks to the recycling of the material. The impacts generated by the production of virgin material are counted negatively.

For this study, no benefit linked to the A1-A3 module is taken into account.

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The installation stage (A5) generates a benefit linked to the recycling of part of the ABS contained in the packaging. This recycling is estimated at 20%, as indicated in appendix D of the PCR ed4. Thus, we consider the following benefit in module D:

- - 0.67 g of ABS (Acrylonitrile butadiene styrene, primary production)

In addition, part of the product packaging is made of recycled ABS so that we can model a load in module D:

- + 3,2592 g of ABS (Acrylonitrile butadiene styrene, primary production)

Module D does not include any additional charge or benefit.

*Manufacturing waste must be considered as co-products. Net profits and expenses (Module D) allocated to co-products cannot be taken into account. Consequently, the net benefits and expenses related to manufacturing waste should not be declared for the modules [A1-A3].

LIFE CYCLE ASSESSMENT METHODOLOGY

The impact results presented below were obtained using the methods defined by PCR-ed4-FR-2021 09 06 and PSR-0001-ed4-FR-2022 11 16. Flow contribution analysis basic environmental indicators is based on calculations from the EIME 6.0.0 life cycle analysis software. The set of indicators used is the set 'Indicators for PEF EF 3.0 (Compliance: PEP ed.4, EN15804+A2)' developed by the CODDE department of Bureau Veritas in accordance with appendix A of PCR-ed4-FR- 2021 09 06.

In accordance with PSR-0001-ed4-FR-2022 11 16, in the breakdown of modules B (B1 to B7), only sub-module B6 (Energy requirements during the use stage) generates impacts corresponding to losses product energy. The other submodules B1, B2, B3, B4, B5 and B7 are equal to zero.

The environmental impacts at the equipment level are equal to the environmental impacts at the functional unit level.
(1 communication signal (1 OF) on 1 meter of cable)

ENVIRONMENTAL IMPACTS OF THE REFERENCE PRODUCT AT THE FUNCTIONAL UNIT SCALE

MANDATORY INDICATORS								
Impact indicators	Unit	Manufact uring A1-A3	Distribu tion A4	Install ation A5	Use B1-B7	End of life C1-C4	TOTAL (except D)	Benefits and Loads D
Climate change - total	kg CO2 eq.	8,28E-02	1,63E-03	1,28E-02	1,05E-06	3,67E-02	1,34E-01	8,51E-03
Climate change - fossil fuels	kg CO2 eq.	8,21E-02	1,63E-03	1,28E-02	1,05E-06	3,67E-02	1,33E-01	8,31E-03
Climate change - biogenics	kg CO2 eq.	7,59E-04	0,00E+00	3,80E-05	2,71E-09	-9,49E-11	7,97E-04	1,93E-04
Climate change - land use and land use transformation	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Ozone depletion	kg CFC-11 eq.	1,05E-08	2,50E-12	7,08E-10	1,55E-14	2,16E-10	1,14E-08	3,58E-13

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Acidification	mole H+ eq.	5,86E-04	1,03E-05	3,83E-05	6,10E-09	2,08E-05	6,55E-04	2,41E-05
Freshwater eutrophication	kg P eq.	9,78E-07	6,12E-10	1,21E-07	5,01E-11	3,53E-07	1,45E-06	3,00E-08
Marine aquatic eutrophication	kg N eq.	7,50E-05	4,84E-06	6,24E-06	8,39E-10	6,03E-06	9,21E-05	6,37E-06
Terrestrial eutrophication	mole N eq.	8,20E-04	5,31E-05	6,95E-05	1,21E-08	7,55E-05	1,02E-03	6,44E-05
Photochemical ozone formation	kg NMVOC eq.	3,78E-04	1,34E-05	2,64E-05	2,49E-09	1,82E-05	4,36E-04	1,95E-05
Depletion of abiotic resources - elements	kg Sb eq.	1,17E-08	6,42E-11	6,42E-10	4,98E-13	1,33E-10	1,26E-08	1,13E-09
Depletion of abiotic resources - fossil fuels	MJ	3,23E+00	2,28E-02	1,83E-01	2,02E-04	5,43E-02	3,49E+00	2,16E-01
Water requirement	m3 world eq.	1,35E-01	6,20E-06	7,64E-03	7,63E-08	3,11E-03	1,46E-01	2,47E-03

Inventory flows	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End of life C1-C4	TOTAL (except D)	Benefits and Loads D
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	4,58E-02	3,04E-05	3,87E-03	1,87E-05	5,35E-04	5,03E-02	4,17E-03
Use of renewable primary energy resources used as raw materials	MJ	2,03E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,03E-02	0,00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	6,61E-02	3,04E-05	3,87E-03	1,87E-05	5,35E-04	7,06E-02	4,17E-03
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	2,61E+00	2,28E-02	1,83E-01	2,02E-04	5,43E-02	2,87E+00	2,16E-01
Use of non-renewable primary energy resources used as raw materials	MJ	6,22E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,22E-01	0,00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	3,23E+00	2,28E-02	1,83E-01	2,02E-04	5,43E-02	3,49E+00	2,16E-01
Use of secondary materials	kg	3,26E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,26E-03	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	6,52E-03	0,00E+00	0,00E+00	6,52E-03	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	6,52E-03	0,00E+00	0,00E+00	6,52E-03	0,00E+00
Net use of freshwater	m3	3,15E-03	1,44E-07	1,78E-04	1,78E-09	7,24E-05	3,40E-03	5,74E-05
Hazardous waste disposed	kg	3,68E-03	0,00E+00	1,24E-03	1,57E-08	2,10E-02	2,59E-02	9,44E-06
Non hazardous waste disposed	kg	3,43E-03	5,73E-05	6,88E-03	1,01E-07	2,30E-02	3,34E-02	3,37E-03
Radioactive waste disposed	kg	5,16E-07	4,08E-08	1,15E-06	4,26E-11	9,00E-07	2,61E-06	2,22E-06
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Matières destinées au recyclage	kg	0,00E+00	0,00E+00	7,06E-04	0,00E+00	0,00E+00	7,06E-04	0,00E+00
Matières destinées à la valorisation énergétique	kg	0,00E+00	0,00E+00	5,61E-04	0,00E+00	1,63E-05	5,77E-04	0,00E+00
Énergie fournie à l'extérieur	MJ	3,31E-05	0,00E+00	4,89E-04	0,00E+00	0,00E+00	5,22E-04	0,00E+00
Teneur en carbone biogénique du produit	kg of C.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Teneur en carbone biogénique de l'emballage associé	kg of C.	-4,22E-01	0,00E+00	4,22E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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OPTIONAL INDICATORS								
Impact indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End of life C1-C4	TOTAL (except D)	Benefits and Loads D
Total use of primary energy during the life cycle	MJ	3,30E+00	2,28E-02	1,87E-01	2,21E-04	5,48E-02	3,56E+00	2,20E-01
Emission of fine particles	disease incidence	4,00E-09	8,40E-11	2,67E-10	2,36E-13	1,40E-10	4,49E-09	1,50E-10
Ionizing radiation, human health	kBq of U235 eq.	5,47E-01	3,97E-06	2,75E-02	2,73E-05	4,32E-04	5,75E-01	1,94E-03
Ecotoxicity (fresh water)	CTUe	6,06E-01	1,10E-03	4,12E-02	7,44E-06	3,25E-02	6,80E-01	2,00E-01
Human toxicity, carcinogenic effects	CTUh	3,93E-10	2,87E-14	2,44E-11	1,76E-16	1,70E-12	4,19E-10	2,02E-12
Human toxicity, non-carcinogenic effects	CTUh	7,49E-10	3,10E-12	4,68E-11	7,61E-15	4,20E-11	8,41E-10	7,50E-11
Impacts related to land use/soil quality	No dimension	6,10E-03	0,00E+00	3,05E-04	3,36E-08	0,00E+00	6,40E-03	0,00E+00

Table 5 - Results of the environmental indicators of the typical reference flow on the life cycle at the scale of the FU.

The impacts relating to the product installation process can be completed by the user.

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