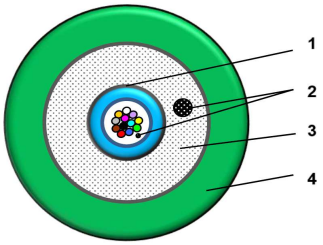
Product Environmental Profile (PEP)

ACOLAN FIREPROTECT OPTIC - CLT cable RFD ZH

Reinforced free structure - 4 to 24 OF

B1310A 12 OF CLT RFD ZH In/Out 50/125 OM3

Very high-speed data cables intended for local computer networks
for campus, backbone and horizontal links.



31,4 g CO_2 eq.
Global Warming*

0,55 MJ
Total use of primary energy*

1,01E-07
kg Sb eq.
Depletion of abiotic resources*

0,02 m³
Net use of fresh water*

* Results based on the lifecycle analysis of the reference product (B1310A 12 OF), at the scale of the UF, i.e.. the transmission of 1 communication signal over 1 meter of cable.

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Independent verification of the declaration and data, in compliance with ISO 14025 : 2010 Internal ☐ External ☒	
The PCR review was conducted by a panel of experts chaired by Philippe Osset (SOLINNEN).	
PEP are compliant with XP C08-100-1 :2016 **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 »	

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

Declaration holder

ACOME Paris - 52 rue du Montparnasse - 75014 PARIS - +33 (0)1 42 79 14 00

ACOME Mortain - 1 route des Closeaux - BP 45 - 50140 ROMAGNY-FONTENAY - +33 (0)2 33 89 31 00

www.acome.com Contact email : commerce@acome.fr

Author of the Life Cycle Assessment

CODDE - Département du LCIE Bureau Veritas

170 rue de Chatagnon - 38430 MOIRANS - +33 (0)4 76 07 36 46

www.codde.fr

Product Environmental Profile (PEP)

ACOLAN FIREPROTECT OPTIC range
CLT cable reinforced free structure
B1310A 12xOM3 CLT RFD ZH IN/OUT

Product description

The ACOLAN FIREPROTECT OPTIC cables with the reinforced free structure are very high-speed data transmission cables designed for all applications (campus, backbone, horizontal cables). They are available for all type environments : Residential, Industrial or Office Buildings, indoors or outdoors.

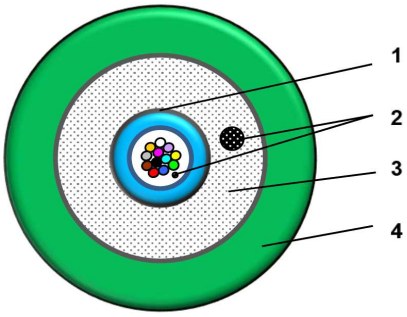
The cables in the ACOLAN FIREPROTECT OPTIC range reinforced free structure are made up of 1 to 2 tubes containing 4, 6, 8, 12 or 24 multimode (OM2, OM3, OM4 or OM5) or single-mode (OS2) optical fibers.

1 - Module Dry Loose Tubec : 4 to 12 optical fibers (color code FOTAG)

2 - Waterproofness : Water swellable yarn -
Radial and longitudinal sealing

3 - Reinforcement : Strengthening fiberglass

4 - Outer jacket : Green LSOH sheath, EN 50290-2-27compliant,
UV stabilised



This document presents the environmental impacts of the reference product: B1310A 12OF 50/125 OM3. The environmental impacts of the complementary products of the ACOLAN FIREPROTECT OPTIQUE range with reinforced free structure are presented at the end of this sheet. See list of articles on p7.

Functional unit

« Transmit a communication signal on 1 meter according to 10GBASE-SR, at 850nm, during 10 years and a 25% use rate in accordance with the standards in force. »

Standardization documents: refer to the technical data sheet of the product.
The duration and rate of use correspond to the "LAN - BUILDING: Tertiary" application as defined in the table given in Appendix 1 of the specific rules for Wires, Cables et Accessories. (PSR-0001-ed3-EN-2015 10 16)

Constituent materials

The total weight of the cable B1310A 12OF 50/125 OM3 is 86,7 g/m (including packaging) divided into the following materials : (calculations are realized for a unit of one meter of cable)

Plastics	57,0%	Metal	0,0%	Others	28,8%	Packaging	14,2%

in % of the mass

This product contains no substances prohibited by the regulations at the time of its introduction on the market outside the maintenance operations carried out during the use phase.

Estimated recycled material content : **0,6% of weight.**

Manufacturing

Certified management system

Cables of the B1310A 12 OF CLT RFD ZH In/Out 50/125 OM3 are manufactured on the site of Mortain (France) which received the environmental certification ISO14001 design and the manufacturing.

The energy model selected for the manufacturing stage is :

Electricity Mix France 1kV-60kV - Module ELCD year 2008

Packaging designed to reduce environnemental impact

This product is packaged on wooden drum certified PEFC™, attesting to traceability in the timber industry and sustainable forest management.

- The packaging of 12,3 g consists of a wooden drum reinforced with steel tubes with a protective packaging.
- Packaging in lengths of 2100m on a drum.

The packaging has been designed in accordance with regulations in force

- Directive 94/62/CE on packaging and packaging waste.

Distribution

Transport scenario

- The selected transport scenario is a local transport, that is to say 3500 km traveled by truck (generic data) to get from our manufacturing site to the nearest distributor of our French, German and Italian customers.

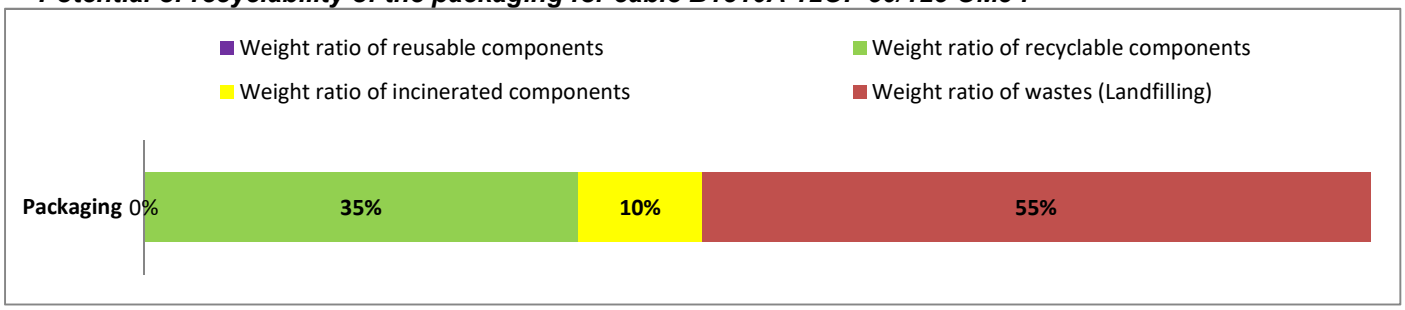
Installation

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 users of the PEP, depending on the context of use of the product.

This installation stage takes into account: the impact of the end of life of the cable waste from the installation stage (3% of losses), the transport and the treatment of the packaging at its end of life. The transport scenario selected for the impact analysis related to the waste disposal stage is 1000 km by truck (local transport - generic data).

The total weight of the packaging at the end of its life is 12,3 g per 1 meter of packaged product.

Potential of recyclability of the packaging for cable B1310A 12OF 50/125 OM3 :



Use

Use scenario

The use scenario selected:

- Category of product : PSR-0001-ed3-EN-2015 10 16 - §4.2.2.3. Optical fiber cables
- Power loss : 0,76 µW/m for 1 OF per meter of cable for the 10GBASE-SR protocol at 850nm, for 25% use rate over 10 years (reference lifetime).

  This modeling time is not a minimum durability requirement.
- Energy model : *Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27 – 2008*

Consumables

No consumables are necessary to use this type of product.

Servicing and maintenance

Under normal conditions of use, this type of product requires no servicing or maintenance.

End of life

Method of treatment of the product

> Hazardous waste contained in the product :

This product contains no hazardous waste in compliance with the RoHS Directive.

> Non-hazardous waste contained in the product excluding packaging:

Plastics/metal/others = 74,4 g par meter

> Recycling potential:

The recycling potential of a product is the percentage of material that can be recycled by existing techniques. It does not take into account the existence or not of the recycling channels which are very dependent on the local situation.

This product contains 0 % by weight of material that can potentially be recycled (excluding packaging).

> Energy recovery potential :

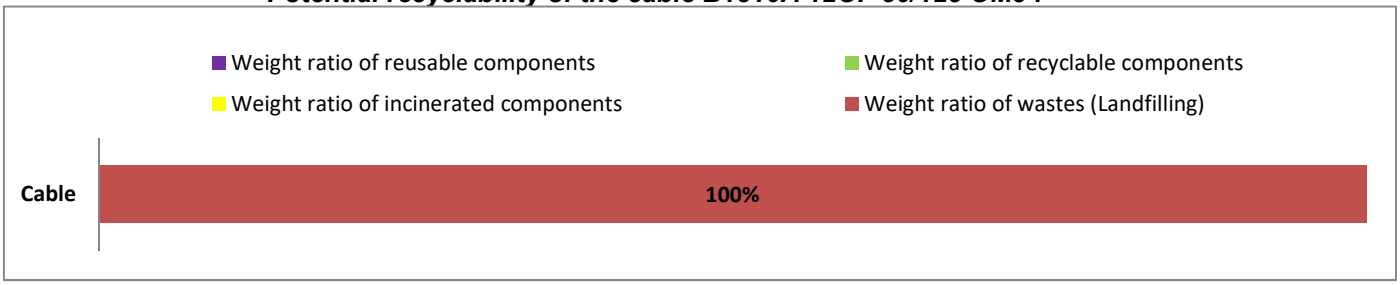
Energy recovery involves using calories in the waste, burning it and recovering the energy it produces to, for example, heat buildings or produce electricity. It is the exploitation of the energy deposit contained in the waste.

This product contains 0% by weight can be recovered with energy recovery (excluding packaging).

> End of life scenario :

Is taken into account in this end-of-life stage: the transport of the product to the treatment site, a grinding and separation stage of metals and plastics, a 100% recycling of metals and a disposal of other materials . The transport scenario selected for this end-of-life stage is 1000 km by truck (local transport - generic data).

Potential recyclability of the cable B1310A 12OF 50/125 OM3 :



Environmental impacts

Methodology

The assessment of environmental impacts of the product B1310A 12OF 50/125 OM3 covers the following stages of the life cycle : raw material extraction and manufacturing (MPF), distribution (D), installation (I), using (U) and end of life (OEL) of reference flow description.It's representative of marketed reference product and used in France.

For each stage, the following modelling elements have been taken into account :

- Manufacturing : Materials and product components, transport necessary for its implementaion, its packaging and waste generated during manufacturing stage.
- Distribution : Transport between our manufacturing site in Mortain and an average delivery on the sales area established 3500km by road transport.
- Installation : The end of life of packaging and the impact of waste from the installation stage (manufacturing, transportation and end of life of waste)
- Use : Power loss of 0,76 µW/m for 1 OF per meter of cable for the 10GBASE-SR protocol, at 850nm, for a use rate of 25% of the time for 10 years (reference lifetime).
- End of life : The end of life of reference product

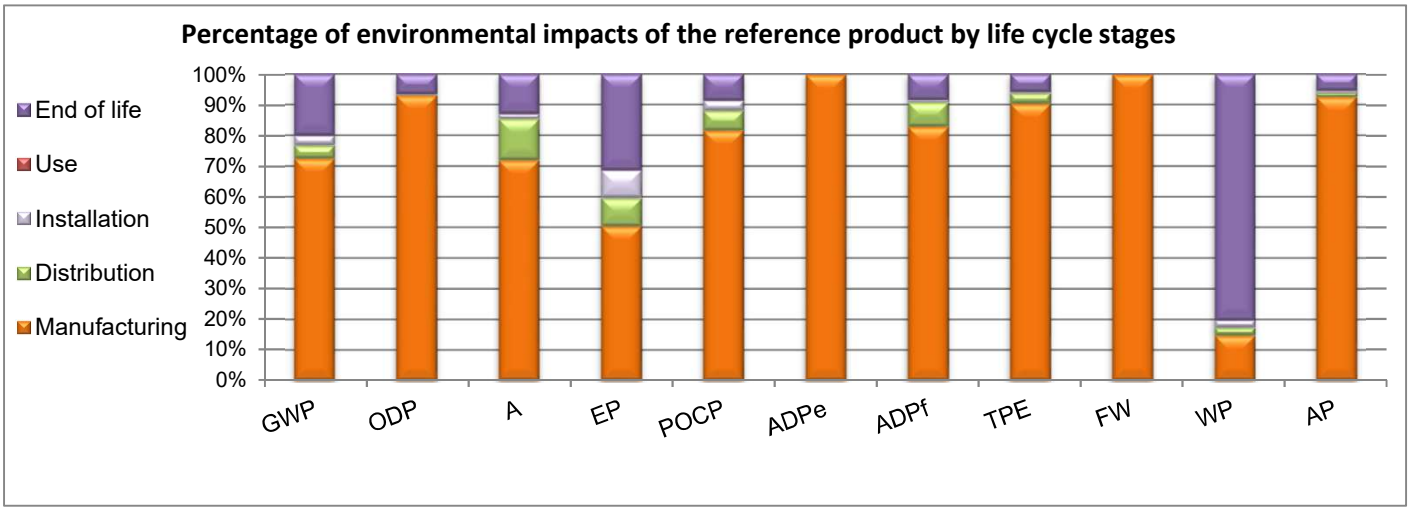
Results at the FU scale, ie the transmission of a communication signal over 1 meter of cable.

Selection Impact Indicators	Total life cycle CDV	Total life cycle Units	Manufacturing MPF		Distribution D		Installation I		Use U		End of life EOL	
Greenhouse Gas Emission (GWP)	3,14E-02	kg CO_2 eq.	2,28E-02	73%	1,30E-03	4%	1,01E-03	3%	8,14E-06	<1%	6,31E-03	20%
Ozone layer depletion (ODP)	3,71E-09	kg CFC-11 eq.	3,46E-09	93%	2,63E-12	<1%	9,13E-12	<1%	5,31E-13	<1%	2,46E-10	7%
Acidification of soils and water (A)	4,34E-05	kg SO_2 eq.	3,12E-05	72%	5,83E-06	13%	6,54E-07	2%	3,40E-08	<1%	5,67E-06	13%
Water eutrophication (EP)	1,46E-05	kg PO_4^{3-} eq.	7,36E-06	50%	1,34E-06	9%	1,31E-06	9%	2,05E-09	<1%	4,58E-06	31%
Photochemical ozone formation (POCP)	6,44E-06	kg C_2H_4 eq.	5,26E-06	82%	4,14E-07	6%	2,08E-07	3%	1,87E-09	<1%	5,62E-07	9%
Abiotic depletion - elements (ADPe)	1,01E-07	kg Sb eq.	1,01E-07	100%	5,19E-11	<1%	1,00E-11	<1%	7,08E-13	<1%	1,58E-10	<1%
Abiotic depletion - fossil ernergy (ADPf)	2,30E-01	MJ	1,91E-01	83%	1,82E-02	8%	1,59E-03	<1%	9,24E-05	<1%	1,95E-02	8%
Total Primary Energy used (TPE)	5,47E-01	MJ	4,94E-01	90%	1,83E-02	3%	2,05E-03	<1%	1,63E-04	<1%	3,24E-02	6%
Net use of fresh water (FW)	1,77E-02	m^3	1,77E-02	100%	1,16E-07	<1%	3,96E-07	<1%	2,95E-05	<1%	5,95E-06	<1%
Water Pollution (WP)	8,45E+00	m^3	1,24E+00	15%	2,13E-01	3%	2,15E-01	3%	3,36E-04	<1%	6,78E+00	80%
Air Pollution (AP)	4,03E+00	m^3	3,73E+00	93%	5,32E-02	1%	2,64E-02	<1%	3,51E-04	<1%	2,22E-01	5%

Modelling performed with the EIME soft in version 5.9.2 and its database version CODDE-2020-12

These impacts are to be multiplied by 12 and by the number of meters of cable installed to obtain the impacts at the scale of the equipment.

As illustrated below, the environmental impact of the reference product is created mainly during the manufacturing stage.



Results at the UF scale, ie the transmission of a communication signal over 1 meter of cable.

Flow Indicators	Total life cycle CDV	Units	MPF	D	I	U	EOL
Use of renewable primary energy (excl. Raw Material)	7,81E-03	MJ	7,52E-03	2,44E-05	2,53E-05	2,07E-05	2,16E-04
Use of renewable primary energy resources (incl. Raw Material)	1,63E-02	MJ	1,63E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources	2,41E-02	MJ	2,38E-02	2,44E-05	2,53E-05	2,07E-05	2,16E-04
Use of non renewable primary energy (excl. Raw Material)	4,46E-01	MJ	3,93E-01	1,83E-02	2,03E-03	1,42E-04	3,22E-02
Use of non renewable primary energy resources (incl. Raw Material)	7,70E-02	MJ	7,70E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources	5,22E-01	MJ	4,70E-01	1,83E-02	2,03E-03	1,42E-04	3,22E-02
Use of secondary material	4,79E-05	kg	4,79E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	0,00E+00	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non renewable secondary fuels	0,00E+00	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Hazardous waste disposed	1,50E-02	kg	8,56E-03	0,00E+00	1,89E-04	4,25E-09	6,28E-03
Non hazardous waste disposed	1,41E-02	kg	6,23E-03	4,61E-05	8,52E-04	3,04E-05	6,99E-03
Radioactive waste disposed	2,36E-05	kg	2,31E-05	3,28E-08	3,30E-08	2,03E-08	3,69E-07
Components for reuse	0,00E+00	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	3,74E-04	kg	0,00E+00	0,00E+00	3,74E-04	0,00E+00	0,00E+00
Material for ernergy recovery	1,07E-04	kg	0,00E+00	0,00E+00	1,07E-04	0,00E+00	0,00E+00
Exported Energy	4,69E-04	MJ	0,00E+00	0,00E+00	4,69E-04	0,00E+00	0,00E+00

Modelling performed with the EIME soft in version 5.9.2 and its database version CODDE-2020-12

These impacts are to be multiplied by 12 and by the number of meters of cable installed to obtain the impacts at the scale of the equipment.

Extrapolation rules :

The ACOLAN FIREPROTECT OPTIC cables with the reinforced free structure can contain 4, 6, 8, 12 or 24 OF. They are available in multimode 50/125 (OM2, OM3, OM4 and OM5) and single-mode (OS2) versions.

List of cable references for the ACOLAN FIREPROTECT OPTIQUE CLT RFD ZH range :

CLT INT/EXT ZH RFD

Contenance câble	Multimode 50/125 OM2 ACMM50	Multimode 50/125 OM3 ACMM50	Multimode 50/125 OM4 ACMM50	Multimode 50/125 OM5 ACMM50	Monomode 9/125*OS2 ACSM2-D PREMIUM
4 fibres	B1301A	B1307A	B1313A		B1319A
6 fibres	B1302A	B1308A	B1314A	B1349A	B1320A
8 fibres	B1303A	B1309A	B1315A		B1321A
12 fibres	B1304A	B1310A	B1316A	B1350A	B1322A
24 fibres	B1305A	B1311A	B1317A	B1351A	B1323A

The impacts of the reference product (B1310A) cover all the references of cables with 12 OF.
The impacts of the other cables in the range are listed in the rest of the sheet.

Tables of the environmental impacts of the other cables in the range

ACOLAN FIREPROTECT OPTIQUE CLT RFD ZH for 4 OF, based on the B1307A cable

Selection Impact Indicators	Total life cycle CDV	Units	Manufacturing MPF	Distribution D	Installation I	Use U	End of life EOL
Greenhouse Gas Emission (GWP)	8,82E-02	kg CO_2 eq.	6,25E-02	3,86E-03	3,03E-03	8,14E-06	1,88E-02
Ozone layer depletion (ODP)	9,50E-09	kg CFC-11 eq.	8,74E-09	7,83E-12	2,72E-11	5,31E-13	7,31E-10
Acidification of soils and water (A)	1,20E-04	kg SO_2 eq.	8,33E-05	1,74E-05	1,96E-06	3,40E-08	1,69E-05
Water Eutrophication (WE)	4,20E-05	kg PO_4^{3-} eq.	2,04E-05	3,99E-06	3,92E-06	2,05E-09	1,36E-05
Photochemical oxidation (POCP)	1,80E-05	kg C_2H_4 eq.	1,45E-05	1,23E-06	6,23E-07	1,87E-09	1,67E-06
Abiotic depletion - elements (ADPe)	3,02E-07	kg Sb eq.	3,01E-07	1,55E-10	3,00E-11	7,08E-13	4,71E-10
Abiotic depletion - fossil ernergy (ADPf)	6,55E-01	MJ	5,38E-01	5,43E-02	4,74E-03	9,24E-05	5,81E-02
Total Primary Energy used (TPE)	1,52E+00	MJ	1,36E+00	5,46E-02	6,14E-03	1,63E-04	9,65E-02
Net use of fresh water (FW)	2,77E-02	m^3	2,77E-02	3,46E-07	1,18E-06	2,95E-05	1,77E-05
Water Pollution (WP)	2,49E+01	m^3	3,48E+00	6,35E-01	6,39E-01	3,36E-04	2,02E+01
Air Pollution (AP)	1,19E+01	m^3	1,10E+01	1,58E-01	7,92E-02	3,51E-04	6,60E-01

Modelling performed with the EIME soft in version 5.9.2 and its database version CODDE-2020-12

Impacts given for the transmission of a communication signal over a cable length of 1 meter.
These impacts are to be multiplied by 4 and by the number of meters of cable installed to obtain the impacts at the scale of the equipment.

ACOLAN FIREPROTECT OPTIQUE CLT RFD ZH for 6 OF, based on the B1308A cable

Selection Impact Indicators	Total life cycle CDV	Units	Manufacturing MPF	Distribution D	Installation I	Use U	End of life EOL
Greenhouse Gas Emission (GWP)	5,98E-02	kg CO_2 eq.	4,27E-02	2,58E-03	2,02E-03	8,14E-06	1,26E-02
Ozone layer depletion (ODP)	6,61E-09	kg CFC-11 eq.	6,10E-09	5,23E-12	1,82E-11	5,31E-13	4,88E-10
Acidification of soils and water (A)	8,15E-05	kg SO_2 eq.	5,73E-05	1,16E-05	1,31E-06	3,40E-08	1,13E-05
Water Eutrophication (WE)	2,83E-05	kg PO_4^{3-} eq.	1,39E-05	2,66E-06	2,62E-06	2,05E-09	9,11E-06
Photochemical oxidation (POCP)	1,22E-05	kg C_2H_4 eq.	9,86E-06	8,24E-07	4,16E-07	1,87E-09	1,12E-06
Abiotic depletion - elements (ADPe)	2,01E-07	kg Sb eq.	2,01E-07	1,03E-10	2,00E-11	7,08E-13	3,14E-10
Abiotic depletion - fossil ernergy (ADPf)	4,43E-01	MJ	3,64E-01	3,63E-02	3,16E-03	9,24E-05	3,88E-02
Total Primary Energy used (TPE)	1,03E+00	MJ	9,26E-01	3,65E-02	4,09E-03	1,63E-04	6,45E-02
Net use of fresh water (FW)	2,27E-02	m^3	2,27E-02	2,31E-07	7,90E-07	2,95E-05	1,18E-05
Water Pollution (WP)	1,67E+01	m^3	2,36E+00	4,24E-01	4,27E-01	3,36E-04	1,35E+01
Air Pollution (AP)	7,95E+00	m^3	7,35E+00	1,06E-01	5,28E-02	3,51E-04	4,41E-01

Modelling performed with the EIME soft in version 5.9.2 and its database version CODDE-2020-12

Impacts given for the transmission of a communication signal over a cable length of 1 meter.
These impacts are to be multiplied by 6 and by the number of meters of cable installed to obtain the impacts at the scale of the equipment.

ACOLAN FIREPROTECT OPTIQUE CLT RFD ZH for 8 OF, based on the B1309A cable

Selection Impact Indicators	Total life cycle CDV	Units	Manufacturing MPF	Distribution D	Installation I	Use U	End of life EOL
Greenhouse Gas Emission (GWP)	4,56E-02	kg CO_2 eq.	3,27E-02	1,94E-03	1,52E-03	8,14E-06	9,43E-03
Ozone layer depletion (ODP)	5,16E-09	kg CFC-11 eq.	4,78E-09	3,93E-12	1,36E-11	5,31E-13	3,67E-10
Acidification of soils and water (A)	6,25E-05	kg SO_2 eq.	4,43E-05	8,71E-06	9,80E-07	3,40E-08	8,47E-06
Water Eutrophication (WE)	2,14E-05	kg PO_4^{3-} eq.	1,06E-05	2,00E-06	1,96E-06	2,05E-09	6,85E-06
Photochemical oxidation (POCP)	9,33E-06	kg C_2H_4 eq.	7,56E-06	6,19E-07	3,12E-07	1,87E-09	8,40E-07
Abiotic depletion - elements (ADPe)	1,51E-07	kg Sb eq.	1,51E-07	7,76E-11	1,50E-11	7,08E-13	2,36E-10
Abiotic depletion - fossil ernergy (ADPf)	3,36E-01	MJ	2,78E-01	2,72E-02	2,37E-03	9,24E-05	2,91E-02
Total Primary Energy used (TPE)	7,89E-01	MJ	7,10E-01	2,74E-02	3,07E-03	1,63E-04	4,84E-02
Net use of fresh water (FW)	2,02E-02	m^3	2,02E-02	1,73E-07	5,93E-07	2,95E-05	8,89E-06
Water Pollution (WP)	1,26E+01	m^3	1,80E+00	3,19E-01	3,21E-01	3,36E-04	1,01E+01
Air Pollution (AP)	5,99E+00	m^3	5,54E+00	7,95E-02	3,96E-02	3,51E-04	3,31E-01

Modelling performed with the EIME soft in version 5.9.2 and its database version CODDE-2020-12

Impacts given for the transmission of a communication signal over a cable length of 1 meter.
These impacts are to be multiplied by 8 and by the number of meters of cable installed to obtain the impacts at the scale of the equipment.

ACOLAN FIREPROTECT OPTIQUE CLT RFD ZH for 24 OF, based on the B1311A cable

Selection Impact Indicators	Total life cycle CDV	 Units	Manufacturing MPF	Distribution D	Installation I	Use U	End of life EOL
Greenhouse Gas Emission (GWP)	**1,90E-02**	**kg CO_2 eq.**	1,41E-02	7,33E-04	5,21E-04	8,14E-06	3,64E-03
Ozone layer depletion (ODP)	**2,57E-09**	**kg CFC-11 eq.**	2,43E-09	1,49E-12	5,13E-12	5,31E-13	1,42E-10
Acidification of soils and water (A)	**2,74E-05**	**kg SO_2 eq.**	2,04E-05	3,29E-06	3,40E-07	3,40E-08	3,27E-06
Water Eutrophication (WE)	**8,60E-06**	**kg PO_4^{3-} eq.**	4,53E-06	7,57E-07	6,65E-07	2,05E-09	2,64E-06
Photochemical oxidation (POCP)	**3,90E-06**	**kg C_2H_4 eq.**	3,24E-06	2,34E-07	1,05E-07	1,87E-09	3,24E-07
Abiotic depletion - elements (ADPe)	**5,10E-08**	**kg Sb eq.**	5,08E-08	2,93E-11	5,38E-12	7,08E-13	9,11E-11
Abiotic depletion - fossil ernergy (ADPf)	**1,43E-01**	**MJ**	1,20E-01	1,03E-02	8,37E-04	9,24E-05	1,12E-02
Total Primary Energy used (TPE)	**3,44E-01**	**MJ**	3,14E-01	1,04E-02	1,10E-03	1,63E-04	1,87E-02
Net use of fresh water (FW)	**1,67E-02**	**m^3**	1,66E-02	6,56E-08	2,12E-07	2,95E-05	3,43E-06
Water Pollution (WP)	**4,93E+00**	**m^3**	7,78E-01	1,21E-01	1,23E-01	3,36E-04	3,91E+00
Air Pollution (AP)	**2,28E+00**	**m^3**	2,11E+00	3,01E-02	1,37E-02	3,51E-04	1,28E-01

Modelling performed with the EIME soft in version 5.9.2 and its database version CODDE-2020-12

Impacts given for the transmission of a communication signal over a cable length of 1 meter.
These impacts are to be multiplied by 24 and by the number of meters of cable installed to obtain the impacts at the scale of the equipment.