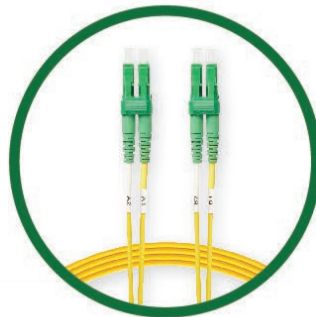
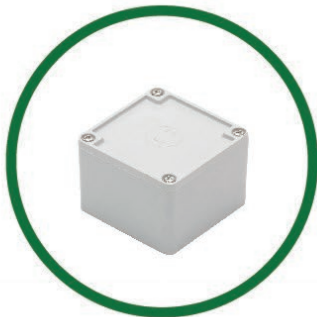
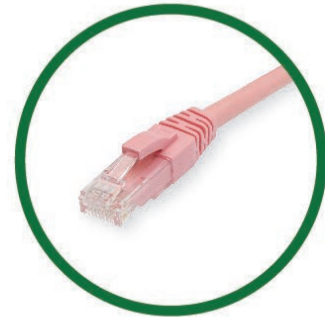


# EPD™

Environmental Product Declaration

Global GreenTag©™ EPD Program Level  
38/71 Eagle St Brisbane QLD 4000  
Australia  
Environmental Product Declaration  
in accordance with ISO 14025  
and EN 15804+A1  
Issued 27 January 2023  
Valid to 27 January 2028  
Version 2.0  
Updated 04 December 2023



 **CABLING®**  
QUALITY PRODUCTS FOR A CONNECTED WORLD



4Cabling Pty Ltd

**Cable, Cable Reel, Patch Cord and  
and Conduit Products**

  
**GLOBAL  
GREENTAG®  
INTERNATIONAL**

## 1. General information

**Table1.** General information of EPD program

Owner of the Declaration	4Cabling Pty Ltd	
	Unit 4, 201 Parramatta Road	
	Homebush West NSW 2140, Australia	
	<a href="https://www.4cabling.com.au/">https://www.4cabling.com.au/</a>	
EPD Program holder	Global GreenTag International Pty Ltd	
Product Category Rules (PCR)	EN 15804:2012+A2:2019- Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products	
Approved and Third Party Verified by	Dr Nana Bortsie- Aryee, Global GreenTag International	
EPD prepared by	IKE Environmental Technology Co. Ltd.	
	Tel & Fax: +86-028-85404099	
	<a href="http://www.ike-global.com">www.ike-global.com</a>	
	<a href="mailto:support@ike-global.com">support@ike-global.com</a>	
LCA Software and LCI database:	eFootprint software CLCD database0.8/0.9, Ecoinvent v3.8 database	
Registration Numbers:	FOU:CP01:2023:EP	
Issue date:	January 23,2023	
Valid to:	January 23,2028	
Markets of Applicability:	Australia, New Zealand, USA, Canada	
EPD Type:	Product Specific	
EPD Scope:	Cradle to Grave	
Time Representativeness:	2021 January-December	
LCIA Method and Version:	CML-IA	

## 2. Product Information

### 2.1 Product Specification

**Table 2.8** Electrical cables and accessories Products Specification

Electrical cables and accessories products		
Serial number	Product Code	Specific model
1	Ethernet Cable Reel	-
2	Fibre Optic Cable	-
3	Patch Cord	UTP-PVC
4	Patch Cord	UTP-LSZH

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5	Patch Cord	SFTP-LSZH
6	Conduit	Corrugated
7	Conduit	PVC Rigid
8	Conduit fittings	PVC

### 2.2 Material Composition

The primary materials include Conductor, Insulation, Jacket/Sheath, LSZH polyolefins, Ceramic (ZrO<sub>2</sub>), Optical Fiber, Kevlar, Connector, polyvinyl chloride (PVC), Cable-PVC, and various filler, stabilizers and plasticisers.

**Table 3.** Material content for the electrical cables and accessories products, 1t

Product	Component	Material	Percent
Ethernet Cable Reel	Conductor	Different calibre copper	0.2~44%
	Insulation	HDPE insulation material	0~10%
	Jacket/Sheath	Polyvinyl chloride	4~34%
	PE Plastic Cross Skeleton	PE-HD	0~7%
	Aluminum Foil	Aluminum foil	0~2%
	Rip Cord	Polypropylene	0~0.50%
Fibre Optic Cable	LSZH polyolefins	Aluminum hydroxide\((C_2H_4)_x.(C_4H_6O_2)_y\)polyethylene	8~37.8%
	Kevlar	phenylenediamine	0~9%
	Optical Fiber	glass fibre\UV-Curable Polymer	1.90~3%
	PBT	polybutylene terephthalate	0~10%
	Ceramic(ZrO <sub>2</sub> )	ceramic frit	0~11%
Patch Cord	PVC	PVC powder(polyvinylchloride)\PLASTICIZER\CaCO <sub>3</sub>	5~6%
	Cable	CuSn(bronze) \C <sub>2</sub> H <sub>4</sub> \PVC carfskin(polyvinylchloride)\Al <sub>2</sub> O <sub>3</sub> \Ethylene-vinyl acetate copolymer\Pentaerythritol Tetrakis	91~92%
	Connector	Polycarbonate\Iron shell	3~4%

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Conduit	Ca/Zn composite stabilizer	Zinc stearate\Calcium stearate	1~4.5%
	TiO2	titanium dioxide	1.4~5%
	Acrylics	methyl acrylate	0.4~1%
	PVC	polyvinylchloride	60%~96.50%
	CaCO3	calcium carbonate	0~24%
	Chlorinated polyethylene	Chlorinated polyethylene	0~6.4%

No substances required to be reported as hazardous are associated with the production of this product

### 2.3 Packing

The electrical cables and accessories products are packaged for shipment using wooden reel\cardboard\plastic wrap and plastic film.

**Table 4.** Material content for the electrical cables and accessories product packaging, per ton.

Component	Material	Percent
Wooden cable reel	Wooden furniture	0~91%
Cardboard Box	Corrugated carton	2.5~100%
Reel drum rubber shaft	polypropylene	0~1%
Polyethylene film	Low density polyethylene film	0%~100%

### 2.4 Reference service life (RSL)

The Reference Service Life (RSL) of the electrical cables and accessories product is 15 years.

## 3. LCA Calculation rules

### 3.1 Declared Unit

The declared unit is 1 ton (t) of 8 installed electrical cables and accessories products from cradle to gate.

The manufacturer declares a 1-year commercial warranty and lifetime residential warranty for their products. For the present assessment, a reference service lifetime (RSL) of 15 years is assumed based on the manufacturer’s recommendation and consistent with similar, industry-wide LCAs.

### 3.2 System boundaries

It is a cradle to grave with options EPD. The system boundary is based on the EN 15804 description.

The table below shows the system boundaries according to EN 15804

**Table 5.** System boundaries according to EN 15804

Product			Construction Process		Use							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material extraction and processing	Transport to manufacturer	Manufacturing	Transport	Construction - installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery and/or recycling potential
X	X	X	X	X	X	X	NR	NR	NR	NR	NR	X	X	X	X	X

The description of life cycle stage A-D are as follows:

A1 Extraction and processing of raw materials for the electrical cables and accessories products components.

A2 Transport of component materials to the manufacturing facilities

A3 Manufacturing of electrical cables and accessories products and packaging

A4 Transport of product (including packaging) to the building site

A5 Installation of product is accomplished using hand tools with no associated emissions and negligible impacts.

B1 Use of the electrical cables and accessories products in a building setting. There are no

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associated emissions or impacts from the use of the product.

B2 No maintenance required according to the manufacturer.

B3-B5 The electrical cables and accessories products is not expected to require repair or replacement over its lifetime. Impacts from these phases have negligible impact (NR)

B6 There is no operational energy use associated with the use of the product (NR)

B7 There is no operational water use associated with the use of the product (NR)

C1 Demolition of the products is accomplished using hand tools with no associated emissions and negligible impacts

C2 Transport of electrical cables and accessories products to local recycling centre at end-of-life

C3 The products is disposed of by using hand tools manually strip the metal material from it which require no waste processing

C4 Disposal of electrical cables and accessories products for underground deposit

D Recyclable metal and PVC materials from C3 and part of the environmental load of production waste disposal in the product stage A1-A3

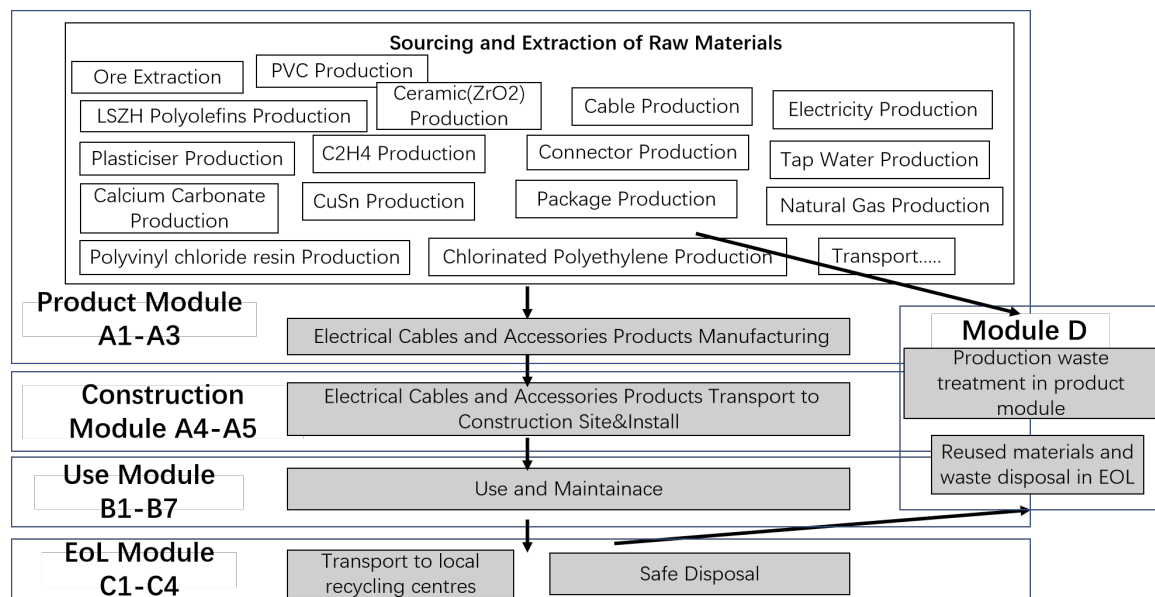


Figure 1. Electrical Cables and Accessories Products Cradle to Grave System Boundary

### 3.3 Time period

Manufacturer-supplied data (primary data) are based on annualized production for 2021.

### 3.3 Estimates and assumptions

Stage B1-B7 - use: According to the supplier, assumption product don't have any energy, water resource consumption and material (Product parts) replacement during use.

Stage C - end of life: it is assumed that the product is disposed of by landfilling which require

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no waste processing and transport distance of flooring product to landfill site is 20km.

Stage D – benefits and loads beyond the system boundary: includes reuse, recovery and/or recycling, and transport to recycling operations. We assume metal and PVC materials recycle content and transport distance of flooring product to recycle site is 20km and PVC materials from C3 and part of the environmental load of production waste in addition to the parts that can be directly reused in the factory, other waste disposal in the product stage A1-A3

### 3.4 Cut-off criteria

In this study, all available data from production are considered, i.e. raw materials used and electric power consumption. The total sum of neglected processes does not exceed 5% of energy usage and mass for the overall life cycle. The manufacturer provided data on the transport expenditure for all relevant material flows. Machines and facilities required during production are not included.

### 3.5 Background data

For life cycle modelling of the considered products, the online software eFootprint has been used to model the product systems considered in this study. All relevant background datasets are taken from the CLCD 0.8/0.9 and Ecoinvent V3.8 (EI v3.8) database. The datasets from CLCD and Ecoinvent date from 2013 to 2021 and are documented in the online documentation.

**Table 6.**Data sources for the 4Cabling electrical cables and accessories products system

Component	Material Description	Material Dataset	Data Source	Publication Date
<b>Ethernet Cable Reel PRODUCT COMPONENT</b>				
<b>Conductor</b>	copper	market for wire drawing, copper (Global)	EI v3.8	2021
<b>Insulation</b>	HDPE insulation	High density polyethylene (kg), industry LCA- represents the market or technical average level, China	CLCD0.9.0	2020
<b>Jacket/Sheath</b>	polyvinyl chloride	market for polyvinylchloride, emulsion polymerised (Global)	EI v3.8	2021
<b>PE Plastic Cross Skeleton</b>	PE-HD	High density polyethylene (kg), industry LCA- represents the market or technical average level, China	CLCD0.9.0	2020
<b>Aluminum Foil</b>	Aluminium foil	market for aluminium collector foil, for Li-ion battery	EI v3.8	2021
<b>Rip Cord-Ethernet Cable Reel</b>	Polypropylene	polypropylene (kg), industry LCA- represents the market or technical average level, China	CLCD0.8.0	2013
<b>Fibre Optic Cable PRODUCT COMPONENT</b>				
<b>LSZH polyolefins</b>	Aluminum hydroxide	Aluminium hydroxide (kg), industry LCA- represents the	CLCD0.8.0	2013

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		market or technical average level, China		
	(C <sub>2</sub> H <sub>4</sub> ) <sub>x</sub> .(C <sub>4</sub> H <sub>6</sub> O <sub>2</sub> ) <sub>y</sub>	Ethylene-market for ethylene(Global)	EI v3.8	2021
	polyethylene	Silane crosslinked polyethylene (kg), industry LCA- represents the market or technical average level, China	CLCD0.9.0	2020
<b>Kevlar</b>	phenylenediamine	para-phenylene diamine production (Global)	EI v3.8	2021
<b>Optical Fiber</b>	glass fibre	market for glass fibre reinforced plastic, polyester resin, hand lay-up (Global)	EI v3.8	2021
	UV-Curable Polymer	market for coating powder(Rest of world)	EI v3.8	2021
<b>PBT</b>	polybutylene terephthalate	market for polyethylene terephthalate, granulate, amorphous (Global)	EI v3.8	2021
<b>Ceramic(ZrO<sub>2</sub>)</b>	ceramic frit	market for frit, for ceramic tile (Global)	EI v3.8	2021
<b>Patch Cord PRODUCT COMPONENT</b>				
<b>PVC</b>	Pvc powder (polyvinyl chloride)	market for polyvinylchloride, emulsion polymerised (Global)	EI v3.8	2021
	PLASTICIZER	market for plasticiser, for concrete, based on sulfonated melamine formaldehyde(Global)	EI v3.8	2021
	CaCO <sub>3</sub>	market for calcium carbonate, precipitated(Rest of world)	EI v3.8	2021
<b>Cable</b>	CuSn (bronze)	market for bronze (Global)	EI v3.8	2021
	C <sub>2</sub> H <sub>4</sub>	market for ethylene(Rest of world)	EI v3.8	2021
	PVC carfskin(polyvinylchloride)	market for polyvinylchloride, emulsion polymerised (Global)	EI v3.8	2021
	AlH <sub>3</sub> O <sub>3</sub>	aluminium hydroxide (kg), industry LCA- represents the market or technical average level, China	CLCD0.8.0	2013
	Ethylene-vinyl acetate copolymer	market for ethylene vinyl acetate copolymer(Rest of world)	EI v3.8	2021
	Pentaerythritol Tetrakis	market for pentaerythritol (Global)	EI v3.8	2021
<b>Connector</b>	polycarbonate	market for polycarbonate (Global)	EI v3.8	2021
	Gold flake	market for bronze (Global)	EI v3.8	2021
<b>Conduit PRODUCT COMPONENT</b>				
<b>Ca/ Zn composite stabilizer</b>	Zinc stearate	market for zinc oxide (global)	EI v3.8	2021
	Calcium stearate	market for calcium carbide, technical grade(Rest of world)	EI v3.8	2021
<b>TiO<sub>2</sub></b>	titanium dioxide	market for rutile, 95% titanium dioxide (Global)	EI v3.8	2021



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<b>Acrylics</b>	methyl acrylate	market for methyl acrylate (Global)	EI v3.8	2021
<b>PVC</b>	Polyvinyl chloride	market for polyvinylchloride, emulsion polymerised (Global)	EI v3.8	2021
<b>CaCO3</b>	Chlorinated polyethylene	market for calcium carbonate, precipitated(Rest of world)	EI v3.8	2021
<b>Chlorinated polyethylene</b>	PE-HD	High density polyethylene (kg), industry LCA- represents the market or technical average level, China	CLCD0.9.0	2020
<b>PACKAGING</b>				
<b>Packaging</b>	Cardboard Box	Corrugated carton(kg), industry LCA- represents the market or technical average level, China	CLCD0.9.0	2020
<b>Packaging</b>	Reel drum rubber shaft	polypropylene (kg), industry LCA- represents the market or technical average level, China	CLCD0.8.0	2013
<b>Packaging</b>	Wooden cable reel	market for furniture, wooden (Global)	Ecoinvent 3.8	2021
<b>Packaging</b>	Polyethylene film	market for packaging film, low density polyethylene (Global)	Ecoinvent 3.8	2021
<b>TRANSPORTATION</b>				
<b>Road transport</b>	Diesel Truck	Heavy diesel truck transport (load: 10t) (t*km, maximum total mass: 17000kg~19000kg), industry LCA- represents the market or technical average level, China	CLCD0.9.0	2020
<b>Road transport</b>	Diesel Truck	transport, freight, lorry 3.5-7.5 metric ton, EURO3-market for transport, freight, lorry 7.5-16 metric ton, EURO5(Global)	EI v3.8	2021
<b>Ship transport</b>	Diesel Truck	Container ship transport (200TEU) (T *km, 13T /TEU), industry LCA- represents the market or technology average level, China	CLCD0.9.0	2020
<b>Energy</b>				
<b>Electricity</b>	Grid electricity-Product	East China Power Grid (kWh, 220V/380V,50Hz), industry LCA- representing market or technology average level, China	CLCD0.9.0	2020
<b>Diesel</b>	Diesel oil	Diesel oil(t), industry LCA- Represents the market or technology average level, China	CLCD0.9.0	2020
<b>Water</b>	Tapwater	Tap water(t), industry LCA- Represents the market or technology average level, China	CLCD0.9.0	2020
<b>Waste Treatment</b>				

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<b>Treatment</b>	Landfill	treatment of municipal solid waste, sanitary landfill (Rest of world)	EI v3.8	2021
<b>Copper scrap</b>	Scrap copper recovery	market for copper scrap, sorted, pressed (Global)	EI v3.8	2021
<b>Waste PVC</b>	waste polyvinyl chloride recycle	market for waste polyvinylchloride product(Rest of world)	EI v3.8	2021
<b>Waste CuSn</b>	Bronze scrap recycle	bronze scrap, post-consumer to generic market for bronze (Global)	EI v3.8	2021

### 3.6 Data quality Assessment

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

**Table 7.** Data quality assessment for the 4Cabling electrical cables and accessories products system

Data Quality Parameter	Data Quality Discussion
<b>Time-Related Coverage:</b> Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are less than 3 years old (typically 2020 and 2021). All of the data used represented an average of at least one year's worth of data collection, and up to three years in some cases. Manufacturer-supplied data (primary data) are based on annualized production for 2021.
<b>Geographical Coverage:</b> Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Electricity use for product manufacture is modeled using representative data for China. Surrogate data used in the assessment are representative of global or rest of world operations. Data representative of rest of world operations are considered sufficiently similar to actual processes. Data representing product disposal are based on regional statistics.
<b>Technology Coverage:</b> Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate.
<b>Precision:</b> Measure of the variability of the data values for each data expressed	Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
<b>Completeness:</b> Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the electrical cables and accessories products. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.

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<p><b>Representativeness:</b> Qualitative assessment of the degree to which the data set reflects the true population of interest</p>	<p>Data used in the assessment represent typical or average processes as currently reported from multiple data sources, and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.</p>
<p><b>Consistency:</b> Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis</p>	<p>The consistency of the assessment is considered to be high. Different portions of the product life cycle are equally considered; however, it must be noted that final disposition of the product is based on assumptions of current practices in China.</p>
<p><b>Reproducibility:</b> Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study</p>	<p>Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.</p>
<p><b>Sources of the Data:</b> Description of all primary and secondary data sources</p>	<p>Data representing energy use at 4Cabling’s facility in China represent an annual average and are considered of high quality due to the length of time over which these data are collected. For secondary LCI datasets, CLCD 0.8 and 0.9, Ecoinvent v3.8 LCI data are used.</p>
<p><b>Uncertainty of the Information:</b> Uncertainty related to data, models, and assumptions</p>	<p>Uncertainty related to materials in the electrical cables and accessories products and packaging is low. Actual supplier data for upstream operations was not available for all suppliers and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (&lt;10 years).</p>

### 3.7 EoL Allocation method

According to ISO 14044/44, allocation is needed in several situations for LCA. One of those is recycling of end-of-life materials.

Therefore, a reasonable recycling method is needed to calculate the environmental benefits of the reprocessed materials at EoL stage. This study will quote “Allocation 50/50 method”.

Allocation 50/50 is the most common recycling methods, which has been discussed and accepted by PEF guide It “allocates the impacts and benefits due to recycling equally between the producer using recycled material and the producer producing a recycled product” [Product Environmental Footprint (PEF) Guide,2013].

### 3.8 Comparability

Environmental product declarations of construction products may not be comparable if they do not comply with EN 15804 and environmental product declarations within the same category from

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different programs may not be comparable.

## 4. Life cycle Inventory parameters

All Life cycle inventory parameters results are calculated using eFootprint, using primary and secondary inventory data.

**Table 8.** Key life cycle inventory parameters for 1t Ethernet Cable Reel using 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
Non-renewable primary energy resources not feedstock	MJ	2.95E+04	4.15E+00	0.00E+00	1.72E+00	-5.76E-01	2.95E+04
Non-renewable primary energy resources feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Non-renewable primary energy resources	MJ	2.95E+04	4.15E+00	0.00E+00	1.72E+00	-5.76E-01	2.95E+04
Renewable primary energy not feedstock	MJ	1.78E+05	6.01E+03	0.00E+00	2.86E+02	-5.84E+01	1.84E+05
Renewable primary energy feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Renewable primary energy	MJ	1.78E+05	6.01E+03	0.00E+00	2.86E+02	-5.84E+01	1.84E+05
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m3	6.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.50E-01
<b>Environmental information describing waste categories</b>							
Hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	1.95E+02	0.00E+00	1.95E+02
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Environmental information describing output flows</b>							
Components for re-use	kg	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	8.05E+02	8.05E+02
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	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

**Table 9.** Key life cycle inventory parameters for 1t of Fibre Optic Cable using 15 years

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Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
Non-renewable primary energy resources not feedstock	MJ	1.05E+03	3.30E+00	0.00E+00	2.56E+00	-9.41E-01	1.06E+03
Non-renewable primary energy resources feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Non-renewable primary energy resources</b>	MJ	1.05E+03	3.30E+00	0.00E+00	2.56E+00	-9.41E-01	1.06E+03
Renewable primary energy not feedstock	MJ	8.20E+04	4.78E+03	0.00E+00	4.41E+02	-5.84E+01	8.72E+04
Renewable primary energy feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Renewable primary energy</b>	MJ	8.20E+04	4.78E+03	0.00E+00	4.41E+02	-5.84E+01	8.72E+04
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m3	3.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-01
<b>Environmental information describing waste categories</b>							
Hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	6.32E+02	0.00E+00	6.32E+02
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Environmental information describing output flows</b>							
Components for re-use	kg	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	3.68E+02	3.68E+02
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	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

Table 10. Key life cycle inventory parameters for 1t Patch Cord (UTP-PVC) using 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
Non-renewable primary energy resources not feedstock	MJ	4.17E+03	1.23E+00	0.00E+00	2.37E+00	-2.97E+01	4.15E+03

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<b>Non-renewable primary energy resources feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Non-renewable primary energy resources</b>	MJ	4.17E+03	1.23E+00	0.00E+00	2.37E+00	-2.97E+01	4.15E+03
<b>Renewable primary energy not feedstock</b>	MJ	2.73E+05	1.77E+03	0.00E+00	4.11E+02	-3.01E+03	2.72E+05
<b>Renewable primary energy feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Renewable primary energy</b>	MJ	2.73E+05	1.77E+03	0.00E+00	4.11E+02	-3.01E+03	2.72E+05
<b>Use of secondary material</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Use of renewable secondary fuels</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Use of non-renewable secondary fuels</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Net use of fresh water</b>	m3	8.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.02E+00
<b>Environmental information describing waste categories</b>							
<b>Hazardous waste</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Non-hazardous waste</b>	kg	0.00E+00	0.00E+00	0.00E+00	5.61E+02	3.70E+00	5.65E+02
<b>Radioactive waste disposed</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Environmental information describing output flows</b>							
<b>Components for re-use</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Materials for recycling</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.39E+02	4.39E+02
<b>Materials for energy recovery</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Exported energy</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 11. Key life cycle inventory parameters for 1t Patch Cord (UTP-LSZH) using 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
<b>Non-renewable primary energy resources not feedstock</b>	MJ	4.17E+03	1.23E+00	0.00E+00	2.37E+00	-2.87E-01	4.17E+03
<b>Non-renewable primary energy resources feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Non-renewable primary energy resources</b>	MJ	4.17E+03	1.23E+00	0.00E+00	2.37E+00	-2.87E-01	4.17E+03

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<b>Renewable primary energy not feedstock</b>	MJ	2.78E+05	1.77E+03	0.00E+00	4.11E+02	-2.85E+01	2.80E+05
<b>Renewable primary energy feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Renewable primary energy</b>	MJ	2.78E+05	1.77E+03	0.00E+00	4.11E+02	-2.85E+01	2.80E+05
<b>Use of secondary material</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Use of renewable secondary fuels</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Use of non-renewable secondary fuels</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Net use of fresh water</b>	m3	8.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.02E+00
<b>Environmental information describing waste categories</b>							
<b>Hazardous waste</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Non-hazardous waste</b>	kg	0.00E+00	0.00E+00	0.00E+00	5.61E+02	3.70E+00	5.65E+02
<b>Radioactive waste disposed</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Environmental information describing output flows</b>							
<b>Components for re-use</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Materials for recycling</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.39E+02	4.39E+02
<b>Materials for energy recovery</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Exported energy</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**Table 12.**Key life cycle inventory parameters for 1t Patch Cord Patch Cord (SFTP-LSZH)sing 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
<b>Non-renewable primary energy resources not feedstock</b>	MJ	4.16E+03	1.23E+00	0.00E+00	2.36E+00	-2.87E-01	4.17E+03
<b>Non-renewable primary energy resources feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Non-renewable primary energy resources</b>	MJ	4.16E+03	1.23E+00	0.00E+00	2.36E+00	-2.87E-01	4.17E+03
<b>Renewable primary energy not feedstock</b>	MJ	2.75E+05	1.77E+03	0.00E+00	4.11E+02	-2.86E+01	2.77E+05
<b>Renewable primary energy feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



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<b>Total Renewable primary energy</b>	MJ	2.75E+05	1.77E+03	0.00E+00	4.11E+02	-2.86E+01	2.77E+05
<b>Use of secondary material</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Use of renewable secondary fuels</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Use of non-renewable secondary fuels</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Net use of fresh water</b>	m3	8.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.02E+00
<b>Environmental information describing waste categories</b>							
<b>Hazardous waste</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Non-hazardous waste</b>	kg	0.00E+00	0.00E+00	0.00E+00	5.61E+02	3.70E+00	5.65E+02
<b>Radioactive waste disposed</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Environmental information describing output flows</b>							
<b>Components for re-use</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Materials for recycling</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.40E+02	4.40E+02
<b>Materials for energy recovery</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Exported energy</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**Table 13.** Key life cycle inventory parameters for 1t Corrugated Conduit using 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
<b>Non-renewable primary energy resources not feedstock</b>	MJ	9.87E+02	4.01E+00	0.00E+00	9.18E-01	-7.97E-01	9.91E+02
<b>Non-renewable primary energy resources feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Non-renewable primary energy resources</b>	MJ	9.87E+02	4.01E+00	0.00E+00	9.18E-01	-7.97E-01	9.91E+02
<b>Renewable primary energy not feedstock</b>	MJ	2.18E+05	5.81E+03	0.00E+00	1.89E+02	-3.65E+01	2.24E+05
<b>Renewable primary energy feedstock</b>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Total Renewable primary energy</b>	MJ	2.18E+05	5.81E+03	0.00E+00	1.89E+02	-3.65E+01	2.24E+05
<b>Use of secondary material</b>	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m3	1.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E+00
<b>Environmental information describing waste categories</b>							
Hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	3.50E+01	0.00E+00	3.50E+01
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Environmental information describing output flows</b>							
Components for re-use	kg	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	9.65E+02	9.65E+02
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	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

Table 14. Key life cycle inventory parameters for 1t PVC Rigid Conduit using 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
<b>Indicators describing resource use</b>							
Non-renewable primary energy resources not feedstock	MJ	8.33E+02	4.01E+00	0.00E+00	1.92E+00	-3.29E-01	8.39E+02
Non-renewable primary energy resources feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Non-renewable primary energy resources	MJ	8.33E+02	4.01E+00	0.00E+00	1.92E+00	-3.29E-01	8.39E+02
Renewable primary energy not feedstock	MJ	2.03E+05	5.81E+03	0.00E+00	3.42E+02	-1.50E+01	2.09E+05
Renewable primary energy feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Renewable primary energy	MJ	2.03E+05	5.81E+03	0.00E+00	3.42E+02	-1.50E+01	2.09E+05
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m3	1.11E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E+00

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Environmental information describing waste categories							
Hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	3.98E+02	0.00E+00	3.98E+02
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Environmental information describing output flows							
Components for re-use	kg	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	6.02E+02	6.02E+02
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	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

Table 15. Key life cycle inventory parameters for 1t PVC Conduit fittings using 15 years

Parameter	Units	Product	Construction	Use	EoL	D	Total
Indicators describing resource use							
Non-renewable primary energy resources not feedstock	MJ	1.39E+03	4.01E+00	0.00E+00	1.91E+00	-4.98E-01	1.39E+03
Non-renewable primary energy resources feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Non-renewable primary energy resources	MJ	1.39E+03	4.01E+00	0.00E+00	1.91E+00	-4.98E-01	1.39E+03
Renewable primary energy not feedstock	MJ	3.92E+05	5.81E+03	0.00E+00	3.42E+02	-2.28E+01	3.98E+05
Renewable primary energy feedstock	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Renewable primary energy	MJ	3.92E+05	5.81E+03	0.00E+00	3.42E+02	-2.28E+01	3.98E+05
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m3	2.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E+00
Environmental information describing waste categories							
Hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste	kg	0.00E+00	0.00E+00	0.00E+00	3.97E+02	0.00E+00	3.97E+02
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Environmental information describing output flows							
Components for re-use	kg	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	6.03E+02	6.03E+02
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	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

## 5. LCA Scenarios and Additional Technical Information

### 5.1 Transport to the building site(A4)

Distribution of the electrical cables and accessories products to the port of Sydney is included in the assessment. Transportation parameters for modeling transport to product distribution centers are summarized in Table 16.

**Table 16.** Transport parameters (A4)

Vehicle type used for transport	Vehicle load capacity	Average Distance to retail store	Capacity utilization factor
Diesel truck	10ton	100km	1
Ocean diesel freighter	2600ton	5894km	1

### 5.2 Installation in the building (A5)

Installation of the product is accomplished using hand tools with no associated emissions and negligible impacts and no waste generated.

### 5.3 Use stage (B1)

No impacts are associated with the use of the product over the Reference Service Lifetime.

### 5.4 Maintenance stage (B2)

According to the manufacturer, no maintenance measures are associated with the use of the product over the Reference Service Lifetime.

### 5.5 Repair/Replacement/Refurbishment stage (B3 - B5)

Product repair, replacement and refurbishment are not relevant during the lifetime of the product.

### 5.6 Building operation stage (B6 – B7)

There is no operational energy or water use associated with the use of the product.

### 5.7 EoL stage (C1 - C4, D)

The disposal stage includes demolition of the products (C1); transport of the electrical cables and accessories products to waste treatment facilities (C2); waste processing (C3); and associated emissions as the product degrades in a landfill (C4). For the 4Cabling electrical cables and accessories products, no emissions are generated during demolition (C1) while no waste processing (C3) is required for underground deposit.

Transportation of waste materials at end-of-life (C2) assumes a 20 km average distance to disposal. Metal and PVC materials in the product are assumed at end-of-life. And 50% value correction factor of electrical cables and accessories products is based upon empirical data.

Table 17. EoL parameters for Electrical Cables And Accessories products, per 1 t

Processes	Unit	Ether net Cable Reel	Fibre Optic Cable	Patch Cord (UTP-PVC)	Patch Cord (UTP-LSZH)	Patch Cord (SFTP-LSZH)	Corrugated Conduit	PVC Rigid Conduit	PVC Conduit fittings
collection process	kg: collected separately	1000	1000	1000	1000	1000	1000	1000	1000
recovery system	kg:for recycling	805	368	439	439	440	965	602	603
Safe disposal	kg:for final disposal	195	632	561	561	560	35	398	397
transportation	km	20	20	20	20	20	20	20	20

## 6. LCA Results

The environmental impact category indicators are also reported based on the CML-IA characterization factors according to EN15804.

**Table 18.** LCA impact indicators

Core environmental impact indicators		
Impact category	Indicator	Unit
Climate change – total	GWP-total	kg CO2 eq
Depletion of abiotic resources -fossil fuels	ADP-fossil	MJ, net calorific value
Depletion of abiotic resources -minerals and metals	ADP minerals&metals	kg Sb eq.
Water use	WDP	m3 world eq
Acidification	AP	mol H+ eq.
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.
Ozone Depletion	ODP	kg CFC 11 eq.
Photochemical ozone formation	POCP	kg NMVOC eq.
Climate change - fossil	GWP-fossil	kg CO2 eq
Climate change - land use and land use change	GWP-luluc	kg CO2 eq
Climate change - biogenic	GWP-biogenic	kg CO2 eq
Eutrophication aquatic marine	EP-marine	kg N eq.
Eutrophication terrestrial	EP-terrestrial	mol N eq

**Additional environmental impact indicators**

Impact category	Indicator	Unit
Particulate Matter emissions	PM	Disease incidence
Ionizing radiation, human health	IRP	kBq U235 eq
Eco-toxicity (freshwater)	ETP-fw	CTUe
Human toxicity, cancer effects	HTP-c	CTUh
Human toxicity, non-cancer effects	HTP-nc	CTUh
Land use related impacts/ Soil quality	SQP	dimensionless

Results of the Life Cycle Assessment are presented below.

**Table 19.** Cradle to Grave LCA results for 1t 8 Electrical Cables And Accessories Products

Core environmental impact indicators-1						
Product/LCIA Impact	GWP	GWP-Fossil	GWP-Biogenic	GWP-Land use	ODP	AP
1 Ethernet Cable Reel	7.65E+03	6.60E+03	1.05E+03	4.73E-02	8.84E-04	2.01E+01
2 Fibre Optic Cable	3.83E+03	3.13E+03	7.04E+02	3.23E-02	1.62E-03	5.32E+00
3 Patch Cord(UTP-PVC)	6.20E+03	5.28E+03	9.13E+02	5.51E-03	4.31E-04	1.22E+02
4 Patch Cord(UTP-LSZH)	6.38E+03	5.43E+03	9.45E+02	2.66E-02	3.17E-04	1.23E+02

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5 Patch Cord(SFTP-LSZH)	6.23E+03	5.32E+03	9.05E+02	2.68E-02	3.10E-04	1.26E+02	
6 Corrugated Conduit	4.07E+03	3.69E+03	3.80E+02	1.41E-02	1.16E-03	8.06E+00	
7 PVC Rigid Conduit PVC	3.67E+03	3.11E+03	5.62E+02	1.11E-02	7.46E-04	6.02E+00	
8 PVC Conduit fittings PVC	4.34E+03	3.80E+03	5.44E+02	1.09E-02	7.50E-04	6.00E+00	
Core environmental impact indicators-2							
Product/LCIA Impact	EP-Fresh water	EP-terrestrial	EP-marine	POCP	ADP-fossil	ADP-mineral and metal	WU
1 Ethernet Cable Reel	2.38E+00	1.08E+02	1.08E+01	3.11E+01	1.62E+05	2.67E-01	1.27E+06
2 Fibre Optic Cable	4.29E-01	5.42E+01	6.82E+00	1.59E+01	8.72E+04	3.37E-02	2.29E+05
3 Patch Cord(UTP-PVC)	2.07E+01	1.92E+02	1.51E+01	5.23E+01	1.16E+05	6.77E+00	2.67E+06
4 Patch Cord(UTP-LSZH)	2.06E+01	1.98E+02	1.57E+01	5.47E+01	1.23E+05	6.76E+00	2.64E+06
5 Patch Cord(SFTP-LSZH)	2.08E+01	1.99E+02	1.57E+01	5.47E+01	1.21E+05	6.80E+00	2.68E+06
6 Corrugated Conduit	8.35E-01	5.46E+01	4.83E+00	1.47E+01	9.87E+04	3.82E-02	5.50E+05
7 PVC Rigid Conduit PVC	6.55E-01	5.41E+01	5.52E+00	1.46E+01	8.90E+04	2.86E-02	4.32E+05
8 PVC Conduit fittingsPVC	6.36E-01	5.42E+01	5.52E+00	1.45E+01	9.90E+04	2.88E-02	3.92E+05
Additional environmental impact indicators							
Product/LCIA Impact	PM	IRP	ET-freshwater	HT-cancer	HT-non cancer	SQP	
1 Ethernet Cable Reel	ND	4.29E+02	8.60E+05	3.86E-05	3.20E-03	ND	
2 Fibre Optic Cable	ND	3.03E+02	1.45E+05	2.23E-05	2.04E-03	ND	
3 Patch Cord(UTP-PVC)	ND	4.71E+02	9.92E+06	1.86E-04	1.99E-02	ND	
4 Patch Cord(UTP-LSZH)	ND	4.72E+02	9.90E+06	1.86E-04	1.99E-02	ND	
5 Patch Cord(SFTP-LSZH)	ND	4.66E+02	1.01E+07	1.87E-04	2.00E-02	ND	
6 Corrugated Conduit	ND	2.32E+02	1.11E+05	9.77E-05	1.25E-02	ND	
7 PVC Rigid Conduit PVC	ND	1.79E+02	1.35E+05	9.96E-05	1.20E-02	ND	
8 PVC Conduit fittings PVC	ND	2.13E+02	1.34E+05	2.44E-04	2.94E-02	ND	

### 7. References

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