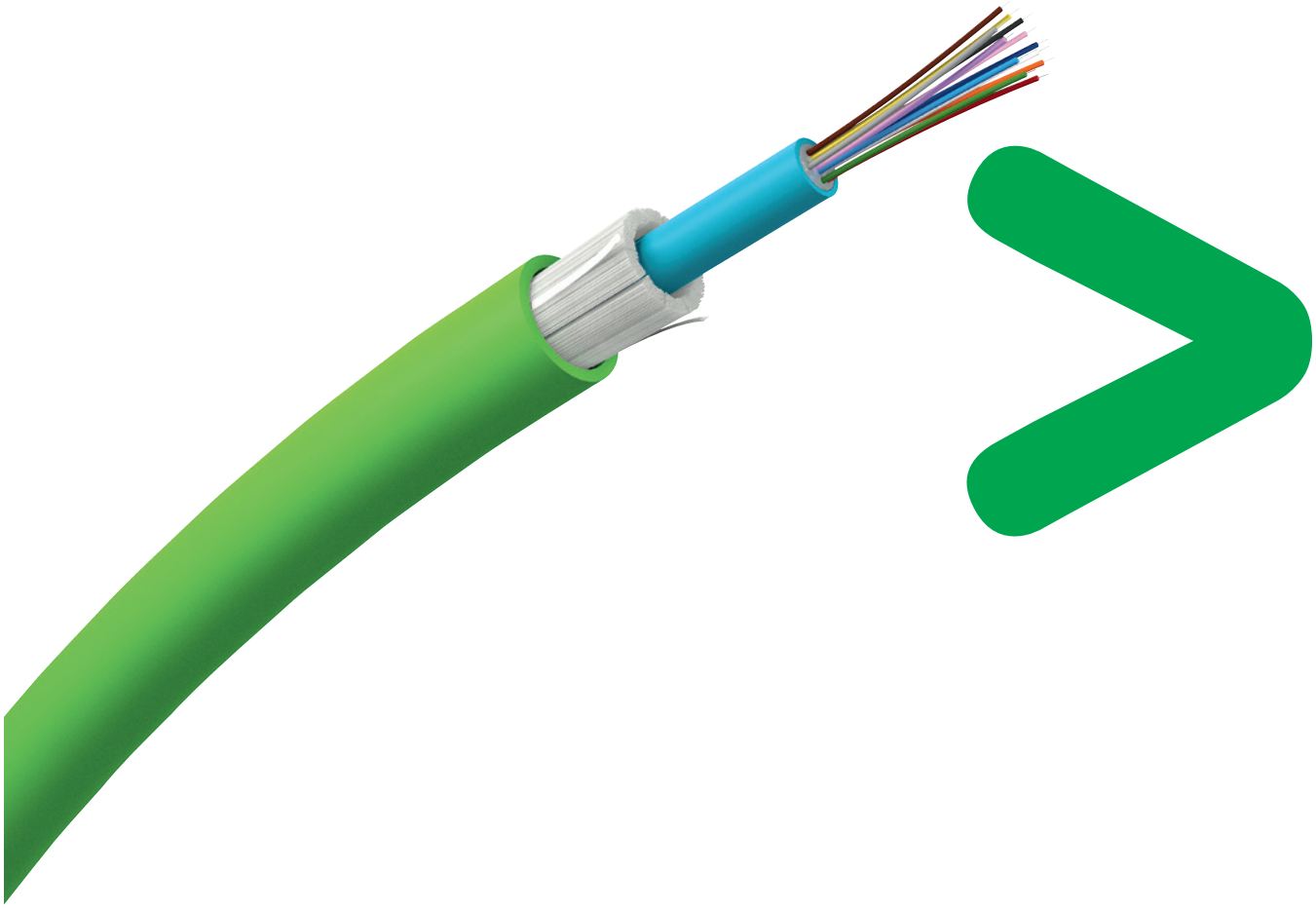
Product Environmental Profile

Fibre LAN optic cables, loose tube



PEP ecoPASSPORT®

Schneider Electric

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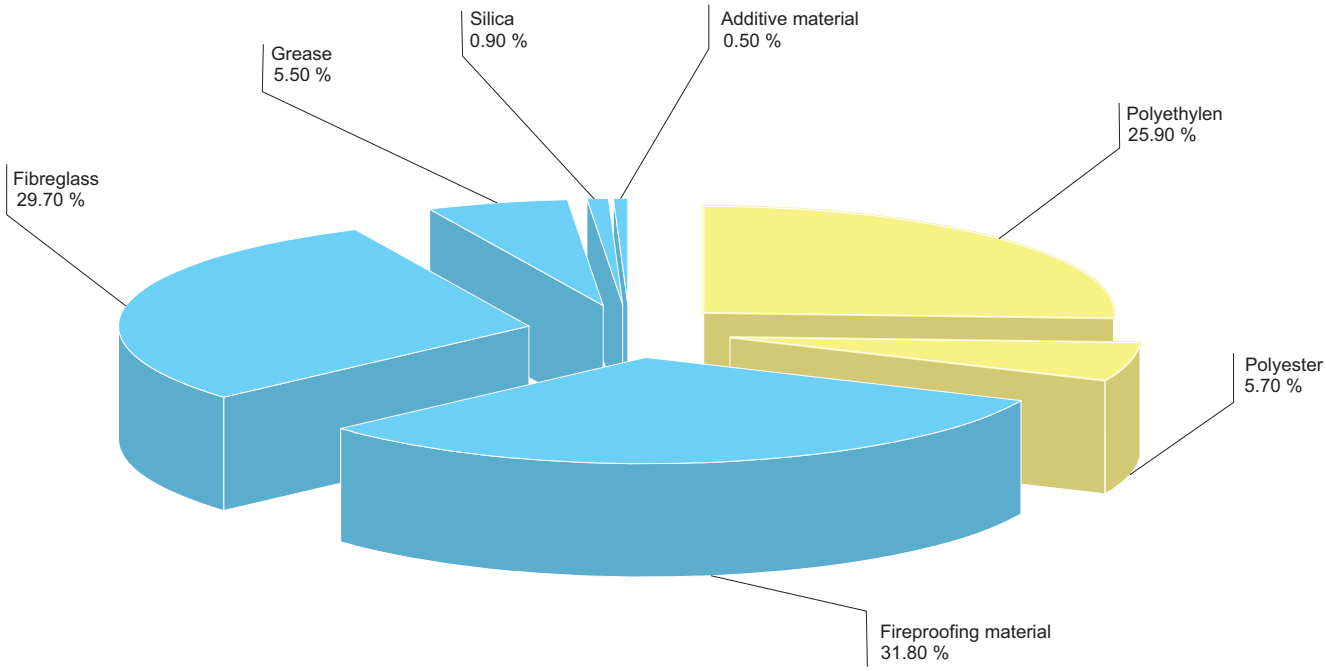
Product Overview

The main function of the Fibre LAN optic cables product range is to cover needs for LAN (Local Area Network) Cabling installations in Buildings: Campus, Backbones and Distribution.
This range consists of: Indoor / Outdoor Loose Tube optic cables with LSZH sheath.
The representative product used for the analysis is the Indoor / Outdoor Loose Tube OM3 optic cable with 12 fibres delivered on a 525 meters drum: VDIC42312L.
All the following calculations are based on a 1 meter sample of this reference transmitting an optical signal during 20 years.
The environmental impacts of this sample are representative of the impacts of the other products of the range which are developed with the similar technology.
The extrapolation rules are described in the following chapters.
The environmental analysis was performed in conformity with ISO 14040.
This analysis takes the stages of the life cycle of the product into account.

Constituent materials

The mass of the product range is from 41.0 g/m and 53.0 g/m not including packaging. The VDIC42312L weighs 41.8 g/m.
The constituent materials are distributed as follows:



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

Indoor / Outdoor Loose Tube optic cables with LSZH sheath are manufactured at a production site which complies with the regulations governing industrial sites.

Distribution

The weight and volume of the packaging have been reduced, in compliance with the European Union's packaging directive.
The Indoor / Outdoor Loose Tube optic cables with LSZH sheath packaging weight is 9.0 g/m. It consists of Wood (7.6 g/m), Steel (1.3 g/m), Polyethylen (HD and LD) (0.1 g/m).
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

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Utilization

The products of the Indoor / Outdoor Loose Tube optic cables with LSZH sheath range do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on) in using phase.
The dissipated power depends on the conditions under which the product is implemented and used.
This dissipated power is negligible versus the dissipated power of the transmitter devices.

End of life

At end of life, the products in the Indoor / Outdoor Loose Tube optic cables with LSZH sheath have been optimized to decrease the amount of waste and valorise the components and materials of the product in the usual end of life treatment process.
The design has been achieved so as components are able to enter the usual end of life treatment. The product doesn't need any specific depollution process.
The potential of recyclability of the products has been evaluated using the Codde "recyclability and recoverability calculation method" (version V1, 20 Sep. 2008) and published by ADEME (French Agency for Environment and Energy Management).
By this method, this product range doesn't contain recyclable materials as the lack of processes for recycling these plastics types.

Environmental impacts

The environmental impacts were analysed for the Manufacturing (M) phases, the Distribution (D) and the Utilization (U) phases.
This product range is included in the category 1 (assumed lifetime service is 20 years and using scenario: Loading rate is 100 % and uptime percentage is 100 %).
The EIME (Environmental Impact and Management Explorer) software, version 4.0, and its database, version 10.0 were used for the life cycle assessment (LCA).
The calculation has been done on 1 meter of VDIC42312L.
The electrical power model used is European model.

Presentation of the environmental impacts

Environmental indicators	Unit	For 1 meter of VDIC42312L						
		S = M + D + U	M		D		U	
Raw material depletion	Y-1	$1.27E^{-17}$	$1.13E^{-17}$	88 %	$4.66E^{-19}$	4 %	$9.76E^{-19}$	8 %
Energy depletion	MJ	6.74	4.74	70 %	$3.49E^{-01}$	5 %	1.65	25 %
Water depletion	dm^3	1.81	1.46	81 %	$3.75E^{-02}$	2 %	$3.15E^{-01}$	17 %
Global warming	g ~CO_2	180	141	79 %	21.96	12 %	16.8	9 %
Ozone depletion	g ~CFC-11	$3.56E^{-05}$	$2.33E^{-05}$	65 %	$1.10E^{-05}$	31 %	$1.26E^{-06}$	4 %
Photochemical ozone creation	m^3	$3.86E^{+04}$	$3.14E^{+04}$	81 %	$3.49E^{+03}$	9 %	$3.69E^{+03}$	10 %
Air acidification	g ~C_2H_4	$1.27E^{-01}$	$1.06E^{-01}$	83 %	$1.40E^{-02}$	11 %	$7.20E^{-03}$	6 %
Hazardous waste production	g ~H^+	$2.38E^{-02}$	$1.84E^{-02}$	77 %	$2.38E^{-03}$	10 %	$2.97E^{-03}$	13 %
Water eutrophication	dm^3	$4.84E^{+01}$	$4.35E^{+01}$	90 %	2.09	4 %	2.8	6 %
Air toxicity	g ~PO_4	$8.41E^{-03}$	$7.84E^{-03}$	94 %	$3.76E^{-04}$	4 %	$1.91E^{-04}$	2 %
Water toxicity	kg	$1.13E^{-03}$	$9.18E^{-04}$	81 %	$1.29E^{-05}$	1 %	$2.01E^{-04}$	18 %

The life cycle analysis shows that the M phase (M, D or U phase) is the life cycle phase which has the greatest impact on the majority of environmental indicators. The environmental parameters of this phase have been optimized at the design stage.
Depending on the analysis of environmental impacts, the parameters of other products in this family may be extrapolated from the table above with a error lower than 0.2 %.
The product benefits from a reduction of the cable diameter up to 5 % leading to a reduction of the lineic weigth up to 5 % compared to the previous offer for equivalent performances which allows reducing its impact on environment.

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System approach

As the product of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction within an assembly or an installation submitted to this Directive.

N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.
Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of the installation.

Glossary

Raw Material Depletion (RMD)

This indicator quantifies the consumption of raw materials during the life cycle of the product. It is expressed as the fraction of natural resources that disappear each year, with respect to all the annual reserves of the material.

Energy Depletion (ED)

This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources.
This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.

Water Depletion (WD)

This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm^3.

Global Warming (GW)

The global warming of the planet is the result of the increase in the greenhouse effect due to the sunlight reflected by the earth's surface being absorbed by certain gases known as "greenhouse-effect" gases. The effect is quantified in gram equivalent of CO_2.

Ozone Depletion (OD)

This indicator defines the contribution to the phenomenon of the disappearance of the stratospheric ozone layer due to the emission of certain specific gases. The effect is expressed in gram equivalent of CFC-11.

Photochemical Ozone Creation (POC)

This indicator quantifies the contribution to the "smog" phenomenon (the photochemical oxidation of certain gases which generates ozone) and is expressed in gram equivalent of ethylene (C_2H_4).

Air Acidification (AA)

The acid substances present in the atmosphere are carried by rain.
A high level of acidity in the rain can cause damage to forests.
The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mode equivalent of H^+.

Hazardous Waste Production (HWP)

This indicator calculates the quantity of specially treated waste created during all the life cycle phases (manufacturing, distribution and utilization). For example, special industrial waste in the manufacturing phase, waste associated with the production of electrical power, etc.
It is expressed in kg.

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