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Environmental Product Declaration

UNE-EN ISO 14025:2010
UNE-EN 15804:2012+A2:2020/ AC 2021

AENOR

Halogen-free CLH corrugated conduit System.

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PEMSA CABLE MANAGEMENT S.A.

The holder of this Declaration is responsible for its content, as well as for keeping, throughout its validity period, the supporting documentation that substantiates the data and statements included.

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The European Standard UNE-EN 15804:2012+A2:2020 serves as the basis for the PCR
Independent verification of the declaration and data, according to EN ISO 14025:2010 ☐ Internal ☒ External
Verification body AENOR Product certification body accredited by ENAC (Accreditation Nº 1/C-PR468).

1. General Information.

1.1. The Organisation.

Pemsa Cable Management has specialised in cable management systems since 1969. It is a leader in the Spanish market and has achieved wide international expansion thanks to its high quality, innovation, and product development.

Pemsa's in-depth knowledge of the industry enables it to meet current and future needs by adapting to market demands.

The company is headquartered in Madrid, Spain, and operates subsidiaries in the United Kingdom, France, Portugal, and Colombia, being present in over 50 countries worldwide.

Pemsa owns four manufacturing centres equipped with proprietary automation systems.

Its numerous certifications endorse its commitment to quality, safety, and sustainability.

Pemsa's products are designed and manufactured under rigorous quality controls. Its quality and environmental management systems are certified in accordance with UNE-EN-ISO 9001:2015 and UNE-EN-ISO 14001:2015, respectively.

Furthermore, its wide range of products complies with the safety requirements of European Directive 2014/35/EU for low-voltage installations, European Directive 2015/863 on the restriction of hazardous substances (RoHS), and REACH Regulation (EC) No. 1907/2006 concerning the restriction of chemical substances.

1.2. Scope of the Declaration.

The scope of this EPD covers the environmental information related to the product's life cycle, including modules: A1–A5 (from raw material extraction to product installation on site), B1–B7 (use phase: use, maintenance, repair, replacement, refurbishment, energy and water consumption in the building), C1–C4 (end-of-life phase), and module D (benefits and loads beyond the system boundary).

The purpose of the product system under study is to be used as conduit for protecting, guiding and supporting electrical installations in the building and tertiary sectors.

1.3. Life Cycle and Conformity.

This EPD has been developed and verified in accordance with:

- UNE-EN ISO 14025:2010.
- UNE-EN ISO 14040:2006/A1:2021.
- UNE-EN ISO 14044:2006/A1:2021.
- UNE-EN 15804:2012+A2:2020 / AC 2021.

Table 1. Product Category Rule.

Título	Sustainability in construction. Environmental Product Declarations. Core Product Category Rules for construction products.
Registration /versión	UNE-EN 15804:2012+A2:2020 / AC 2021
Issue Date	2020
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This EPD includes the life cycle stages shown in Table 1-2. It is a cradle-to-grave declaration (A1–D).

Table 1-2. System boundaries. Considered information modules.

Product stage	A1	Raw material supply	X
	A2	Transport to factory	X
	A3	Manufacturing	X
Constr-uction	A4	Transport to site	X
	A5	Installation / construction	X
Use stage	B1	Use	X
	B2	Maintenance	X
	B3	Repair	X
	B4	Replacement	X
	B5	Refurbishment	X
	B6	Operational energy use	X
	B7	Operational water use	X
End of life	C1	Deconstruction / demolition	X
	C2	Transport	X
	C3	Waste processing	X
	C4	Disposal	X
	D	Potential for reuse, recovery and/or recycling	X
X = Module included in the LCA			

This EPD may not be comparable with those developed under other programmes or according to different reference documents; in particular, it may not be comparable with declarations not developed and verified in accordance with the UNE-EN 15804 Standard.

Similarly, EPDs may not be comparable if the data sources differ (for example, databases), if not all relevant information modules are included, or if they are not based on the same scenarios.

The comparison of construction products should be made based on the same function, using the same declared unit, and at the building level (or architectural/engineering work), that is, including the product's performance throughout its entire life cycle, as well as the specifications of section 6.7.2 of the UNE-EN ISO 14025 Standard.

1.4. Differences from previous versions of this EPD.

This EPD is modified, to include images of the process in ***2.3. Product performance*** and add the EN/IEC 61386-22 standard***,*** incorporate adjustments in the wording of section ***3.3. Declared unit*** and add ***Table 2-2.*** *Distribution packaging*.

2. The Product.

2.1. Product Identification.

This Environmental Product Declaration (EPD) applies to halogen-free CLH corrugated conduit systems made of polypropylene (PP), manufactured by PEMSA CABLE MANAGEMENT, S.A.

CPC Code: 36980.

2.2. Product Composition.

The manufacturer declares the following composition for 1 kg of product:

Table 2-1. Composition of halogen-free CLH corrugated conduit systems.

	% by weight
Polypropylene	93 -95 %
Additives	5 - 7 %

The raw material used is based on . Polypropylene (PP).

During the product's life cycle, no hazardous substances listed in the Candidate List of Substances of Very High Concern (SVHC) for Authorisation are used in concentrations greater than 0.1 % by weight of the product.

The study considers the primary packaging used in the distribution of the product.

Table 2-2. Distribution packaging.

	kg/declared unit
Film PEBD	7,94E-03

2.3. Product Performance.

CLH-type corrugated flexible conduit for the protection of electrical cables in building and tertiary sector applications. Manufactured from plastic material (PP), halogen-free, with an IP65 protection rating, compression resistance of 320 N, and impact resistance of 2 J. Available in gray (RAL 7035), with a wide range of sizes.

Halogen-free high-safety material with low opacity and smoke toxicity in the event of a fire, complying with EN 50642 / EN IEC 63355, which defines the test method to determine halogen content for cable management systems.

CLH conduits are non-flame-propagating according to the international European product standard (EN/IEC 61386-1).

Products covered by this EPD comply with the European Low Voltage Directive (2014/35/EU) and the applicable European and international product standards for conduit systems (EN/IEC 61386-1, EN/IEC 61386-22 and EN/IEC 61386-23).

CLH Corrugated Conduit

3. Life Cycle Assessment Information.

3.1. Life Cycle Analysis.

The Life Cycle Assessment (LCA) report for the EPD of the halogen-free CLH corrugated conduit manufactured by PEMSA CABLE MANAGEMENT, S.A., dated October 2025, was prepared by Abaleo S.L. using the databases Ecoinvent 3.11 (March 2025) and Environmental Footprint 3.1 (March 2023), and the software SimaPro 10.2.0.0, which was the most updated version available at the time of the study.

The study was based on data from the production plant in Mejorada del Campo (Madrid, Spain).

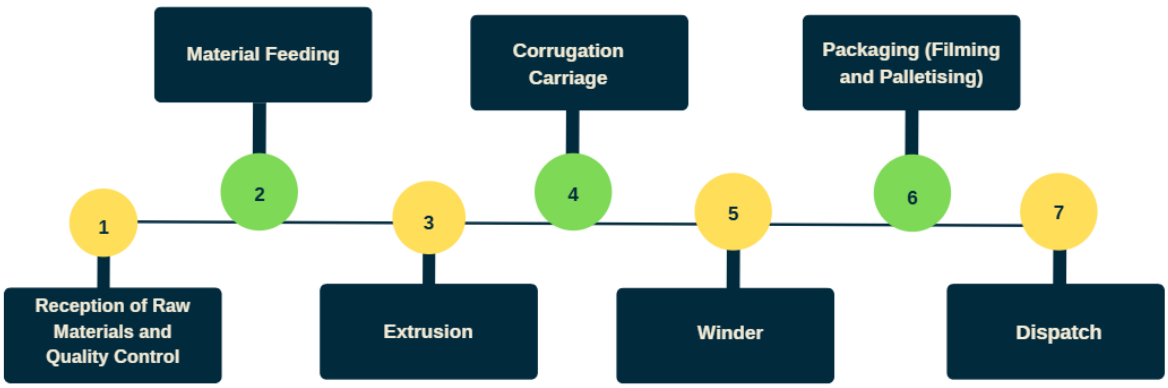
The LCA follows the recommendations and requirements of ISO 14040:2006, ISO 14044:2006, and UNE-EN 15804:2012 +A2:2020 / AC 2021.

3.2. Study Scope.

The scope of this EPD covers the cradle-to-grave (A1–D) production of the halogen-free CLH corrugated conduit manufactured by PEMSA CABLE MANAGEMENT, S.A., for use as protective cable management components in building and tertiary applications.

The following diagram represents the processes included in the study scope for the halogen-free CLH corrugated conduit.

Figure 3-1. Process diagram.



- Reception of Raw Materials and Quality Control:
  The raw material sacks are received with predefined technical specifications. An initial quality control is carried out to verify compliance with the required standards and regulations, ensuring their technical properties.
- Material Feeding:
  The raw material is fed into the hopper prior to the extrusion line.
- Extrusion:
  The product is formed through the extrusion process, adjusting the material feed according to the required nominal diameters.
- Corrugation Carriage:
  Once the material is extruded, it passes through a corrugation carriage with ring-shaped molds, forming the final tube profile according to the different nominal diameters.
- Winder:
  After extrusion and forming, the tube is conveyed to a winder, which coils it into rolls of varying lengths depending on the nominal diameter.
  Periodic in-line inspections and random sampling are carried out to verify the specified dimensional tolerances.
- Packaging (Filming and Palletising):
  Once the product is wound, it is packaged using recyclable packaging materials designed to protect it during handling and transportation, ensuring structural and surface integrity until it reaches its destination.
- Dispatch:
  Products are labelled and organised for distribution according to demand.

The specific manufacturing process data come from the Mejorada del Campo plant – Madrid (Spain), corresponding to the year 2024, which is considered a representative average year.

Exclusions from the LCA:

- Auxiliary installation components (such as plugs and screws), as they are not manufactured or marketed by PEMSA CABLE MANAGEMENT, S.A.
- Equipment with a service life greater than 3 years.
- Construction of factory buildings and other capital goods.
- Staff business travel and commuting.
- Research and development activities.

3.3. Declared Unit.

The declared unit is 1 kilogram (1 kg) of CLH corrugated conduit.

3.4. Allocation Criteria.

In accordance with the reference standard, allocation by mass has been applied for system inputs and outputs (auxiliary materials, energy consumption, and waste).

It was not necessary to apply economic allocation criteria.

3.5. Cut off Rule.

In accordance with the criteria of the reference standard, the gross weight/volume of all materials used in the manufacturing process has been included in the LCA, so that at least 99% of the weight of the product unit is obtained.

No exclusions of raw materials or energy inputs have been made.

3.6. Data Representativeness and Quality.

To model the manufacturing process of the CLH corrugated conduit produced by PEMSA CABLE MANAGEMENT, S.A., production data from the factory corresponding to the year 2024 have been used, a period considered representative of average production.

From this factory, data have been obtained on: material and energy consumption; distances from suppliers; and waste generation and management.

When necessary, the Ecoinvent 3.11 (March 2025) and Environmental Footprint 3.1 (March 2023) databases have been used, which are the latest versions available at the time of conducting the LCA. For inventory data, LCA modelling, and calculating the environmental impact categories required by the reference standard, the SimaPro 10.2.0.0 software has been employed, which is the most up-to-date version available at the time of the study.

The following criteria have been applied for the selection of the most representative processes:

- That the data are representative of the technological development actually applied in the manufacturing processes. If information is not available, a value representative of an average technology has been selected.
- That the data are geographically as close as possible (European) and, where applicable, regionally averaged.
- That the data are as up-to-date as possible.

To assess the quality of the primary data for the production of the studied products, the semi-quantitative data quality evaluation criteria proposed by the European Union in its Environmental Footprint Guide for Products and Organisations have been applied. The results obtained are as follows:

- Very good completeness. Score 1.
- Good methodological suitability and consistency. Score 2.
- Very good temporal representativeness. Score 1.
- Good technological representativeness. Score 2.
- Very good geographical representativeness. Score 1.
- Low data uncertainty. Score 2.

According to the above data, the Data Quality Rating (DQR) has the following value: 9/6 = 1.5, indicating that the data quality is excellent.

To better understand the data quality assessment carried out, it should be noted that the score for each criterion ranges from 1 to 5 (the lower the score, the higher the quality), and the final score is obtained using the following table:

Table 3-1. Data quality.

Overall data quality rating (DQR)	Overall data quality level
≤ 1,5	Excellent quality
1,5 a 2,0	Very good quality
2,0 a 3,0	Good quality
3 a 4,0	Fair quality
> 4	Insufficient quality

4. System boundaries, scenarios, and additional technical information.

The product system studied in the Life Cycle Assessment of the CLH corrugated conduit produced by PEMSA CABLE MANAGEMENT, S.A., is cradle-to-grave.

Module A1: Raw material production.

This module includes the raw material production process, in which the following is considered:

- The extraction of resources and the production of raw materials.
- Transport to the raw material processing/production facilities.
- Energy and fuel consumption during raw material production.
- Consumption of other resources (such as water) during raw material production.
- Generation of waste and emissions to air, water, and soil during raw material production.
- Production of the electricity used in the manufacturing process.

Module A2: Transport.

Truck and ship transport of all raw materials from the production sites (suppliers) to the PEMSA CABLE MANAGEMENT, S.A., plant in Mejorada del Campo – Madrid (Spain) has been considered. The transport distances for the raw materials have been calculated based on data provided by the purchasing and sales departments of PEMSA CABLE MANAGEMENT, S.A.

Module A3: Manufacturing.

This module considers the production of auxiliary materials for manufacturing, the production of the packaging required for product distribution to the customer, and its transport to the plant; the transport and management of the waste generated during this stage of the life cycle.

The transport distances for the waste have been calculated based on the locations provided by PEMSA CABLE MANAGEMENT, S.A.

Module A4. Transport to the installation/site.

This module considers all environmental impacts associated with the transport of the finished product (including packaging) to the customer or the construction site where it will be installed. It includes distance, transport mode, fuel type, and transport-related emissions.

Module A5. On-site installation.

This module covers the impacts arising from the installation activities of the product at its final location. It includes: energy use, transport and management of waste generated during the installation process (scrap and packaging waste), and production of installation waste.

Module B1-B7. Use stage.

The CLH corrugated conduit from PEMSA CABLE MANAGEMENT, S.A., do not require maintenance work, nor do they need to be repaired, replaced, or refurbished during their service life under normal use, provided they are correctly installed and used. They also do not consume materials or energy during their service life. Therefore, the environmental impacts in life cycle stages B1 to B7 are zero.

Module C1 – Deconstruction / demolition.

The LCA considers a typical scenario in which the CLH corrugated conduit are manually dismantled, without the need for machinery or complex procedures.

Module C2: Transport to the waste treatment/recovery facility.

It is assumed that, at the end of its service life, the CLH corrugated conduit are transported by road to the nearest waste management facility, located at an average distance of 100 km. For this transport, trucks with a load capacity of 16–32 tonnes, compliant with EURO6 standards, are used.

Module C3 - Waste treatment, and Module C4 - Waste disposal.

The waste scenario considered assumes that 18,3% of the polypropylene (PP) in the studied product is sent for recycling. Non-recycled waste is sent to landfill.

Table 4-1. Parameters of module C1–C4 corresponding to the CLH corrugated conduit.

Parameters	Value (per declared unit)
Demolition	0 MJ
Recovery system, specified by type	0 kg for reuse.
	0,183 kg for recycling.
	0 kg for energy recovery.
Disposal, specified by type	0,817 kg for final disposal (landfill).
Assumptions for scenario development (transport)	Transport of waste to the facility: - EURO 6 truck: 100 km

Module D – Benefits and burdens beyond the system boundary.

Module D includes the potential for reuse and recycling, expressed as net burdens and benefits related to the secondary material recovered at the exit of the product system, calculating material substitution effects only for the net output flow from the product stage; secondary material used as input in the product stage (A1–A3) has been excluded, considering only the percentage of non-secondary raw material that reaches waste status.

Table 4-2. Life Cycle Stages and Information Modules for Building Assessment.

Life Cycle Information – UNE EN 15804.														Additional information
A1 - 3			A4 - A5		B1 - B7					C1 - C4				D
Product stage			Construction process stage		Use stage					End of life stage				Benefits and burdens beyond the system
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Raw material supply	Transport	Manufacturing	Transport	Construction / installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Deconstruction, demolition	Transport	Waste treatment	Waste disposal	Potential for reuse, recovery, and recycling
			Scen-ario	Scen-ario	Scen-ario	Scen-ario	Scen-ario	Scen-ario	Scen -ario	Scen -ario	Scen -ario	Scen -ario	Scen -ario	

B6. Operational energy use	
Scenario	X

B7. Operational water use	
Scenario	X

X: Evaluated module

5. Declaration of the environmental parameters of the LCA and the LCI.

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins, or risks.

Environmental impact parameters for 1 kg of Halogen-free CLH corrugated conduit

Table 5-1. Environmental impact parameters defined in the UNE-EN 15804 Standard.

Halogen-free CLH corrugated conduit *Declared Unit: 1 kg*																			
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq	2,45 E+00	1,92 E-01	-4,21 E-02	2,60 E+00	5,71 E-02	1,60 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,50 E-02	1,35 E-01	3,69 E-01	-2,03E-01
GWP-fossil	kg CO_2 eq	2,44 E+00	1,92 E-01	4,38 E-02	2,68 E+00	5,71 E-02	1,51 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,50 E-02	1,34 E-01	3,69 E-01	-2,03 E-01
GWP-biogenic	kg CO_2 eq	9,85 E-04	7,83 E-06	-8,61 E-02	-8,51 E-02	1,99 E-06	8,88 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,21 E-07	1,69 E-04	2,71 E-06	2,83 E-05
GWP-luluc	kg CO_2 eq	1,11 E-03	5,97 E-06	8,36 E-05	1,20 E-03	9,11 E-07	3,03 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,37 E-07	1,12 E-04	7,88 E-07	-1,36 E-05
ODP	kg CFC-11 eq	1,16 E-07	3,06 E-09	1,23 E-09	1,20 E-07	1,29 E-09	1,14 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,41 E-10	1,24 E-09	2,34 E-10	-1,67 E-08
AP	mol H+ eq	7,04 E-03	4,95 E-03	1,56 E-04	1,21 E-02	8,33 E-05	6,04 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,86 E-05	3,24 E-04	7,63 E-05	-4,57 E-04
EP-freshwater	kg P eq	4,13 E-05	1,48 E-07	1,25 E-06	4,27 E-05	3,54 E-08	2,45 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,26 E-09	3,92 E-06	3,40 E-08	-6,44 E-07
EP-marine	kg N eq	1,45 E-03	1,23 E-03	3,81 E-05	2,72 E-03	1,90 E-05	1,34 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,18 E-06	5,62 E-05	4,02 E-05	-1,18 E-04
EP-terrestrial	mol N eq	1,56 E-02	1,37 E-02	4,17 E-04	2,97 E-02	2,08 E-04	1,35 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,56 E-05	6,28 E-04	3,84 E-04	-1,20 E-03
POFP	kg NMVOC eq	1,28 E-02	3,71 E-03	2,55 E-04	1,68 E-02	1,48 E-04	5,08 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,65 E-05	2,07 E-04	1,34 E-04	-1,63 E-03
ADP-minerals&metals [2]	kg Sb eq	1,44 E-07	2,23 E-09	1,79 E-08	1,64 E-07	1,48 E-09	8,51 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,91 E-10	1,48 E-07	3,18 E-09	1,30 E-07
ADP-fossil [2]	MJ, v.c.n.	8,52 E+01	2,40 E+00	1,09 E+00	8,87 E+01	7,59 E-01	2,36 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,99 E-01	1,14 E+00	1,68 E-01	-1,07 E+01
WDP [2]	m^3 eq	1,15 E+00	8,14 E-04	3,15 E-02	1,18 E+00	2,43 E-04	4,93 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,37E-05	1,99E-02	-2,47 E-03	-1,37 E-01

GWP - total: Global warming potential; **GWP - fossil**: Global warming potential from fossil fuels; **GWP - biogenic**: Biogenic global warming potential; **GWP - luluc**: Global warming potential from land use and land-use change; **ODP**: Ozone depletion potential; **AP**: Acidification potential, accumulated exceedance; **EP-freshwater**: Eutrophication potential, fraction of nutrients reaching the freshwater compartment; **EP-marine**: Eutrophication potential, fraction of nutrients reaching the marine compartment; **EP-terrestrial**: Eutrophication potential, accumulated exceedance; **POFP**: Photochemical ozone formation potential; **ADP-minerals&metals**: Abiotic depletion potential for non-fossil resources; **APD-fossil**: Abiotic depletion potential for fossil resources; **WDP**: Water deprivation potential (user), weighted water deprivation consumption.

Table 5-2. Additional environmental impact parameters defined in the UNE-EN 15804 Standard.

Halogen-free CLH corrugated conduit *Declared Unit: 1 kg*																		
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Human health impact	3,17E-08	6,24E-09	1,91E-09	3,99E-08	3,4E-09	5,81E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,98E-10	2,01E-09	1,17E-09	-2,20E-09
IRP [1]	kBq U235 eq	1,92E-01	1,91E-04	1,33E-03	1,93E-01	7,28E-05	4,11E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,91E-05	7,16 E-03	1,05E-04	-3,23E-04
ETP-fw [2]	CTUe	3,34E+00	7,93E-02	1,94E-01	3,6E+00	2,73E-02	1,14E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,18E-03	4,68E-01	7,84E-02	2,55E-02
HTP-c [2]	CTUh	2,83E-10	2,52E-11	6,71E-11	3,75E-10	3,57E-12	8,25E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,27E-13	9,42E-11	5,79E-12	5,89E-11
HTP-nc [2]	CTUh	6,69E-09	5,99E-10	1,76E-10	7,47E-09	3,80E-10	1,74 E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,00E-10	2,03E-08	4,72E-10	1,95E-08
SQP [2]	Pt	2,60E+00	3,09E-03	5,15E+00	7,76E+00	9,65E-04	1,34E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,53E-04	1,49E-01	3,84E-01	2,35E-02

PM: Potential incidence of diseases caused by particulate matter emissions; **IRP**: Human exposure efficiency relative to U-235 (Ionising Radiation Potential); **ETP-fw**: Comparative Toxic Unit Potential for freshwater ecosystems; **HTP-c**: Comparative Toxic Unit Potential for ecosystems – carcinogenic effects; **HTP-nc** Comparative Toxic Unit Potential for ecosystems – non-carcinogenic effects; **SQP**: Soil Quality Potential Index.

Note 1. This impact category primarily addresses the potential effects of low dose ionising radiation exposure on human health associated with the nuclear fuel cycle. It does not consider effects arising from potential nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The potential for ionising radiation in soil caused by radon emissions or by certain building materials is also not measured by this indicator.

Note 2. Results for this environmental impact indicator should be interpreted with caution, as the level of uncertainty is high and practical experience with this parameter remains limited.

Resource Use for 1 kg of Halogen-free CLH corrugated conduit

Table 5-3. Parameters describing resource use.

Halogen-free CLH corrugated conduit *Declared Unit: 1 kg*																			
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ, v.c.n.	1,89 E+00	4,76 E-03	8,72E-01	2,77 E+00	1,86 E-03	7,22 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,90 E-04	2,16E-01	3,81 E-03	2,44 E-02
PERM	MJ, v.c.n.	0,00 E+00	0,00E+00	8,45 E-01	8,45E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ, v.c.n.	1,89 E+00	4,76 E-03	1,72 E+00	3,61 E+00	1,86 E-03	7,22 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,90 E-04	2,16 E-01	3,81 E-03	2,44 E-02
PENRE	MJ, v.c.n.	8,52 E+01	2,40 E+00	1,09 E+00	8,87 E+01	7,59 E-01	2,36 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,99 E-01	1,14 E+00	1,68 E-01	-1,07 E+01
PENRM	MJ, v.c.n.	4,22 E+01	0,00 E+00	0,00 E+00	4,22 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PENRT	MJ, v.c.n.	1,27 E+02	2,40 E+00	1,09 E+00	1,31 E+02	7,59 E-01	2,36 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,99 E-01	1,14 E+00	1,68 E-01	-1,07 E+01
SM	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	MJ, v.c.n.	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,0 0E+00	0,00 E+00	0,00 E+00
NRSF	MJ, v.c.n.	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00E+00	0,00 E+00
FW	m^3	1,22 E-02	4,50 E-05	7,77 E-04	1,30 E-02	1,47 E-05	1,15 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,86 E-06	8,42 E-04	-3,12 E-03	-7,34 E-04

PERE: Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM**: Use of renewable primary energy used as raw materials; **PERT**: Total use of renewable primary energy; **PENRE**: Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM**: Use of non-renewable primary energy used as raw materials; **PENRT**: Total use of non-renewable primary energy; **SM**: Use of secondary materials; **RSF**: Use of renewable secondary fuels; **NRSF**: Use of non-renewable secondary fuels; **FW**: Net use of fresh water resources.

Waste Categories for 1 kg of Halogen-free CLH corrugated conduit

Table 5-4. Parameters describing waste generation.

Halogen-free CLH corrugated conduit *Declared Unit: 1 kg*																			
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	1,54E-03	1,25E-05	1,65E-05	1,57E-03	5,04E-06	1,00E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,33E-06	8,53E-04	1,31E-06	6,08E-04
NHWD	kg	8,66E-03	5,08E-05	3,21E-04	9,03E-03	2,55E-05	3,96E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,71E-06	1,28E-02	7,06E-01	1,16E-02
RWD	kg	1,28E-04	1,0E-07	1,01E-06	1,29E-04	4,57E-08	2,88E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-08	5,77E-06	5,93E-08	-3,9E-08

HWD: Hazardous waste disposed; **NHWD**: Non-hazardous waste disposed; **RWD**: Radioactive waste disposed.

Output flows for 1 kg of Halogen-free CLH corrugated conduit

Table 5-5. Parameters describing the output flows.

Halogen-free CLH corrugated conduit *Declared Unit: 1 kg*																			
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU: Components for Reuse; **MFR**: Materials for Recycling; **MER**: Materials for Energy Recovery; **EE**: Exported Energy; **EET**: Exported Thermal Energy.

Information on Biogenic Carbon Content

Halogen-Free CLH Corrugated Conduit	Units	Result per declared unit
Product biogenic carbon content - KgC	Kg C	0
Packaging biogenic carbon content - KgC	Kg C	2,35E-02

6. Additional Environmental Information.

6.1. Other Indicators.

The production of CLH corrugated conduit does not generate any co-products.

6.2. Indoor Air Emissions.

The manufacturer declares that the CLH corrugated conduit do not generate any indoor air emissions during their service life.

6.3. Soil and Water Emissions.

The manufacturer declares that the CLH corrugated conduit do not generate any emissions to soil or water during their service life.

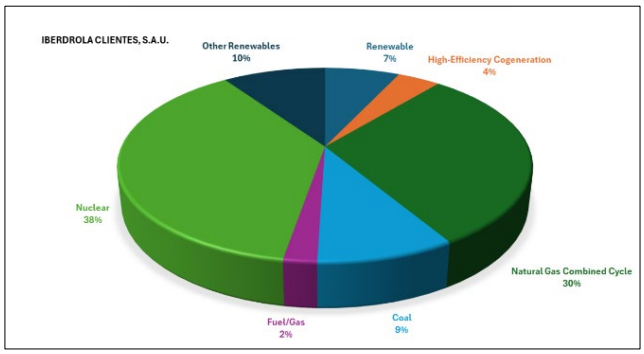
6.4. Biogenic Carbon Content.

The manufacturer declares that the packaging of the CLH corrugated conduit does contain materials with biogenic content.

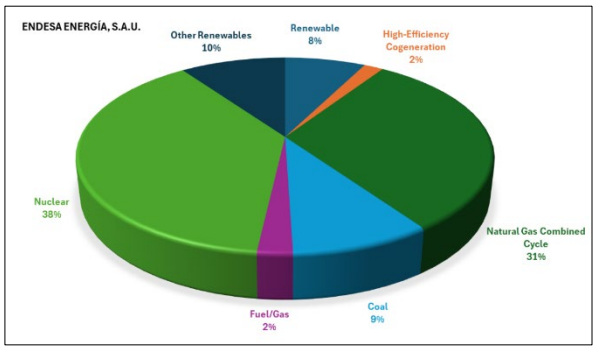
The biogenic carbon content of the packaging corresponds to the wood and paper used for palletizing the product for distribution.

6.5. Electricity Mix Used.

The electricity mix used for the characterization of electricity for the year 2024 includes the Spanish electricity suppliers Iberdrola Clientes S.A.U. and Endesa Energía, S.A.U., with information obtained from the 2024 Annual Report of the National Commission on Markets and Competition, which was available at the time of the study. The carbon footprint of the electricity mix is 0,277 $kgCO_2e/kWh$.



Electricity Mix of Iberdrola Clientes, S.A.U., period 2024.



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