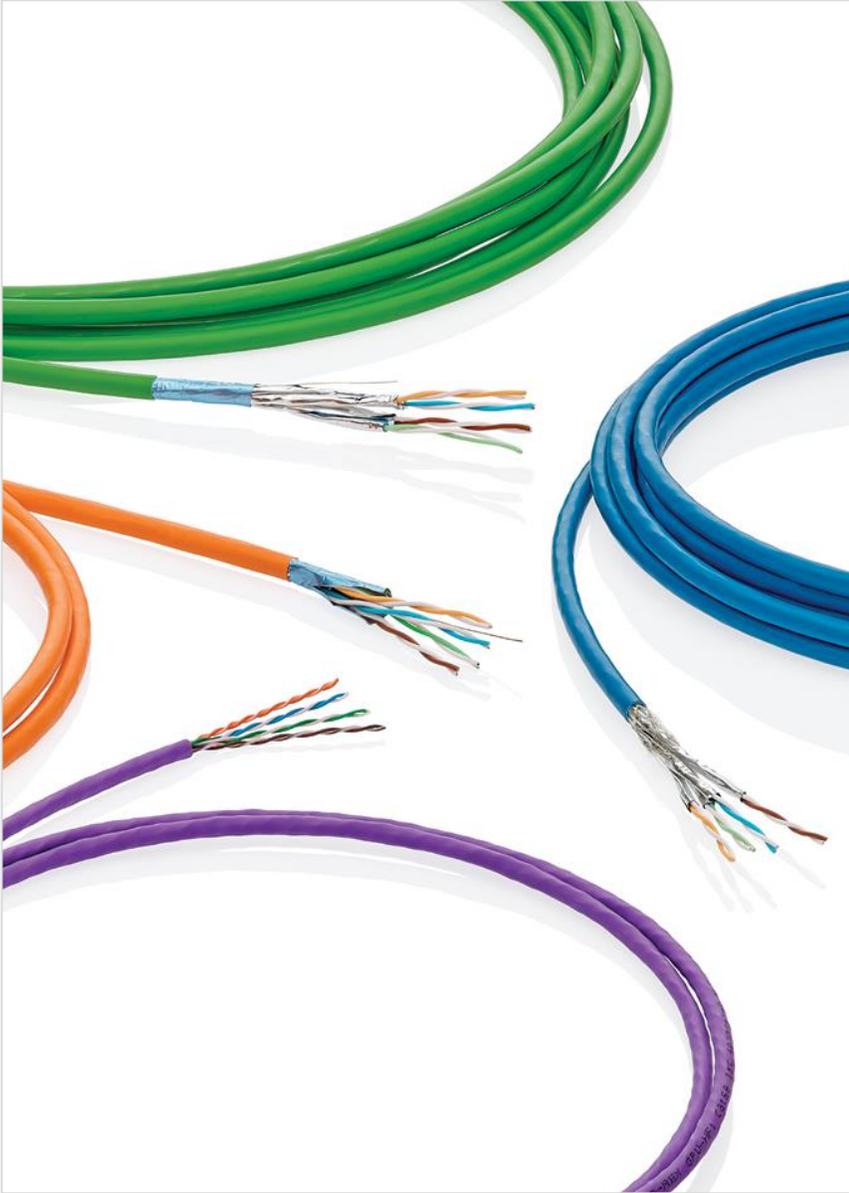


ENVIRONMENTAL PRODUCT DECLARATION

LEVITON COPPER DATA TRANSMISSION CABLE

LOW SMOKE HALOGEN FREE (LSHF), LSHF RATED



The image represents Leviton Network Solutions Copper Low Smoke Halogen Free (LSHF) 4 twisted pairs data communication cables, covering all LSHF EuroClass levels



Every day, Leviton is engineering possibilities that make the future happen, meeting the needs of today's residential, commercial, and industrial customers globally. From electrical, to lighting, to data networks, and energy management, Leviton develops thoughtful solutions that help make its customers' lives easier, safer, more efficient, and more productive. Leviton is also driven by its commitment to sustainability. Leviton has created CN2030, a set of sustainability goals to achieve company-wide carbon neutrality by 2030, and to achieve net zero by 2050. The CN2030 program is based on the company's refreshed commitment to reduce its environmental impact in several key focus areas: energy, waste, recycling, water, and by creating innovations that empower and enable customers to be more sustainable.



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 50693 and EN 15804+A2/AC

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Solutions 333 Pfingsten rd, Northbrook IL, 60062	www.ul.com www.spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	Program Operator Rules v 2.7 2022	
MANUFACTURER NAME AND ADDRESS	Leviton Network Solutions, Viewfield Industrial Estate, Glenrothes, Fife, Scotland, UK, KY6 2RS	
DECLARATION NUMBER	4790742360.105.1	
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	1 metre of Leviton 4 twisted pair data communication cable, at 70% utilization for 30 years	
REFERENCE PCR AND VERSION NUMBER	P.E.P Association. PCR for Electrical, Electronic and HVAC-R Products (PEP Program, 2021) P.E.P Association. PSR Specific Rules for Wires, Cables and Accessories (PEP Program, 2022)	
DESCRIPTION OF PRODUCT APPLICATION/USE	Data communication cable	
PRODUCT RSL DESCRIPTION (IF APPL.)	30 years with 70% use rate	
MARKETS OF APPLICABILITY	Europe, International	
DATE OF ISSUE	November 1, 2023	
PERIOD OF VALIDITY	5 Years	
EPD TYPE	Product specific	
RANGE OF DATASET VARIABILITY	Manufacturer specific	
EPD SCOPE	Cradle to Grave	
YEAR(S) OF REPORTED PRIMARY DATA	2021	
LCA SOFTWARE & VERSION NUMBER	LCA for Experts v10.7	
LCI DATABASE(S) & VERSION NUMBER	Managed LCA Content, CUP 2022.2	
LCIA METHODOLOGY & VERSION NUMBER	EN 15804+A2/AC (2021), IPCC AR6, CML	

The PCR review was conducted by:	P.E.P. Association
	PCR Review Panel
	contact@pep-ecopassport.org
This declaration was independently verified in accordance with ISO 14025: 2006. <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	Cooper McCollum, UL Solutions
	Sphera
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria, Industrial Ecology Consultants

LIMITATIONS
Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

1. Product Definition and Information

1.1. Description of Company/Organization

Leviton Network Solutions is a single-source global manufacturer of copper and fiber cabling systems. Leviton Network Solutions is committed to protecting the environment through the design, manufacture, and delivery of sustainable network infrastructure for data centers, businesses, schools, hospitals, government facilities, and commercial mixed-use markets around the world. All Leviton products are engineered to exacting standards while considering environmental impact through every step of our ISO 9001 Certified product development process, from initial material sourcing to final packaging and logistics. Leviton's primary cable and connectivity factories are certified for environmental and energy management systems, and our EMEA headquarters was the first data communications factory to achieve PAS 2060 Carbon Neutrality. Through these sustainable design and manufacture practices, Leviton Network Solutions produces products that contribute to greater energy savings, less waste, and carbon footprint reduction. Additionally, there are no substances of very high concern in Leviton's products.

1.2. Product Description

Product Identification

There are six cable construction categories covered in this declaration as detailed below along with the respective product families. These low smoke, halogen free cables are available in a range of LSHF fire classifications, lengths, packaging options and colours. The list of LSHF names and corresponding information are provided below.

Table 1: Product Specification

LSHF CABLE	CATEGORY	CABLE TYPES	PART NUMBERS	DESCRIPTION
LSHF 1	6, 6A, 7 and 7A	S/FTP	C6S/FTP*, AC6S/FTP*, UM10*, UM12*	<p>Leviton Category 6 S/FTP cables [Part Number: C6S/FTP*] exceed the Category 6 performance standards. They are specified to 250 MHz and are suitable for use in all Class E structured wiring cable systems. The applications supported include Gigabit Ethernet, Power over Ethernet, and broadband video transmissions at frequencies up to 250 MHz.</p> <p>Leviton Category 6A S/FTP cables [Part Number: AC6S/FTP*] exceed Category 6A performance standards. They are specified to 500 MHz and are suitable for use in all Class EA structured wiring cable systems. The Category 6A S/FTP cable supports 10 Gigabit Ethernet, Gigabit Ethernet, Power Over Ethernet, voice, and broadband video transmissions at frequencies up to 500 MHz.</p> <p>Leviton Category 7 S/FTP cables [Part Number: UM10*] exceed the Category 7 performance standards. They are specified to 600 MHz and rated to 1000 MHz and are suitable for use in all Class F structured wiring cable systems. The applications supported include 10 Gigabit Ethernet, Gigabit Ethernet, Power over Ethernet, and broadband video transmissions at frequencies as high as 600 MHz.</p> <p>Leviton Category 7A S/FTP cables [Part Number: UM12*] exceed Category 7A performance standards. They are specified to 100 MHz and rated to 1200 MHz and are suitable for use in all Class FA structured wiring cable systems. The applications supported include 10 Gigabit Ethernet,</p>



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
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LSHF CABLE	CATEGORY	CABLE TYPES	PART NUMBERS	DESCRIPTION
				Gigabit Ethernet, Power over Ethernet, and broadband video transmissions at frequencies up to 1000 MHz.
LSHF 2	6 and 6A	F/FTP	C6F/FTP*, AC6F/FTP*	<p>Leviton Category 6 F/FTP cables [Part Number: C6F/FTP*] exceed the Category 6 performance standards. They are specified to 250 MHz and are suitable for use in all Class E structured wiring cable systems. The applications supported include Gigabit Ethernet, Power over Ethernet, and broadband video transmissions at frequencies up to 250 MHz.</p> <p>Leviton Category 6A F/FTP cables [Part Number: AC6F/FTP*] exceed Category 6A performance standards. They are specified to 500 MHz and are suitable for use in all Class EA structured wiring cable systems. The Category 6A F/FTP cable supports 10 Gigabit Ethernet, Gigabit Ethernet, Power Over Ethernet, voice, and broadband video transmissions at frequencies up to 500 MHz.</p>
LSHF 3	6 and 6A	U/FTP	C6U/FTP*, AC6U/FTP*	<p>Leviton Category 6 U/FTP cables [Part Number: C6U/FTP*] exceed the Category 6 performance standards. They are specified to 250 MHz and are suitable for use in all Class E structured wiring cable systems. The applications supported include Gigabit Ethernet, Power over Ethernet, and broadband video transmissions at frequencies up to 250 MHz.</p> <p>Leviton Category 6A U/FTP cables [Part Number: AC6U/FTP*] exceed Category 6A performance standards. They are specified to 500 MHz and are suitable for use in all Class EA structured wiring cable systems. The Category 6A U/FTP cable supports 10 Gigabit Ethernet, Gigabit Ethernet, Power Over Ethernet, voice, and broadband video transmissions at frequencies up to 500 MHz.</p>
LSHF 4	6	F/UTP	C6F/UTP*	Leviton Category 6 F/UTP cables [Part Number: GPF*] exceed Category 6 performance standards. They are specified to 250 MHz and are suitable for use in all Class E structured wiring cable systems. The applications supported include Gigabit Ethernet, Power over Ethernet, and broadband video transmissions at frequencies up to 250 MHz.
LSHF 5	6A	U/UTP	C6U*, AC6U*, SST*, RDT*	Leviton Category 5e U/UTP cables [Part Number: GPU*] exceed Category 5e performance standards. They are rated to 100 MHz and are suitable for use in all Class D structured wiring cable systems. Category 5e U/UTP cables support Gigabit Ethernet, Power over Ethernet, and voice transmissions at frequencies up to 100 MHz.
LSHF 6	5e and 6	U/UTP	GPU*, C6U*4	<p>Leviton Category 6 U/UTP cables [Part Number: C6U*4] exceed Category 6 performance standards. They are rated to 250 MHz and are suitable for use in all Class E structured wiring cable systems. Category 6 U/UTP cables support Gigabit Ethernet, Power over Ethernet, voice, and broadband video transmissions at frequencies up to 250 MHz.</p> <p>Leviton Category 6A U/UTP cables [Part Numbers: AC6U*, SST*, RDT*] exceed the Category 6A performance standards. They are rated to 500 MHz and are suitable for use in all Class EA structured wiring cable systems. Category 6A U/UTP cables support 10 Gigabit Ethernet, Gigabit Ethernet, Power over Ethernet, voice, and broadband video transmissions at frequencies up to 500MHz.</p>

* Denotes part number options available for fire class, packaging, length, and color

1.3. Product Average

This EPD represents the manufacturer specific products for cables. All the cables are a 4 twisted pair construction for





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**According to ISO 14025,
EN 15804+A2/AC**

data networking. All the cables that are manufactured using the same processes and materials have been grouped together and a product average calculation applied.

1.4. Application

Leviton low smoke halogen free LSHF rated copper cables are designed for use within buildings to deliver ethernet protocols, up to 10 Gigabit Ethernet, and Power over Ethernet applications up to 100 watts. Application performance varies by product. For specific application guidance, please reference the relevant product datasheet.

1.5. Declaration of Methodological Framework

This EPD is declared under a “Cradle-to-grave,” i.e., all stages of the life cycle have been included: manufacturing, distribution, installation, use, and end-of-life. The net benefits and loads beyond the system boundaries (potential for reuse, recovery, and/or recycling), expressed as net benefits or impacts, is also included. The analysis follows the modular structure as defined by EN 15804+A2/AC (EN 15804+A2/AC, 2021).

Per the product specific rules PCR (PEP Program, 2021), the functional unit selected for this assessment is 1 meter (m) of copper data cable, at 70% utilization for 30 years.

1.6. Industry Standards

Cables are technically compliant with the following standards below:

- ISO/IEC11801 - Information technology - Generic cabling for customer premises
- BS EN50173 - Information technology. Generic cabling systems. Alternative cabling configurations
- ISO/IEC61156 – Multicore and symmetrical pair/quad cables for digital communications
- BS EN50288 – Multi-element metallic cables
- BS EN50575 - Construction Product Regulation
- BS EN50399/BE EN61034 – Smoke Production, Flame Droplets
- BS EN60754 – Smoke Acidity





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

1.7. Delivery Status

LSHK cables are delivered in bulk to the customer’s specified location using various transportation to distribution centers or stores and cut to desired length.

1.8. Material Composition

Table 2 shows the percent (%) composition and weight of the material components that are used in the production of six LSHF cables covered in the study. Copper and jacket have the maximum material content in all products.

Table 2: Material Composition of LSHF copper data cables

MATERIAL	LSHF 1-S/FTP	LSHF 2-F/FTP	LSHF 3-U/FTP	LSHF 4-F/UTP	LSHF 5- U/UTP	LSHF 6-U/UTP
	Mass [%]	Mass [%]				
Copper	33.7%	35.1%	35.3%	37.0%	30.7%	48.0%
HDPE	8.3%	9.6%	10.1%	11.8%	7.7%	11.9%
LDPE XF	0.0%	0.0%	0.0%	5.2%	4.2%	0.0%
Colorant	0.1%	0.1%	0.1%	0.1%	0.1%	1.1%
Tape (AL/PET)	11.5%	17.0%	13.1%	6.7%	0.0%	0.0%
Tin (Wire)	15.4%	3.5%	3.5%	3.4%	0.0%	0.0%
Jacket*	31.1%	34.8%	37.9%	35.7%	57.3%	39.0%

*Jacket is the combination of two material (Aluminium hydroxide and Ethylene Vinylacetate Copolymer (E/VA) [Plastics])

1.9. Manufacturing

The first stage of manufacture is wire drawing, where the copper diameter is reduced before annealing and heating. Afterwards, molten plastic is applied to the copper under high pressure creating the insulated primary core. It is then cooled, dried, and measured before beginning the second process, twisting. Twisting begins with two individual cores being twisted together to create a balanced pair. Four pairs are twisted together to create the four pair cabled unit, additional materials can be included at this stage to further improve electrical performance. Secondary extrusion takes the four pair cabled unit and applies a protective plastic jacket to the cable before cooling. The cable is finally spooled onto reels or into boxes for distribution. The LSHF cable production process is shown in the Figure 1.



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
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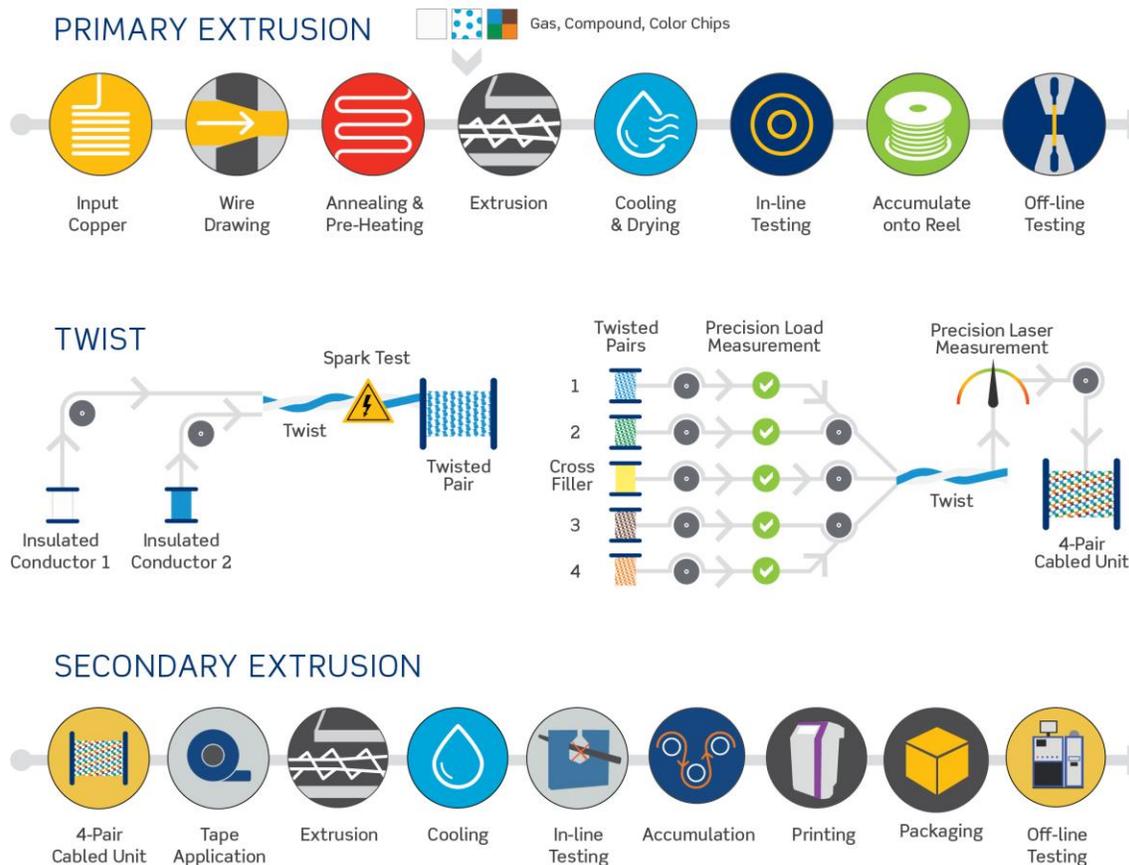


Figure 1: LSHF Cable Production Process

1.10. Packaging

Cables are packed and shipped using reels or boxes at 305, 500, or 1000 m lengths. Most common sold products are 305 m boxes and 500 m reels. Corrugated cardboard, wooden pallets, steel, and plastic film packaging materials are used in the reels and boxes. Cardboard packaging per meter of cable has minimal biogenic carbon and therefore, biogenic carbon from packaging is excluded from this assessment.

1.11. Transportation

Transportation includes the inbound freight of raw materials into the manufacturing stage, the outbound transportation of products to their installation sites, and the freight of wastes to their end-of-life disposal site. The only mode of transportation included in the study is by truck. Primary data on transportation distances was used when known, e.g., product distribution distances were provided by Leviton i.e., 1609 km (1000 mi) distribution distance in US and 800 km



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

(497 mi) in UK. Unknown distances were modelled using the PCR (PEP Program, 2021) default distances:

- International transport: 19,000 km (11,806 mi) by boat, 1,000 km (621 mi) by truck
- Domestic transport: 1,000 km (621 mi) by truck

A range of transport distances between 800 km - 2100 km is considered in this study.

1.12. Product Installation

The installation of LSHF copper data cables is assumed to be manual and therefore no energy use is accounted for in this stage. An installation loss of 5% is also assumed. Table 3 provides a list of input and output flows for the installation stage.

Table 3: Installation data for LSHF copper data cables

TYPE	FLOW	VALUE	UNIT
Inputs	LSHF data cable	0.061	kg/m
Outputs	LSHF data cable	0.058	kg/m
Outputs	Metal scrap	0.001	kg/m
Outputs	Plastic scrap	0.001	kg/m

1.13. Use

The product has operational energy consumption. The operational energy use stage (B6), Table 6, specifies the operational energy use for each product as determined by the PCR (PEP Program, 2021). As a conservative assumption, product groups were classified based on the highest power consumption product contained. Also specified in the PCR (PEP Program, 2021) cables have a usage of 30 years and 70% utilization.

1.14. Reference Service Life and Estimated Building Service Life

The LSHF cables are assumed to have a reference service life of 30 years with 70% utilization.

1.15. Reuse, Recycling, and Energy Recovery

In the waste processing and disposal stage (C3 to C4), the PCR (PEP Program, 2021) assumed requires that all cables are assumed to be shredded, with the metal components recycled and the other (plastic) components incinerated. Energy and material credits are given to account for the electricity, thermal energy and secondary material generated from the incineration and recycling of wastes. The energy and secondary material generated during the disposal of these wastes can substitute an equivalent amount of virgin energy and materials. Recycling and incineration impacts are accounted in Module C4.

1.16. Disposal

At the end of life, the cables are dismantled manually and metals are recycled and plastics are incinerated. The waste





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According to ISO 14025,
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from manufacturing, installation, and packaging are handled based on the 20% incineration and 80% landfill. Regarding the transport to EoL (C2), according to the PCR (PEP Program, 2021) assumed, the waste is transported 1000 km (621 mi) by truck. The metals are recycled and plastics are incinerated.

2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

Based on ISO/IEC 11801, there are 8 types or product groups of copper cables: U/UTP, U/FTP, F/UTP, S/UTP, SF/UTP, F/FTP, S/FTP, and SF/FTP, depending on their pair and cable shielding (Tarluz, n.d.). The functional unit selected for this assessment is 1 meter (m) of copper data cable, at 70% utilization for 30 years. This functional unit is consistent with the study’s goals of calculating the environmental impact of copper wire used over distances of several meters. A reference flow is the quantity of product necessary for the system to deliver the performance described by the functional unit. Table 4 displays the linear weights per meter for the analyzed product categories, i.e., the reference flows for each product category.

Table 4: Linear weights per functional unit of one meter of copper data cable.

PRODUCT	LINEAR WEIGHT (KG/M)
LSHF 1 (S/FTP)	0.058
LSHF 2 (F/FTP)	0.051
LSHF 3 (U/FTP)	0.051
LSHF 4 (F/UTP)	0.051
LSHF 5 (Cat 6A U/UTP)	0.064
LSHF 6 (Cat 5e/6 U/UTP)	0.071

2.2. System Boundary

The system boundary of this study is cradle-to-grave, i.e., all stages of the life cycle have been included: manufacturing, distribution, installation, use, and end-of-life. The net benefits and loads beyond the system boundaries (potential for reuse, recovery, and/or recycling), expressed as net benefits or impacts, is also included. The analysis follows the modular structure defined by (EN 15804+A2/AC, 2021). Table 5 summarizes the major components included and excluded from the study, as shaped by the PCR (PEP Program, 2021).





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

Table 5: System boundaries of the cradle-to-grave study

Production			Installation		Use stage*							End-of-Life			Next product system	
Raw material supply (extraction, processing, recycled material)	Transport to manufacturer	Manufacturing	Transport from gate to building site	Installation into building	Use / application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport to EoL	Waste processing for reuse, recovery, or recycling	Disposal	Reuse, recovery, or recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1*	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	X	ND	X	X	X	X	X

(X = declared module; ND =Module not declared)

* Use Stage – B1, B2, B3, B4, B5, B7 is zero they are not applicable modules in the analysis of copper cable products
 * C1 is zero because deconstruction is done manually

The impacts of the components excluded from the study are expected to be negligible compared to the impacts associated with the rest of the included stages.

As indicated by the PCR (PEP Program, 2021) impacts related to production, transportation, installation, use, and end-of-life, up to final disposal of the flow required to supply the considered stage, shall be accounted in the corresponding stage. Likewise, all impacts related to waste (i.e., transport and processing) are considered in the modules in which the waste arises. In this way, each life cycle stage shall include all aspects related to its inputs and outputs. Key assumptions about the activities included in the declared modules within the system boundary are listed below.

Module A1 to A3

The production stage includes provision of all raw materials and energy, as well as waste processing up to the disposal of final residues during the production stage.

These modules consider the manufacturing of raw materials, specifically copper wire and jacketing compounds, the transport to the production sites and the manufacturing of the cables. This includes the drawing of the wire to the appropriate diameter, the extrusion of insulation, the twining of the paired cables, and the extrusion of the final jacket. The impact of packaging materials is included.

Module A4

LSHF products are manufactured in the UK. This module considers 497 miles (800 km) truck transport to site (diesel





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According to ISO 14025,
EN 15804+A2/AC

driven, EURO 6, 40 tons total load, 61% utilization).

Module A5

An installation material loss of 5% was assumed based on company data. No energy is required for the installation process.

Regarding the treatment and disposal of packaging material wastes, credits are given to account for the electricity and thermal energy generated from the incineration of wastes and landfill gas. The energy generated during this waste's disposal can be substituted for an equivalent amount of energy produced from virgin materials. These credits are declared in Module D and affect only the rate of primary material (no secondary materials).

Module B1 to B7

In the use stage, the PSR (PEP Program, 2022) states that the use or application of the product installed (B1), maintenance (B2), repair (B3), replacement (B4), restoration (B5), and water requirements (B7) are not applicable modules in the analysis of copper cable products. The stage modules – B1, B2, B3, B4, B5, B7 are zero they are not applicable.

Regarding the operational energy use stage (B6), Table 6, specifies the operational energy use for each product as determined by the PCR (PEP Program, 2021). As a conservative assumption, product groups were classified based on the highest power consumption product contained. Also specified in the PCR (PEP Program, 2021) is a usage of 30 years and 70% utilization.

Table 6: Operational energy use phase power consumption

PRODUCT	CLASSIFICATION	POWER CONSUMPTION (Mw/M)
LSHF 1 (S/FTP)	Cat 6, 6A, 7, 7A	1.134
LSHF 2 (F/FTP)	Cat 6, 6A	1.134
LSHF 3 (U/FTP)	Cat 6, 6A	1.134
LSHF 4 (F/UTP)	Cat 6	1.134
LSHF 5 (Cat 6A UTP)	Cat 6A	1.365
LSHF 6 (Cat 5e/6 UTP)	Cat 5e & 6	1.134

Module C1 to C4

For the deconstruction and demolition stages (C1), manual dismantling is assumed. No loading in trucks or containers is needed.

Regarding the transport to EoL(C2), according to the PCR (PEP Program, 2021), a transport distance of 1000 km (621 mi) by truck must be assumed.

In the waste processing and disposal stage (C3 to C4), the PCR (PEP Program, 2021) that all cables are assumed to be shredded, the metal components recycled, and the other (plastic) components incinerated. Energy and material credits are given to account for the electricity, thermal energy, and secondary material generated from the incineration



and recycling of wastes. The energy and secondary material generated during the disposal of these wastes can substitute an equivalent amount of virgin energy and materials. Recycling and incineration impacts are accounted in Module C4.

Module D

The credits for avoided primary production of recycled metals are accounted for in Module D. For the thermal and electrical energy generated in Module A5 and C3, due to the incineration of packaging and product waste, credits have been calculated by using a regionalized electricity grid mix and thermal energy from natural gas.

No mandatory life cycle stages, relevant processes, or data needs have been omitted.

2.3. Estimates and Assumptions

The analysis uses the following assumptions:

- If inbound transportation distances were not provided for materials used in manufacturing, a default assumption of international transport: 19,000 km (11,806 mi) by boat, 1,000 km (621 mi) by truck and
- domestic transport: 1,000 km (621 mi) by truck were made using the PCR default distance.
- Installation is assumed to be manual (no energy use), and 5% installation loss is assumed for cables.
- Since primary data were not available to describe end-of-life treatment, the default values specified by the PEP PCR (PEP Program, 2021) were applied.

2.4. Cut-off Criteria

No cut-off criteria are defined for this study. As summarized in section 2.2, the system boundary was defined based on relevance to the goal of the study. For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

2.5. Data Sources

The LCA model was created using LCA for Experts Software system for life cycle engineering, developed by Sphera Inc. (Sphera, 2023). Background life cycle inventory data for raw materials and processes were obtained from the Managed LCA Content, 2022.2 database. The information is documented online at <https://sphera.com/product-sustainability-gabi-data-search/>.

Primary manufacturing data were provided by Leviton.

2.6. Data Quality

A variety of tests and checks were performed throughout the project to ensure high quality of the completed LCA. Checks included a review of project specific LCA models and the background data used.

Geographical Coverage

Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
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To satisfy cut-off criteria, proxy datasets were used as needed for raw material inputs to address lack of data for a specific material or for a specific geographical region. These proxy datasets were chosen as they represent the actual product. Additionally, European data or global data were used when North American data (for raw materials sourced in the US) were not available.

Temporal Coverage

The intended time coverage for the study is the year 2021. Primary data for the foreground system was collected for this reference year, and the results of the study are therefore representative of 2021. The results are expected to be relevant until there is a significant change in e.g., production technology, production of input materials or energy mixes.

The majority of background datasets are based on data from 2017 onwards.

Technological Coverage

The primary data represents production of the products under evaluation. Secondary data were chosen to be specific to the technologies in question (or appropriate proxy data used where necessary).

Completeness

Foreground processes were checked for mass balance and completeness of the emissions inventory. No data was knowingly omitted.

2.7. Period under Review

Primary data collected represents production during the 2021 calendar year. This analysis is intended to represent production in 2021.

2.8. Allocation

This study uses the substitution allocation approach and reports credits in Module D. A summary of the application of the substitution approach in the different end-of-life fates is given below.

Material recycling (substitution approach): In the study, copper at the end of life is recycled and material credits are applied. The original burden of copper input is substituted using the mass of recovered secondary material.

Energy recovery (substitution approach): Plastics from the product, and 20% of paper/corrugated board, metal, plastics, and woods used as packaging materials are sent to waste incineration. Credits are assigned for power and heat outputs using the regional grid mix and thermal energy from natural gas. The latter represents the cleanest fossil fuel and therefore results in a conservative estimate of the avoided burden.

Landfilling (substitution approach): Paper/corrugated board, metal, plastics, and woods are sent to landfills, linked to an inventory that accounts for waste composition, regional leakage rates, landfill gas capture and utilization rates. Credits are assigned for energy recovery from landfill gas due to landfilling of wood and cardboard packaging materials.

Allocation of background data (energy and materials) taken from the Managed LCA Content (MLC) 2022.2 databases is documented online at <https://sphera.com/product-sustainability-gabi-data-search/>.

Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

3. Life Cycle Assessment Scenarios

Table 7: Transport to the building site (A4)

	LSHF 1	LSHF 2	LSHF 3	LSHF 4	LSHF 5	LSHF 6	UNIT
Name	S/FTP	F/FTP	U/FTP	F/UTP	Cat 6A U/UTP	Cat 5e & 6 U/UTP	
Fuel type							
Liters of fuel	55	55	55	55	55	55	l/100km
Vehicle type	Truck	Truck	Truck	Truck	Truck	Truck	
Transport distance	1000	1000	1000	1000	1000	1000	km
Capacity utilization (including empty runs, mass based)	70	70	70	70	70	70	%
Gross density of products transported	-	-	-	-	-	-	kg/m ³
Weight of products transported (if gross density not reported)	0.061	0.053	0.053	0.054	0.067	0.038	kg
Volume of products transported (if gross density not reported)							m ³
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	<1	<1	<1	<1	<1	<1	-

Table 8: Installation into the building (A5)

	LSHF 1	LSHF 2	LSHF 3	LSHF 4	LSHF 5	LSHF 6	UNIT
Name	S/FTP	F/FTP	U/FTP	F/UTP	Cat 6A U/UTP	Cat5e & 6 U/UTP	
Ancillary materials	0	0	0	0	0	0	kg
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	-	-	-	-	-	-	m ³
Other resources	-	-	-	-	-	-	kg
Electricity consumption	-	-	-	-	-	-	kWh
Other energy carriers	-	-	-	-	-	-	MJ
Product loss per functional unit	0.003	0.003	0.003	0.003	0.003	0.002	kg
Waste materials at the construction site before waste processing, generated by product installation	0.003	0.003	0.003	0.003	0.003	0.003	kg
Output materials resulting from on-site waste processing (specified by route, e.g., for recycling, energy recovery and/or disposal)						-	kg
Biogenic carbon contained in packaging	0.001	0.001	0.001	0.001	0.001	0.001	kg CO ₂
Direct emissions to ambient air, soil, and water	-	-	-	-	-	-	kg
VOC content	-	-	-	-	-	-	µg/m ³

Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

Table 9: Reference Service Life

	LSHF 1	LSHF 2	LSHF 3	LSHF 4	LSHF 5	LSHF 6	UNIT
Name	S/FTP	F/FTP	U/FTP	F/UTP	Cat 6A U/UTP	Cat 5e & 6 U/UTP	
RSL	30	30	30	30	30	30	years
Load frequency	1	1	1	1	1	1	
Fugitive emissions	-	-	-	-	-	-	
Energy requirement	0.751	0.751	0.751	0.751	0.751	0.751	MJ

Table 10: End of life (C1-C4)

	LSHF 1	LSHF 2	LSHF 3	LSHF 4	LSHF 5	LSHF 6	UNIT
Name	S/FTP	F/FTP	U/FTP	F/UTP	Cat 6A U/UTP	Cat 5e & 6 U/UTP	
Assumptions for scenario development (description of deconstruction, collection, recovery, disposal method, and transportation)							
Collection process (specified by type)	Collected separately						kg
	Collected with mixed construction waste	0.06	0.06	0.06	0.06	0.07	0.07 kg
Recovery (specified by type)	Reuse	-	-	-	-	-	kg
	Recycling	0.03	0.02	0.02	0.02	0.02	0.0187 kg
	Landfill	0.01	0.01	0.01	0.01	0.01	0.01 kg
	Incineration	0.03	0.02	0.03	0.03	0.05	0.05 kg
	Incineration with energy recovery	0.03	0.03	0.03	0.03	0.05	0.05 kg
	Energy conversion efficiency rate						
Disposal (specified by type)	Product or material for final deposition	0.01	0.01	0.01	0.01	0.01	0.01 kg
Removals of biogenic carbon (excluding packaging)							kg CO ₂

Table 11: Reuse, recovery and/or recycling potentials (D), relevant scenario information

	LSHF 1	LSHF 2	LSHF 3	LSHF 4	LSHF 5	LSHF 6	UNIT
Name	S/FTP	F/FTP	U/FTP	F/UTP	Cat 6A U/UTP	Cat5e & 6 U/UTP	
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)							MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)							0.36 0.38 0.38 0.38 0.53 0.53 MJ
Net energy benefit from material flow declared in C3 for energy recovery							- MJ



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

The energy datasets used to determine the impacts of the manufacturing, use stages for Leviton’s copper cables are provided in Table 12. Leviton’s copper cables are manufactured in the UK and used in Europe. No energy is used during the installation and at the end-of-life stages as installation is assumed to be manual, and cables are manually deconstructed.

Table 12: Key energy datasets used in inventory analysis

ENERGY	LOCATION	DATASET	DATA PROVIDER	REFERENCE YEAR	PROXY?
Electricity	GB	Electricity grid mix	Sphera	2018	No
Electricity	EU-28	Electricity grid mix	Sphera	2018	No
Technical heat	GB	Thermal energy from natural gas	Sphera	2018	No

4. Life Cycle Assessment Results

Environmental Product Declarations (EPDs) created under different Product Environmental Profile (PEP) and Product Category Rules (PCR) are not comparable. Additionally, EPDs based on a declared unit shall not be used for comparisons between products, regardless of the EPDs using the same PCR.

There is no biogenic carbon in the product. The biogenic carbon in the packaging is minimal hence excluded from this assessment.

It shall be noted that the above impact categories represent impact potentials, i.e., they are approximations of environmental impacts that could occur if the emissions would (a) actually follow the underlying impact pathway and (b) meet certain conditions in the receiving environment while doing so. In addition, the inventory only captures that fraction of the total environmental load that corresponds to the functional unit (relative approach). LCIA results are therefore relative expressions only and do not predict actual impacts, the exceeding of thresholds, safety margins, or risks.

4.1. Life Cycle Impact Assessment Results

Cradle-to-grave results for the life cycle impact categories, use of resources, and generation of wastes for Leviton’s LSHF copper data cables are presented in Table 13 through Table 24. The assessment results are provided as per the European Standard, (EN 15804+A2/AC, 2021)The breakdown of potential environmental impacts per life cycle stage is also presented in the following tables. Since the products are intended for markets outside of Europe, the rest of the world impact assessment results using IPCC AR6 (GWP) and CML 2016 are also included in the report following part A of ULE PCR (ULE, 2022). As described in section 2.2, results from modules A1, A2, A3, A4, A5, A6, B6, C1, C2, C3, C4 and D are included in the results. Use Stage – B1, B2, B3, B4, B5, B7 is zero because they are not applicable in the analysis of copper cable products, and C1 is zero as the deconstruction process is done manually. These zeroes modules are excluded from the result tables. Also, a disclaimer is added here to note that the results of ADP minerals and metals (ADPe), APD fossil, and WDP environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicators. Lastly, as per the PEP requirements, the



ENVIRONMENTAL PRODUCT DECLARATION



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According to ISO 14025, EN 15804+A2/AC

total column of the result of the impacts calculated in the LCA does not include the results of the net benefits and loads (module D).

Table 13: EN 15804+A2/AC (2021) LCIA results for LSHF 1 (S-FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP Total	kg CO ₂ eq.	4.64E-01	2.53E-01	4.34E-03	6.43E-03	7.76E-02	4.88E-03	0.00E+00	1.18E-01	-1.48E-01
GWP Fossil	kg CO ₂ eq	4.62E-01	2.56E-01	4.35E-03	1.35E-03	7.69E-02	4.90E-03	0.00E+00	1.18E-01	-1.48E-01
GWP Bio	kg CO ₂ eq	1.56E-03	-4.20E-03	-4.28E-05	5.08E-03	6.93E-04	-4.82E-05	0.00E+00	6.83E-05	2.51E-04
GWP Luluc	kg CO ₂ eq	5.33E-04	4.52E-04	2.95E-05	7.03E-08	1.63E-05	3.32E-05	0.00E+00	1.99E-06	-3.88E-04
ODP	kg CFC 11 eq.	2.41E-12	1.20E-12	4.30E-16	8.40E-16	1.13E-12	4.84E-16	0.00E+00	8.72E-14	-6.58E-13
AP	mole H+ eq.	2.29E-03	2.04E-03	5.13E-06	1.41E-06	1.69E-04	5.78E-06	0.00E+00	7.20E-05	-1.95E-03
EP Fresh	kg P eq.	8.28E-07	5.18E-07	1.56E-08	3.12E-08	2.24E-07	1.76E-08	0.00E+00	2.12E-08	-2.79E-07
EP Marine	kg N eq.	2.54E-04	1.86E-04	1.70E-06	6.16E-07	3.79E-05	1.91E-06	0.00E+00	2.61E-05	-1.17E-04
EP Terr	mole of N eq.	2.73E-03	1.97E-03	2.02E-05	5.29E-06	3.98E-04	2.28E-05	0.00E+00	3.06E-04	-1.21E-03
POCP	kg NMVOC eq.	8.01E-04	6.14E-04	4.45E-06	2.53E-06	1.02E-04	5.01E-06	0.00E+00	7.28E-05	-4.00E-04
ADP element	kg Sb eq.	2.03E-04	2.03E-04	4.41E-10	1.77E-11	2.10E-08	4.97E-10	0.00E+00	2.25E-09	-8.55E-05
ADP fossil	MJ	5.54E+00	3.70E+00	5.74E-02	5.32E-03	1.40E+00	6.47E-02	0.00E+00	3.13E-01	-1.77E+00
WDP	m ³ World -q	1.11E-01	7.97E-02	4.90E-05	2.57E-04	1.75E-02	5.51E-05	0.00E+00	1.35E-02	-7.78E-02

Table 14: Rest of the World LCIA results for LSHF 1 (S-FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C4	D
GWP – 100	kg CO ₂ eq.	4.63E-01	2.55E-01	4.32E-03	3.90E-03	7.66E-02	4.86E-03	1.18E-01	-1.47E-01
ODP	kg R11 eq.	2.84E-12	1.41E-12	5.06E-16	9.89E-16	1.33E-12	5.70E-16	1.03E-13	-7.75E-13
AP	kg SO ₂ eq.	2.24E-03	2.02E-03	3.75E-06	1.08E-06	1.59E-04	4.22E-06	5.39E-05	-1.76E-03
EP	kg Phosphate eq.	1.08E-04	7.78E-05	8.60E-07	9.96E-07	1.78E-05	9.68E-07	9.84E-06	-5.08E-05
POCP	kg Ethene eq.	1.14E-04	9.71E-05	-1.28E-07	8.34E-07	1.11E-05	-1.44E-07	5.15E-06	-8.10E-05

Table 15: EN 15804+A2/AC (2021) LCIA results for LSHF 2 (F-FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP Total	kg CO ₂ eq.	4.29E-01	2.21E-01	3.82E-03	6.46E-03	7.76E-02	4.27E-03	0.00E+00	1.15E-01	-1.18E-01



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

GWP Fossil	kg CO ₂ eq	4.27E-01	2.25E-01	3.83E-03	1.38E-03	7.69E-02	4.28E-03	0.00E+00	1.15E-01	-1.18E-01
GWP Bio	kg CO ₂ eq	1.66E-03	-4.09E-03	-3.77E-05	5.08E-03	6.93E-04	-4.21E-05	0.00E+00	4.80E-05	8.90E-05
GWP Luluc	kg CO ₂ eq	4.20E-04	3.47E-04	2.60E-05	8.74E-08	1.63E-05	2.90E-05	0.00E+00	1.40E-06	-2.68E-04
ODP	kg CFC 11 eq.	2.33E-12	1.14E-12	3.79E-16	7.60E-16	1.13E-12	4.23E-16	0.00E+00	6.13E-14	-5.63E-13
AP	mole H+ eq.	1.94E-03	1.70E-03	4.52E-06	1.45E-06	1.69E-04	5.05E-06	0.00E+00	5.28E-05	-1.36E-03
EP Fresh	kg P eq.	7.81E-07	4.80E-07	1.38E-08	3.21E-08	2.24E-07	1.54E-08	0.00E+00	1.49E-08	-2.14E-07
EP Marine	kg N eq.	2.09E-04	1.48E-04	1.49E-06	6.25E-07	3.79E-05	1.67E-06	0.00E+00	1.86E-05	-8.62E-05
EP Terr	mole of N eq.	2.24E-03	1.57E-03	1.78E-05	5.39E-06	3.98E-04	1.99E-05	0.00E+00	2.26E-04	-8.93E-04
POCP	kg NMVOC eq.	6.70E-04	5.04E-04	3.92E-06	2.55E-06	1.02E-04	4.38E-06	0.00E+00	5.21E-05	-2.91E-04
ADP element	kg Sb eq.	1.12E-04	1.12E-04	3.89E-10	1.90E-11	2.10E-08	4.34E-10	0.00E+00	1.58E-09	-5.87E-05
ADP fossil	MJ	5.21E+00	3.48E+00	5.06E-02	5.07E-03	1.40E+00	5.65E-02	0.00E+00	2.19E-01	-1.49E+00
WDP	m ³ World -q	9.95E-02	6.92E-02	4.31E-05	2.51E-04	1.75E-02	4.82E-05	0.00E+00	1.24E-02	-5.52E-02

Table 16: Rest of the World LCIA results for LSHF 2 (F-FTP) copper data cable

PARAMETER S	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C4	D
GWP – 100	kg CO ₂ eq.	4.27E-01	2.24E-01	3.80E-03	3.94E-03	7.66E-02	4.25E-03	1.15E-01	-1.17E-01
ODP	kg R11 eq.	2.75E-12	1.35E-12	4.46E-16	8.94E-16	1.33E-12	4.98E-16	7.22E-14	-6.63E-13
AP	kg SO ₂ eq.	1.99E-03	1.78E-03	3.30E-06	1.11E-06	1.59E-04	3.69E-06	3.91E-05	-1.23E-03
EP	kg Phosphate eq.	9.09E-05	6.32E-05	7.57E-07	1.01E-06	1.78E-05	8.46E-07	7.21E-06	-3.74E-05
POCP	kg Ethene eq.	9.81E-05	8.27E-05	-1.13E-07	8.35E-07	1.11E-05	-1.26E-07	3.75E-06	-5.73E-05

Table 17: EN 15804+A2/AC (2021) LCIA results for LSHF 3 (U-FTP) copper data cable

PARAMETER S	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP Total	kg CO ₂ eq.	4.13E-01	2.06E-01	3.82E-03	6.46E-03	7.76E-02	4.27E-03	0.00E+00	1.15E-01	-1.19E-01
GWP Fossil	kg CO ₂ eq	4.11E-01	2.09E-01	3.83E-03	1.38E-03	7.69E-02	4.28E-03	0.00E+00	1.15E-01	-1.18E-01
GWP Bio	kg CO ₂ eq	1.63E-03	-4.12E-03	-3.77E-05	5.08E-03	6.93E-04	-4.21E-05	0.00E+00	4.82E-05	9.15E-05
GWP Luluc	kg CO ₂ eq	4.19E-04	3.46E-04	2.60E-05	8.71E-08	1.63E-05	2.90E-05	0.00E+00	1.41E-06	-2.69E-04
ODP	kg CFC 11 eq.	2.30E-12	1.11E-12	3.79E-16	7.60E-16	1.13E-12	4.23E-16	0.00E+00	6.16E-14	-5.64E-13
AP	mole H+ eq.	1.90E-03	1.67E-03	4.52E-06	1.45E-06	1.69E-04	5.05E-06	0.00E+00	5.30E-05	-1.37E-03



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

EP Fresh	kg P eq.	7.52E-07	4.52E-07	1.38E-08	3.21E-08	2.24E-07	1.54E-08	0.00E+00	1.50E-08	-2.15E-07
EP Marine	kg N eq.	2.03E-04	1.43E-04	1.50E-06	6.25E-07	3.79E-05	1.67E-06	0.00E+00	1.87E-05	-8.65E-05
EP Terr	mole of N eq.	2.17E-03	1.51E-03	1.78E-05	5.39E-06	3.98E-04	1.99E-05	0.00E+00	2.27E-04	-8.97E-04
POCP	kg NMVOC eq.	6.50E-04	4.84E-04	3.92E-06	2.55E-06	1.02E-04	4.38E-06	0.00E+00	5.24E-05	-2.92E-04
ADP element	kg Sb eq.	1.06E-04	1.06E-04	3.89E-10	1.89E-11	2.10E-08	4.34E-10	0.00E+00	1.59E-09	-5.90E-05
ADP fossil	MJ	5.01E+00	3.28E+00	5.06E-02	5.07E-03	1.40E+00	5.66E-02	0.00E+00	2.20E-01	-1.49E+00
WDP	m ³ World -q	9.76E-02	6.73E-02	4.31E-05	2.51E-04	1.75E-02	4.82E-05	0.00E+00	1.24E-02	-5.55E-02

Table 18: Rest of the World LCIA results for LSHF 3 (U-FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C4	D
GWP – 100	kg CO ₂ eq.	4.12E-01	2.08E-01	3.80E-03	3.93E-03	7.66E-02	4.25E-03	1.15E-01	-1.17E-01
ODP	kg R11 eq.	2.71E-12	1.31E-12	4.46E-16	8.95E-16	1.33E-12	4.98E-16	7.26E-14	-6.64E-13
AP	kg SO ₂ eq.	1.90E-03	1.70E-03	3.31E-06	1.11E-06	1.59E-04	3.69E-06	3.93E-05	-1.24E-03
EP	kg Phosphate eq.	8.84E-05	6.07E-05	7.57E-07	1.01E-06	1.78E-05	8.46E-07	7.24E-06	-3.76E-05
POCP	kg Ethene eq.	9.58E-05	8.04E-05	-1.13E-07	8.35E-07	1.11E-05	-1.26E-07	3.77E-06	-5.76E-05

Table 19: EN 15804+A2/AC (2021) LCIA results for LSHF 4 (F/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP Total	kg CO ₂ eq.	3.92E-01	1.86E-01	3.86E-03	6.44E-03	7.76E-02	4.31E-03	0.00E+00	1.14E-01	-1.22E-01
GWP Fossil	kg CO ₂ eq.	3.90E-01	1.89E-01	3.87E-03	1.36E-03	7.69E-02	4.32E-03	0.00E+00	1.14E-01	-1.21E-01
GWP Bio	kg CO ₂ eq.	1.54E-03	-4.20E-03	-3.81E-05	5.08E-03	6.93E-04	-4.25E-05	0.00E+00	5.06E-05	1.13E-04
GWP Luluc	kg CO ₂ eq.	4.32E-04	3.59E-04	2.62E-05	8.46E-08	1.63E-05	2.93E-05	0.00E+00	1.48E-06	-2.83E-04
ODP	kg CFC 11 eq.	2.24E-12	1.04E-12	3.82E-16	7.68E-16	1.13E-12	4.27E-16	0.00E+00	6.46E-14	-5.71E-13
AP	mole H+ eq.	1.91E-03	1.68E-03	4.56E-06	1.44E-06	1.69E-04	5.10E-06	0.00E+00	5.52E-05	-1.44E-03
EP Fresh	kg P eq.	7.13E-07	4.12E-07	1.39E-08	3.18E-08	2.24E-07	1.55E-08	0.00E+00	1.57E-08	-2.21E-07
EP Marine	kg N eq.	1.98E-04	1.37E-04	1.51E-06	6.23E-07	3.79E-05	1.69E-06	0.00E+00	1.96E-05	-9.00E-05
EP Terr	mole of N eq.	2.12E-03	1.44E-03	1.80E-05	5.37E-06	3.98E-04	2.01E-05	0.00E+00	2.36E-04	-9.32E-04
POCP	kg NMVOC eq.	6.38E-04	4.70E-04	3.96E-06	2.55E-06	1.02E-04	4.42E-06	0.00E+00	5.47E-05	-3.05E-04



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

ADP element	kg Sb eq.	9.76E-05	9.76E-05	3.92E-10	1.87E-11	2.10E-08	4.39E-10	0.00E+00	1.67E-09	-6.22E-05
ADP fossil	MJ	4.87E+00	3.13E+00	5.11E-02	5.09E-03	1.40E+00	5.71E-02	0.00E+00	2.31E-01	-1.51E+00
WDP	m ³ World -q	9.78E-02	6.75E-02	4.36E-05	2.51E-04	1.75E-02	4.87E-05	0.00E+00	1.24E-02	-5.81E-02

Table 20: Rest of the World LCIA results for LSHF 4 (F/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C4	D
GWP – 100	kg CO ₂ eq.	3.91E-01	1.88E-01	3.84E-03	3.92E-03	7.66E-02	4.29E-03	1.14E-01	-1.20E-01
ODP	kg R11 eq.	2.64E-12	1.23E-12	4.50E-16	9.04E-16	1.33E-12	5.03E-16	7.61E-14	-6.73E-13
AP	kg SO ₂ eq.	1.82E-03	1.61E-03	3.34E-06	1.10E-06	1.59E-04	3.73E-06	4.09E-05	-1.30E-03
EP	kg Phosphate eq.	8.64E-05	5.84E-05	7.65E-07	1.01E-06	1.78E-05	8.55E-07	7.54E-06	-3.91E-05
POCP	kg Ethene eq.	9.59E-05	8.04E-05	-1.14E-07	8.34E-07	1.11E-05	-1.27E-07	3.92E-06	-6.03E-05

Table 21: EN 15804+A2/AC (2021) LCIA results for LSHF 5 (Cat 6A U/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP Total	kg CO ₂ eq.	4.15E-01	1.64E-01	4.77E-03	6.91E-03	7.76E-02	5.39E-03	0.00E+00	1.57E-01	-1.39E-01
GWP Fossil	kg CO ₂ eq	4.13E-01	1.68E-01	4.78E-03	1.83E-03	7.69E-02	5.41E-03	0.00E+00	1.56E-01	-1.38E-01
GWP Bio	kg CO ₂ eq	1.65E-03	-4.08E-03	-4.70E-05	5.08E-03	6.93E-04	-5.32E-05	0.00E+00	4.96E-05	-9.51E-06
GWP Luluc	kg CO ₂ eq	4.40E-04	3.54E-04	3.24E-05	1.06E-07	1.63E-05	3.67E-05	0.00E+00	1.46E-06	-2.72E-04
ODP	kg CFC 11 eq.	2.27E-12	1.08E-12	4.72E-16	8.29E-16	1.13E-12	5.34E-16	0.00E+00	6.35E-14	-6.99E-13
AP	mole H+ eq.	1.87E-03	1.63E-03	5.64E-06	1.60E-06	1.69E-04	6.38E-06	0.00E+00	5.72E-05	-1.40E-03
EP Fresh	kg P eq.	7.04E-07	3.88E-07	1.72E-08	3.91E-08	2.24E-07	1.94E-08	0.00E+00	1.54E-08	-2.42E-07
EP Marine	kg N eq.	1.91E-04	1.29E-04	1.87E-06	6.58E-07	3.79E-05	2.11E-06	0.00E+00	1.96E-05	-9.37E-05
EP Terr	mole of N eq.	2.04E-03	1.34E-03	2.22E-05	5.85E-06	3.98E-04	2.52E-05	0.00E+00	2.47E-04	-9.74E-04
POCP	kg NMVOC eq.	6.13E-04	4.42E-04	4.89E-06	2.66E-06	1.02E-04	5.53E-06	0.00E+00	5.50E-05	-3.12E-04
ADP element	kg Sb eq.	6.54E-05	6.54E-05	4.85E-10	2.20E-11	2.10E-08	5.49E-10	0.00E+00	1.64E-09	-5.91E-05
ADP fossil	MJ	4.81E+00	3.05E+00	6.31E-02	5.66E-03	1.40E+00	7.14E-02	0.00E+00	2.25E-01	1.83E+00
WDP	m ³ World -q	9.82E-02	6.40E-02	5.38E-05	2.89E-04	1.75E-02	6.09E-05	0.00E+00	1.62E-02	-5.77E-02



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

Table 22: Rest of the World LCIA results for LSHF 5 (Cat 6A U/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C4	D
GWP – 100	kg CO ₂ eq.	4.14E-01	1.66E-01	4.74E-03	4.39E-03	7.66E-02	5.37E-03	1.56E-01	-1.37E-01
ODP	kg R11 eq.	2.68E-12	1.28E-12	5.56E-16	9.76E-16	1.33E-12	6.29E-16	7.48E-14	-8.23E-13
AP	kg SO ₂ eq.	1.69E-03	1.48E-03	4.12E-06	1.23E-06	1.59E-04	4.66E-06	4.18E-05	-1.26E-03
EP	kg Phosphate eq.	8.40E-05	5.52E-05	9.45E-07	1.12E-06	1.78E-05	1.07E-06	7.81E-06	-4.07E-05
POCP	kg Ethene eq.	9.37E-05	7.80E-05	-1.41E-07	8.46E-07	1.11E-05	-1.59E-07	4.04E-06	-5.97E-05

Table 23: EN 15804+A2/AC (2021) LCIA results for LSHF 6 (Cat 5e/6 U/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP Total	kg CO ₂ eq.	2.88E-01	1.24E-01	2.82E-03	6.03E-03	7.76E-02	3.08E-03	0.00E+00	7.42E-02	-9.23E-02
GWP Fossil	kg CO ₂ eq.	2.86E-01	1.29E-01	2.83E-03	9.49E-04	7.69E-02	3.08E-03	0.00E+00	7.42E-02	-9.22E-02
GWP Bio	kg CO ₂ eq.	1.42E-03	-4.34E-03	-2.78E-05	5.08E-03	6.93E-04	-3.03E-05	0.00E+00	4.21E-05	1.51E-04
GWP Luluc	kg CO ₂ eq.	3.63E-04	3.05E-04	1.92E-05	7.31E-08	1.63E-05	2.09E-05	0.00E+00	1.23E-06	-2.39E-04
ODP	kg CFC 11 eq.	2.05E-12	8.65E-13	2.79E-16	6.76E-16	1.13E-12	3.05E-16	0.00E+00	5.38E-14	-4.12E-13
AP	mole H ⁺ eq.	1.62E-03	1.40E-03	3.33E-06	1.31E-06	1.69E-04	3.64E-06	0.00E+00	4.45E-05	-1.20E-03
EP Fresh	kg P eq.	5.90E-07	3.06E-07	1.02E-08	2.55E-08	2.24E-07	1.11E-08	0.00E+00	1.31E-08	-1.73E-07
EP Marine	kg N eq.	1.58E-04	1.01E-04	1.10E-06	5.95E-07	3.79E-05	1.20E-06	0.00E+00	1.61E-05	-7.24E-05
EP Terr	mole of N eq.	1.67E-03	1.05E-03	1.32E-05	4.97E-06	3.98E-04	1.43E-05	0.00E+00	1.90E-04	-7.49E-04
POCP	kg NMVOC eq.	5.02E-04	3.46E-04	2.89E-06	2.46E-06	1.02E-04	3.15E-06	0.00E+00	4.50E-05	-2.47E-04
ADP element	kg Sb eq.	5.83E-05	5.82E-05	2.87E-10	1.63E-11	2.10E-08	3.13E-10	0.00E+00	1.39E-09	-5.27E-05
ADP fossil	MJ	3.74E+00	2.07E+00	3.73E-02	4.46E-03	1.40E+00	4.07E-02	0.00E+00	1.93E-01	-1.10E+00
WDP	m ³ World -q	8.15E-02	5.53E-02	3.18E-05	2.13E-04	1.75E-02	3.47E-05	0.00E+00	8.46E-03	-4.81E-02





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

Table 24: Rest of the World LCIA results for LSHF 6 (Cat 5e/6 U/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C4	D
GWP – 100	kg CO ₂ eq.	2.88E-01	1.28E-01	2.81E-03	3.51E-03	7.66E-02	3.06E-03	7.40E-02	-9.14E-02
ODP	kg R11 eq.	2.41E-12	1.02E-12	3.29E-16	7.95E-16	1.33E-12	3.59E-16	6.33E-14	-4.85E-13
AP	kg SO ₂ eq.	1.48E-03	1.28E-03	2.44E-06	1.00E-06	1.59E-04	2.66E-06	3.33E-05	-1.09E-03
EP	kg Phosphate eq.	6.97E-05	4.38E-05	5.59E-07	9.11E-07	1.78E-05	6.10E-07	6.08E-06	-3.15E-05
POCP	kg Ethene eq.	7.83E-05	6.34E-05	-8.31E-08	8.24E-07	1.11E-05	-9.07E-08	3.18E-06	-5.00E-05

4.2. Visualization of LCIA results

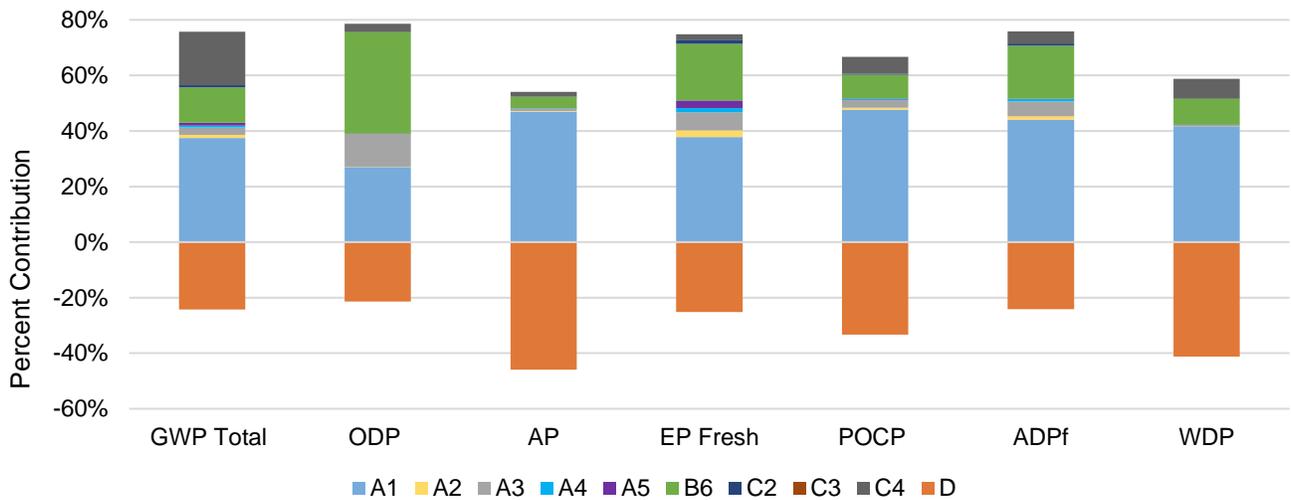


Figure 2: Contributions to the environmental impact categories for LSHF 1 (S/FTP), per 1 m of copper data cable





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

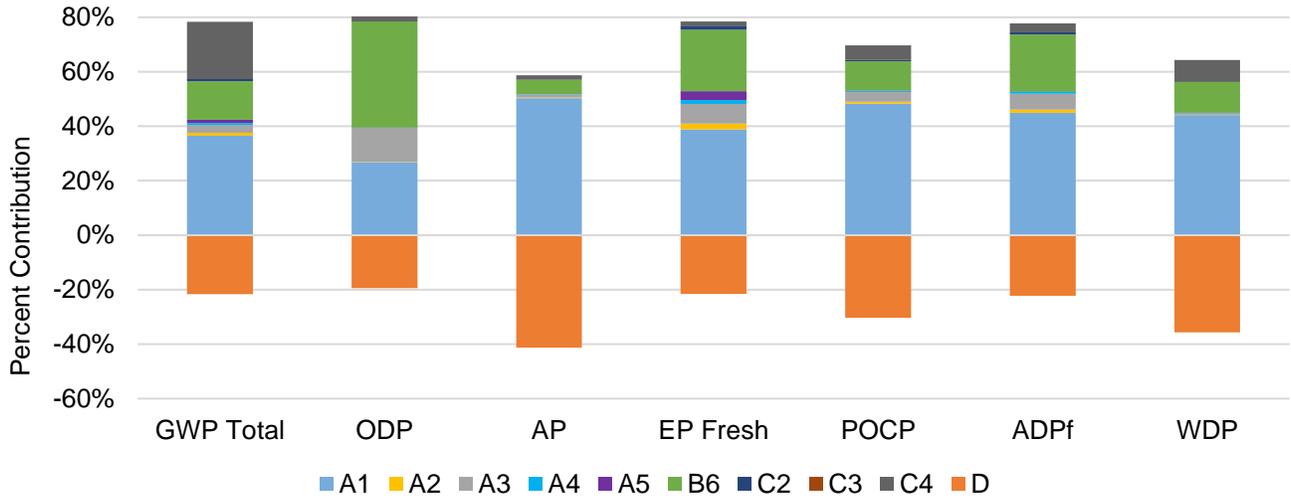


Figure 3: Contributions to the environmental impact categories for LSHF 2 (F/FTP), per 1 m of copper data cable

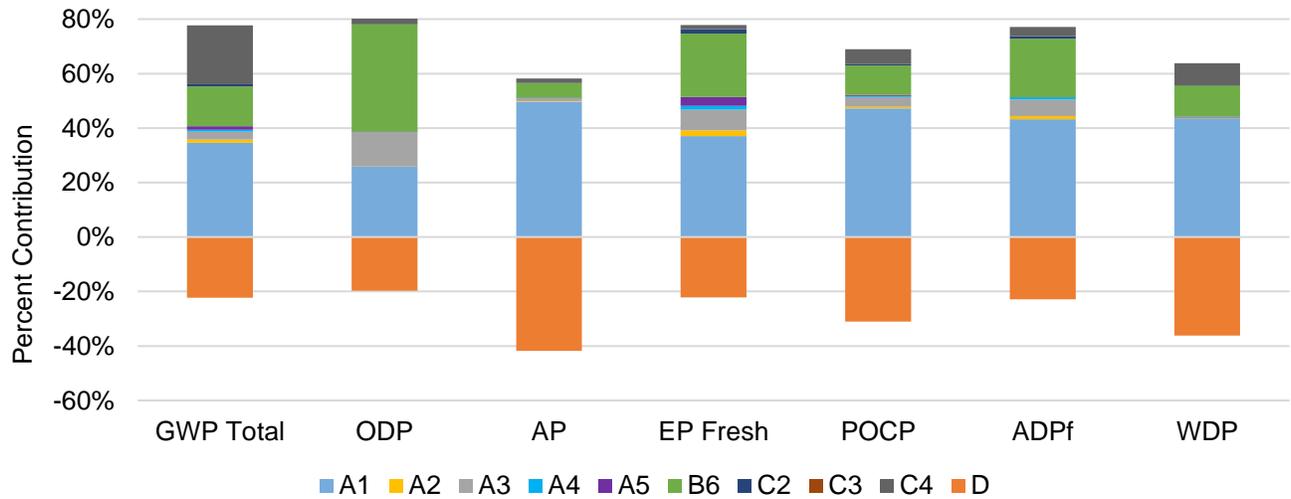


Figure 4: Contributions to the environmental impact categories for LSHF 3 (U/FTP), per 1 m of copper data cable





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

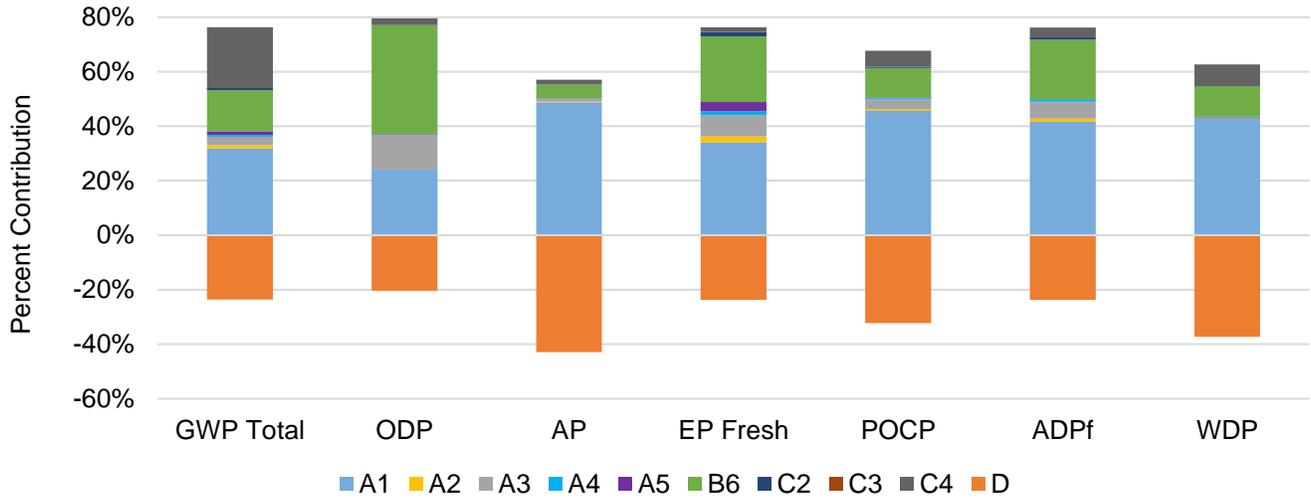


Figure 5: Contributions to the environmental impact categories for LSHF 4 (F/UTP), per 1 m of copper data cable.

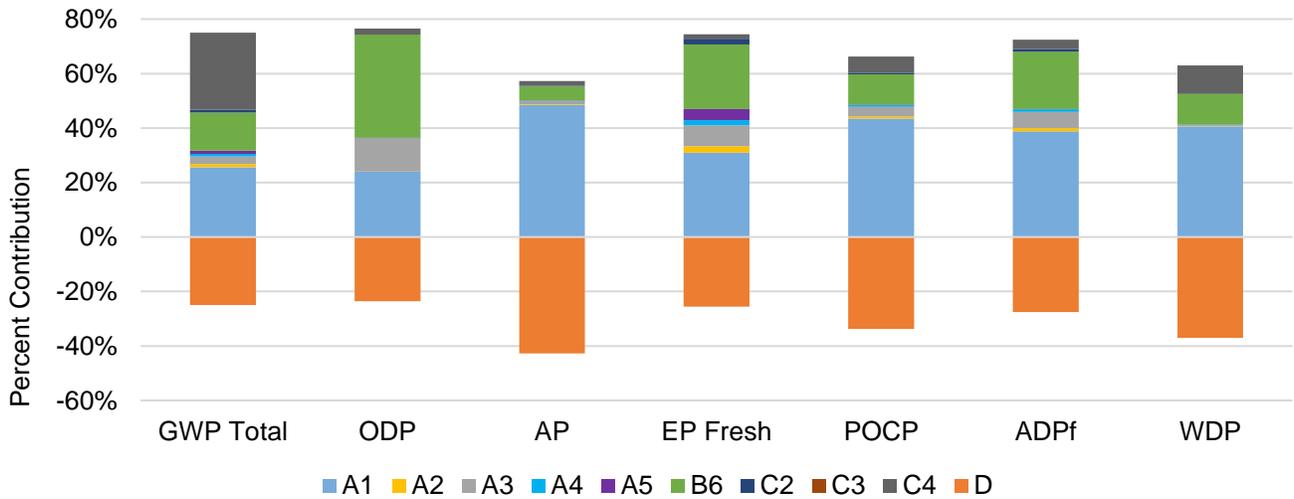


Figure 6: Contributions to the environmental impact categories for LSHF 5 (Cat 6A U/UTP), per 1 m of copper data cable





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

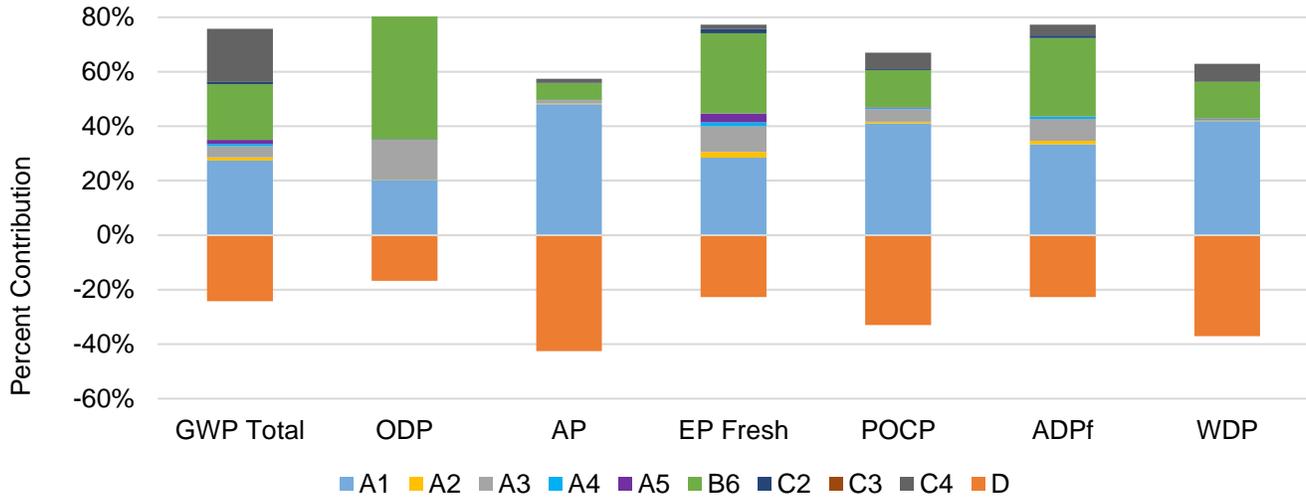


Figure 7: Contributions to the environmental impact categories for LSHF 6 (Cat 5e/6 U/UTP), per 1 m of copper data cable

4.3. Life Cycle Inventory Results

Use of resources, and generation of wastes for Leviton’s LSHF copper data cables are presented from Table 25 through Table 36 as per (EN 15804+A2/AC, 2021).

Table 25: EN 15804+A2/AC (2021) Resource Use LSHF 1 (S/FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ, LHV	1.83E+00	9.84E-01	3.98E-03	5.87E-04	7.75E-01	4.48E-03	0.00E+00	5.95E-02	-5.16E-01
PERM	MJ, LHV	5.26E-02	5.26E-02	0.00E+00						
PERT	MJ, LHV	1.88E+00	1.04E+00	3.98E-03	5.87E-04	7.75E-01	4.48E-03	0.00E+00	5.95E-02	-5.16E-01
PENRE	MJ, LHV	5.54E+00	3.71E+00	5.77E-02	5.31E-03	1.40E+00	6.49E-02	0.00E+00	3.13E-01	-1.77E+00
PENRM	MJ, LHV	4.41E-01	4.41E-01	0.00E+00						
PENRT	MJ, LHV	5.99E+00	4.15E+00	5.77E-02	5.31E-03	1.40E+00	6.49E-02	0.00E+00	3.13E-01	-1.77E+00
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
FW	m ³	3.19E-03	2.09E-03	4.60E-06	6.02E-06	7.39E-04	5.18E-06	0.00E+00	3.41E-04	-1.45E-03



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

Table 26: EN 15804+A2/AC (2021) Output Flows and Waste Categories LSHF 1 (S/FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	1.07E-09	9.34E-10	3.05E-13	7.92E-13	1.21E-10	3.44E-13	0.00E+00	1.61E-11	-3.07E-10
NHWD	kg	6.58E-02	5.46E-02	9.40E-06	4.39E-03	1.05E-03	1.06E-05	0.00E+00	5.76E-03	-4.50E-02
RWD	kg	3.70E-04	1.30E-04	1.07E-07	1.16E-07	2.23E-04	1.21E-07	0.00E+00	1.68E-05	-6.19E-05
CRU	kg	-	-	-	-	-	-	-	-	-
MFR	kg	2.84E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-02	0.00E+00
MER	kg	-	-	-	-	-	-	-	-	-
EEE	MJ	2.01E-01	0.00E+00	0.00E+00	4.67E-03	0.00E+00	0.00E+00	0.00E+00	1.96E-01	0.00E+00
EET	MJ	3.55E-01	0.00E+00	0.00E+00	6.23E-03	0.00E+00	0.00E+00	0.00E+00	3.49E-01	0.00E+00

Table 27: EN 15804+A2/AC (2021) Resource Use LSHF 2 (F/FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ, LHV	1.76E+00	9.37E-01	3.51E-03	5.44E-04	7.75E-01	3.92E-03	0.00E+00	4.18E-02	-4.31E-01
PERM	MJ, LHV	5.26E-02	5.26E-02	0.00E+00						
PERT	MJ, LHV	1.81E+00	9.90E-01	3.51E-03	5.44E-04	7.75E-01	3.92E-03	0.00E+00	4.18E-02	-4.31E-01
PENRE	MJ, LHV	5.21E+00	3.49E+00	5.08E-02	5.07E-03	1.40E+00	5.68E-02	0.00E+00	2.19E-01	-1.49E+00
PENRM	MJ, LHV	4.39E-01	4.39E-01	0.00E+00						
PENRT	MJ, LHV	5.65E+00	3.92E+00	5.08E-02	5.07E-03	1.40E+00	5.68E-02	0.00E+00	2.19E-01	-1.49E+00
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
FW	m ³	3.03E-03	1.97E-03	4.05E-06	5.90E-06	7.39E-04	4.53E-06	0.00E+00	3.07E-04	-1.07E-03

Table 28: EN 15804+A2/AC (2021) Output Flows and Waste Categories LSHF 2 (F/FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	1.03E-09	9.00E-10	2.69E-13	7.56E-13	1.21E-10	3.00E-13	0.00E+00	1.14E-11	-2.48E-10
NHWD	kg	5.51E-02	4.58E-02	8.28E-06	4.09E-03	1.05E-03	9.25E-06	0.00E+00	4.09E-03	-3.10E-02
RWD	kg	3.65E-04	1.30E-04	9.43E-08	1.05E-07	2.23E-04	1.05E-07	0.00E+00	1.18E-05	-6.45E-05
CRU	kg	-	-	-	-	-	-	-	-	-
MFR	kg	1.95E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	0.00E+00



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
MER	kg	-	-	-	-	-	-	-	-	-
EEE	MJ	2.12E-01	0.00E+00	0.00E+00	4.78E-03	0.00E+00	0.00E+00	0.00E+00	2.07E-01	0.00E+00
EET	MJ	3.75E-01	0.00E+00	0.00E+00	6.42E-03	0.00E+00	0.00E+00	0.00E+00	3.68E-01	0.00E+00

Table 29: EN 15804+A2/AC (2021) Resource Use LSHF 3 (U/FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ, LHV	1.72E+00	8.94E-01	3.51E-03	5.45E-04	7.75E-01	3.92E-03	0.00E+00	4.20E-02	-4.32E-01
PERM	MJ, LHV	5.26E-02	5.26E-02	0.00E+00						
PERT	MJ, LHV	1.77E+00	9.47E-01	3.51E-03	5.45E-04	7.75E-01	3.92E-03	0.00E+00	4.20E-02	-4.32E-01
PENRE	MJ, LHV	5.02E+00	3.29E+00	5.08E-02	5.07E-03	1.40E+00	5.68E-02	0.00E+00	2.20E-01	-1.49E+00
PENRM	MJ, LHV	4.71E-01	4.71E-01	0.00E+00						
PENRT	MJ, LHV	5.49E+00	3.76E+00	5.08E-02	5.07E-03	1.40E+00	5.68E-02	0.00E+00	2.20E-01	-1.49E+00
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
FW	m ³	2.91E-03	1.85E-03	4.05E-06	5.90E-06	7.39E-04	4.53E-06	0.00E+00	3.07E-04	-1.07E-03

Table 30: EN 15804+A2/AC (2021) Output Flows and Waste Categories LSHF 3 (U/FTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	1.02E-09	8.84E-10	2.69E-13	7.56E-13	1.21E-10	3.00E-13	0.00E+00	1.15E-11	-2.49E-10
NHWD	kg	5.44E-02	4.51E-02	8.28E-06	4.10E-03	1.05E-03	9.25E-06	0.00E+00	4.11E-03	-3.12E-02
RWD	kg	3.58E-04	1.23E-04	9.43E-08	1.05E-07	2.23E-04	1.05E-07	0.00E+00	1.18E-05	-6.43E-05
CRU	kg	-	-	-	-	-	-	-	-	-
MFR	kg	1.96E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.96E-02	0.00E+00
MER	kg	-	-	-	-	-	-	-	-	-
EEE	MJ	2.11E-01	0.00E+00	0.00E+00	4.78E-03	0.00E+00	0.00E+00	0.00E+00	2.06E-01	0.00E+00
EET	MJ	3.74E-01	0.00E+00	0.00E+00	6.41E-03	0.00E+00	0.00E+00	0.00E+00	3.67E-01	0.00E+00



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

Table 31: EN 15804+A2/AC (2021) Resource Use LSHF 4 (F/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ, LHV	1.66E+00	8.29E-01	3.54E-03	5.48E-04	7.75E-01	3.96E-03	0.00E+00	4.41E-02	-4.39E-01
PERM	MJ, LHV	5.26E-02	5.26E-02	0.00E+00						
PERT	MJ, LHV	1.71E+00	8.81E-01	3.54E-03	5.48E-04	7.75E-01	3.96E-03	0.00E+00	4.41E-02	-4.39E-01
PENRE	MJ, LHV	4.87E+00	3.13E+00	5.13E-02	5.08E-03	1.40E+00	5.73E-02	0.00E+00	2.31E-01	-1.52E+00
PENRM	MJ, LHV	6.25E-01	6.25E-01	0.00E+00						
PENRT	MJ, LHV	5.50E+00	3.76E+00	5.13E-02	5.08E-03	1.40E+00	5.73E-02	0.00E+00	2.31E-01	-1.52E+00
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
FW	m ³	2.75E-03	1.69E-03	4.09E-06	5.89E-06	7.39E-04	4.57E-06	0.00E+00	3.09E-04	-1.12E-03

Table 32: EN 15804+A2/AC (2021) Output Flows and Waste Categories LSHF 4 (F/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	1.00E-09	8.67E-10	2.71E-13	7.58E-13	1.21E-10	3.03E-13	0.00E+00	1.20E-11	-2.54E-10
NHWD	kg	5.37E-02	4.42E-02	8.36E-06	4.12E-03	1.05E-03	9.34E-06	0.00E+00	4.30E-03	-3.28E-02
RWD	kg	3.47E-04	1.11E-04	9.52E-08	1.06E-07	2.23E-04	1.06E-07	0.00E+00	1.24E-05	-6.33E-05
CRU	kg	-	-	-	-	-	-	-	-	-
MFR	kg	2.07E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-02	0.00E+00
MER	kg	-	-	-	-	-	-	-	-	-
EEE	MJ	2.08E-01	0.00E+00	0.00E+00	4.74E-03	0.00E+00	0.00E+00	0.00E+00	2.03E-01	0.00E+00
EET	MJ	3.67E-01	0.00E+00	0.00E+00	6.35E-03	0.00E+00	0.00E+00	0.00E+00	3.61E-01	0.00E+00

Table 33: EN 15804+A2/AC (2021) Resource Use LSHF 5 (Cat 6A U/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ, LHV	1.63E+00	8.00E-01	4.38E-03	6.00E-04	7.75E-01	4.95E-03	0.00E+00	4.32E-02	-5.25E-01
PERM	MJ, LHV	5.26E-02	5.26E-02	0.00E+00						
PERT	MJ, LHV	1.68E+00	8.53E-01	4.38E-03	6.00E-04	7.75E-01	4.95E-03	0.00E+00	4.32E-02	-5.25E-01
PENRE	MJ, LHV	4.81E+00	3.05E+00	6.34E-02	5.65E-03	1.40E+00	7.17E-02	0.00E+00	2.26E-01	-1.83E+00
PENRM	MJ, LHV	8.00E-01	8.00E-01	0.00E+00						



ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

PARAMETER S	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PENRT	MJ, LHV	5.61E+00	3.85E+00	6.34E-02	5.65E-03	1.40E+00	7.17E-02	0.00E+00	2.26E-01	-1.83E+00
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
FW	m ³	2.72E-03	1.57E-03	5.06E-06	6.81E-06	7.39E-04	5.72E-06	0.00E+00	3.97E-04	-1.16E-03

Table 34: EN 15804+A2/AC (2021) Output Flows and Waste Categories LSHF 5 (Cat 6A U/UTP) copper data cable

PARAMETER S	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	1.01E-09	8.71E-10	3.35E-13	8.43E-13	1.21E-10	3.80E-13	0.00E+00	1.20E-11	-2.94E-10
NHWD	kg	5.75E-02	4.75E-02	1.03E-05	4.63E-03	1.05E-03	1.17E-05	0.00E+00	4.28E-03	-3.14E-02
RWD	kg	3.41E-04	1.05E-04	1.18E-07	1.15E-07	2.23E-04	1.33E-07	0.00E+00	1.21E-05	-9.10E-05
CRU	kg	-	-	-	-	-	-	-	-	-
MFR	kg	1.96E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.96E-02	0.00E+00
MER	kg	-	-	-	-	-	-	-	-	-
EEE	MJ	3.01E-01	0.00E+00	0.00E+00	5.66E-03	0.00E+00	0.00E+00	0.00E+00	2.95E-01	0.00E+00
EET	MJ	5.33E-01	0.00E+00	0.00E+00	7.99E-03	0.00E+00	0.00E+00	0.00E+00	5.25E-01	0.00E+00

Table 35: EN 15804+A2/AC (2021) Resource Use LSHF 6 (Cat 5e/6 U/UTP) copper data cable

PARAMETER S	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ, LHV	1.49E+00	6.74E-01	2.59E-03	4.81E-04	7.75E-01	2.82E-03	0.00E+00	3.67E-02	-3.22E-01
PERM	MJ, LHV	5.26E-02	5.26E-02	0.00E+00						
PERT	MJ, LHV	1.54E+00	7.26E-01	2.59E-03	4.81E-04	7.75E-01	2.82E-03	0.00E+00	3.67E-02	-3.22E-01
PENRE	MJ, LHV	3.75E+00	2.07E+00	3.75E-02	4.45E-03	1.40E+00	4.09E-02	0.00E+00	1.93E-01	-1.10E+00
PENRM	MJ, LHV	3.74E-01	3.74E-01	0.00E+00						
PENRT	MJ, LHV	4.12E+00	2.45E+00	3.75E-02	4.45E-03	1.40E+00	4.09E-02	0.00E+00	1.93E-01	-1.10E+00
SM	kg	-	-	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-	-
FW	m ³	2.21E-03	1.24E-03	2.99E-06	5.00E-06	7.39E-04	3.26E-06	0.00E+00	2.13E-04	-8.97E-04





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025, EN 15804+A2/AC

Table 36: EN 15804+A2/AC (2021) Output Flows and Waste Categories LSHF 6 (Cat 5e/6 U/UTP) copper data cable

PARAMETERS	UNIT	TOTAL	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	9.14E-10	7.82E-10	1.98E-13	6.64E-13	1.21E-10	2.16E-13	0.00E+00	9.95E-12	-1.91E-10
NHWD	kg	4.41E-02	3.60E-02	6.11E-06	3.51E-03	1.05E-03	6.66E-06	0.00E+00	3.56E-03	-2.77E-02
RWD	kg	3.21E-04	8.74E-05	6.96E-08	9.33E-08	2.23E-04	7.59E-08	0.00E+00	1.04E-05	-3.93E-05
CRU	kg	-	-	-	-	-	-	-	-	-
MFR	kg	1.75E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-02	0.00E+00
MER	kg	-	-	-	-	-	-	-	-	-
EEE	MJ	1.28E-01	0.00E+00	0.00E+00	3.95E-03	0.00E+00	0.00E+00	0.00E+00	1.24E-01	0.00E+00
EET	MJ	2.25E-01	0.00E+00	0.00E+00	4.94E-03	0.00E+00	0.00E+00	0.00E+00	2.20E-01	0.00E+00

5. LCA Interpretation

Overall, for all products evaluated, raw materials (A1) are the largest contributor (27% to 50%) across all impact categories except for ODP and for LSHF 5, C4 (28%) is the main impact driver in the production of 1 m² of LSHF copper data cables. The usage of copper as a raw material contributes the most and this is also due to upstream burdens in material extraction of all raw materials. Module (A3) manufacturing (1-15%) also contributes to noticeable impact.

Installation (A5) has minimal contribution (1-2%) across all impact categories for all products. Outbound transport of products (A4) and transport for end-of-life disposal (C2) are minor contributors to all impact categories.

The impact of operational energy use (B6) is significant (9% to 29%) due to consumption of energy during the use stage and B6 contributes (38% to 46%) to ODP.

End of Life disposal (C4) has noticeable contributions (19% to 28%) to global warming and (7% to 10%) to water deprivation potential. Recycling metal components at the end of copper cables life provides significant benefits by avoiding environmental burdens associated with cable production. Credits (22% to 47%) at the end-of-life (D) are earned from both the recycling of metals and the thermal and electrical energy benefits from incineration. The greatest benefits are derived from recycling copper cables, followed by incineration, and a smaller amount from the energy generated by landfill gas.





Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

6. Additional Environmental Information

6.1. Environmental Activities and Certifications

Leviton Network Solutions has long been motivated by sustainability goals. Our copper and fiber cable manufacturing facility in Glenrothes, UK, has been carbon neutral since 2011, a first step toward accomplishing CN2030, our initiative to achieve carbon neutrality across our operations by 2025, with an ambition to be net zero by 2050. Also, Leviton Network Solutions' environmental activities include: the first data communications cable factory to achieve BSI PAS 2060 Carbon Neutrality, all manufacturing facilities are ISO 9001 Certified, and primary cable and connectivity factories are ISO 14001 and ISO 50001 Certified. Also, all manufacturing facilities comply with Conflict Minerals regulations, including supply (Sphera, 2023) chain contracts and supplier reviews.

Leviton Network Solutions has long been motivated by sustainability goals. Our copper and fiber cable manufacturing facility in Glenrothes, UK, has been carbon neutral since 2011, a first step toward accomplishing CN2030, our initiative to achieve carbon neutrality across our operations by 2025, with an ambition to be net zero by 2050. Also, Leviton Network Solutions' environmental activities include: the first data communications cable factory to achieve BSI PAS 2060 Carbon Neutrality, all manufacturing facilities are ISO 9001 Certified, and primary cable and connectivity factories are ISO 14001 and ISO 50001 Certified. Also, all manufacturing facilities comply with Conflict Minerals regulations, including supply (Sphera, 2023) chain contracts and supplier reviews.

6.2. Further Information

Leviton's CN2030 sustainability program to achieve carbon neutrality is based on the company's refreshed commitment to reduce its environmental impact in several focus areas: energy, waste, recycling, water, and by creating innovations that empower and enable customers to be more sustainable. Learn more about Leviton Network Solutions' sustainability commitments: Leviton.com/sustainability. (ISO, 2011)



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

7. References

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ENVIRONMENTAL PRODUCT DECLARATION



Copper LSHF Cable: Category 7A (UM12), Category 7 (UM10), Category 6A (SST, RDT, S/FTP, F/FTP, U/FTP, U/UTP), Category 6 (S/FTP, F/FTP, U/FTP, F/UTP, U/UTP), Category 5e (U/UTP)

According to ISO 14025,
EN 15804+A2/AC

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