EPD - ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Halogen Free couplers for Rigid Tube for electrical installation; U407,U408, U409, U410, U411, U412 and U413

JSL Material Eléctrico SA

GENERAL INFORMATION

Manufacturer: **JSL MATERIAL ELÉCTRICO SA**

Address: Rua Mário Castelhano 3, Zona Industrial de Queluz de Baixo, 2730-120 Barcarena - Portugal

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EPD STANDARDS, SCOPE AND VERIFICATION

Reference standard: **EN 15804+A2:2019 and ISO 14025**

Sector: **Electrical installation products**

PCR : **EPD Hub Core PCR version 1.0, 1 Feb 2022**

Category of EPD : **Group EPD (EPD of multiple products)**

Scope of the EPD: **Cradle to gate with options, A4-A5, and modules C1-C4, D**

EPD author: **Paulo Oliveira, Chem. Engineer and Quality and Environment Manager at JSL**

EPD verification: **Verification of this EPD and data, according to ISO 14025 made by internal JSL staff**

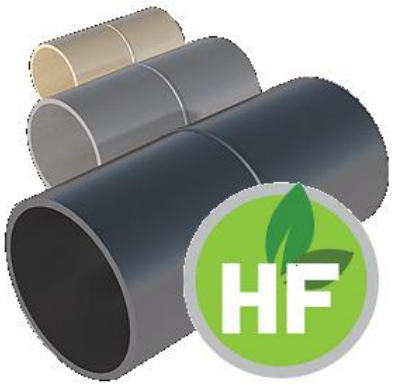
External verification: **None. Type II EPD**

NOTICE: The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name : **Halogen Free couplers for rigid conduit for electrical and telecommunications installations (see JSL catalogue)**

Joints references included: **U407, U408, U409, U410, U411, U412 and U413, with internal diameters (mm): 16, 20, 25, 32, 40, 50 and 63, respectively .**



Place of production: **JSL MATERIAL ELÉCTRICO SA,** Rua Mário Castelhano 3, Zona Industrial de Queluz de Baixo, 2730-120 Barcarena - Portugal

Period for data : 2023

Averaging in EPD: YES, average of all the references of the couplers range.

ENVIRONMENTAL DATA SUMMARY

Declared unit: 1 kg of couplers (same number of couplers of each reference)
Declared unit mass: 1 kg
GWP-fossil, A1-A3 (kgCO2e) 3.53E0
GWP-total, A1-A3 (kgCO2e) 3.15E-0
Secondary material, inputs (%) 1.8
Secondary material, outputs (%) 5,0
Total energy use, A1-A3 (kWh) 3.1
Total water use, A1-A3 (m3e) 0.3

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

JSL is an electrical products manufacturer since 1960 and always producing their products rethinking raw materials consumption, water and energy and the impact on both costs and environment as also the facility and recyclability of the products on their end of life. . Our offer, including electrical installation safety, performance and halogen free conduits and reliable infrastructure, enables a more sustainable living environment.

We help our customers in residential and commercial construction, municipalities and utilities, as well as different industries to work faster , smarter and with a competitive price, but always assuring safe products and according the applicable Standards. We employ about 96 professionals in our plant , export to all European countries and more than 56 countries in the world. We create trust together with our partners: Customers, prospective customers and suppliers. We establish this with shared knowledge, quality and sustainable results.

JSL is a Certified Company according ISO 9001 and ISO 14001 Standards

PRODUCT DESCRIPTION

Couplers for tigid tube are made of Halogen Free Polypropylene copolymer according to applicable standards; acid free and complying with the general European Standards EN 61386 (2023) and their amendments as also Metric series of standards specifying the diameters for the joint fittings (*IEC 60423:2007 Conduit systems for cable management - Outside diameters of conduits for electrical installations and threads for conduits and fittings*). The couplers are produced in 3 different colors; RAL 7035 grey color, RAL 9005 Black Color and RAL 9010 White color. The coupler is used to join the tube sections in the electrical and telecommunications conduit infrastructure in both indoor and outdoor use, ensuring that the cables of low and high voltage cables and all kinds of data transmission are well protected not only inside the tube but also in the joining devices, assuring tightness and mechanical protection.

The couplers References ;_U407,U408, U409, U410, U411, U412 and U413 are part of JSL halogen free product offer. Polypropylene Copolymer from LyondellBasell is used as raw material for these injected items. Recycled raw material resulting from "sprue injection runners " is added in a proportion of 8-10% to the virgin raw material.

The product is supplied in bags of 20, 25, 50 and 100 articles per bag.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material	category	Amount,	mass- %	Material origin
Metals	--	--	--	--
Minerals	--	--	--	--
Fossil materials	PP Copolymer	98.52%	98.82	EU
Fossil materials	Polyolefin(LDPE)	0.18%	0.18	EU
Bio-based materials	Masterbatch colorant	1.3%	1.0	EU

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit : 1 kg of couplers (same number of couplers of each reference)
Mass per declared unit : 1 kg
Reference service life: 50 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = **MND.**
Modules not relevant = **MNR**.

–Raw material conveying and transportation
–Injection and molding (melting, material processing and molding)
–Packing
–Warehouse storage
–Transportation

Packaging of the finished product consists of a LDPE plastic bag according product dimension and number of items per bag (see JSL Catalogue).

The halogen free couplers for rigid tubes are manufactured in compliance with the requirements in the following standard: EN 61386-1:2021 Conduit systems for cable management – Part 1: General requirements (IEC 61386-1:2008: Amd 1 2019) Amendment A1 Conduit systems for cable management , EN 61386-21:2021 and EN 60754-1:2014 regarding Halogens content.

MANUFACTURING PROCESS

MANUFACTURING AND PACKAGING (A1-A3)
The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission. In regard to the representative products at hand, the environmental impacts considered for the product stage cover the manufacturing of raw material polypropylene (and formulation additives M Masterbatch colorant), used in the production, as well as packaging materials (LDPE bag). The study also considers the material losses occurring during the manufacturing processes and the impacts of green hydroelectricity transmission.
The polypropylene couplers are produced by injection molding. Waste polypropylene generated during the production process(sprue runner) is to be recycled in Step A3. The packaging used during transport from the supplier to the fabrication site (A2) is part of a multi-use system, like Euro-pallets.
In order to foster sustainable manufacturing practices and responsible resource management, a share of recycled material is used (about 8-10%). are then packed together in LDPE plastic bags. Not included in A3 are the infrastructure at the production site and the administration activities of the employees.

TRANSPORT AND INSTALLATION (A4-A5 steps)
Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. The transportation distance is defined according to the PCR. The average distance of transportation from the production plant to the installation site is based on the actual sales average figures of the company in the local Markets in Europe using Belgium as a milestone. The installation scenarios in JSL's infrastructure product EPDs are based on TEPPFA's (The European Plastic Pipe and Fittings Association) industry averaged EPDs. These documents and their background reports include industry consensus estimates of the resource use, emissions and affluents of typical European installations; these parameters have been used as input for the JSL EPD present modeling and futur calculations for similar products. Environmental impacts from installation include standardized energy and installation tools, waste packaging materials and release of biogenic carbon dioxide from wood pallets.

PRODUCT USE AND MAINTENANCE (B1-B7 steps)
This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied considering that are not on our domain or control.

PRODUCT END OF LIFE (C1-C4, D steps)

Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed negligible (C1). After ca 50 years of service life, 95% of the end-of-life product is assumed to be sent to the closest treatment facilities (C2). The collected 95% from the demolition site is sent to recycling (C3), whereas the remaining 5% is left inert under the ground (C4). Due to the recycling of PP Polymers , the end-of-life product is converted into recycled Polymer blend of PP (D).

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:
Raw materials: No Allocation
Packing materials ; No Allocation
Ancillary materials; Not applicable
Manufacturing energy and waste: Allocated by mass or volume

As it is impossible to collect all energy consumption data separately for each product produced in the plant, data is allocated. Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 kg of the product, which is used within this study, are calculated by considering the total product weight per annual production per coupler reference and size, since the production processes of these products are similar. The annual production percentage of each reference is taken into consideration for allocation. According the ratio of the annual production for the declared range of couplers to the total annual production at the Injection plant, the annual total fuel consumption, consumed water and the generated waste per the declared product are allocated. Subsequently, the product output fixed to 1 kg and the corresponding amount of product is used in the calculations. Besides, since the formulation of the product is certain, raw materials in the product do not need to be allocated considering the total annual production.

AVERAGES AND VARIABILITY

Type of average: average for the total range of references and sizes according annual total production
Averaging method : Weighted average
Variation in GWP-fossil for A1-A3: Not applicable

CALCULATIONS AND BIBLIOGRAPHY

This EPD has been created using excel sheet developed at JSL. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and other European database sources were used as sources of environmental data.

ISO 14025:2010. Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
ISO 14044:2006. Environmental management - Life cycle assessment - Requirements and guidelines.
EN 15804:2012+A2:2019. Environmental product declaration - Core rules for the product category of construction products.
EN 50693:2019. Product category rules for life cycle assessments of electronic and electrical products and systems.
Ecoinvent v3, 2019. Allocation, cut-off by classification. Swiss Centre of Life Cycle Inventories.

DATA QUALITY:

Specific data for the product composition is provided by JSL. The data represent the production of the declared product and were collected for EPD development in the year of study (2023). Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Plastic - PP Copolymer	ECOINVENT 3.6	Database	2019
Plastic - LDPE	ECOINVENT 3.6	Database	2019

Data from material supplier and the LCA generator has been accepted "As-Is" Data from processing JSL in-house has been repeated ongoingly without major deviations. Figures given in document are worst case values.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. Allocation used in environmental data sources is aligned with the above.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1]	kg CO_2e	3,10E+00	9,25E-02	-4,49E-02	3,15E+00	3,34E-02	4,58E-01	MND	MND	MND	MND	MND	MND	MND	MNR	9,39E-03	1,27E+00	3,55E-02	-1,80E+00
GWP – fossil	kg CO_2e	3,10E+00	9,24E-02	3,40E-01	3,53E+00	3,33E-02	6,22E-02	MND	MND	MND	MND	MND	MND	MND	MNR	9,38E-03	1,27E+00	3,55E-02	-1,80E+00
GWP – biogenic	kg CO_2e	0,00E+00	1,26E-06	-3,87E-01	-3,87E-01	1,28E-05	3,95E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3,63E-06	2,92E-03	2,11E-05	-4,25E-05
GWP – LULUC	kg CO_2e	2,48E-03	3,75E-05	2,06E-03	4,59E-03	1,36E-05	7,75E-05	MND	MND	MND	MND	MND	MND	MND	MNR	3,46E-06	4,05E-05	2,73E-06	-1,96E-03
Ozone depletion pot.	kg CFC_{-11}e	1,70E-07	2,04E-08	2,28E-08	2,14E-07	7,35E-09	2,70E-09	MND	MND	MND	MND	MND	MND	MND	MNR	2,16E-09	2,05E-09	7,88E-10	-7,12E-08
Acidification potential	mol H^+e	2,86E-02	3,83E-04	1,36E-03	3,03E-02	1,38E-04	1,79E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,97E-05	2,68E-04	2,23E-05	-1,58E-02
EP-freshwater[2]	kg Pe	1,71E-04	7,79E-07	1,62E-05	1,87E-04	2,81E-07	8,48E-06	MND	MND	MND	MND	MND	MND	MND	MNR	7,68E-08	8,28E-07	4,28E-08	-7,63E-05
EP-marine	kg Ne	2,63E-03	1,12E-04	4,51E-04	3,19E-03	4,03E-05	4,90E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,18E-05	1,09E-04	1,36E-05	-1,66E-03
EP-terrestrial	mol Ne	3,19E-02	1,23E-03	3,82E-03	3,69E-02	4,44E-04	4,97E-04	MND	MND	MND	MND	MND	MND	MND	MNR	1,30E-04	1,15E-03	8,22E-05	-1,98E-02
POCP ("smog")[3]	kg NMVOCe	1,20E-02	3,76E-04	1,13E-03	1,35E-02	1,35E-04	1,33E-04	MND	MND	MND	MND	MND	MND	MND	MNR	4,17E-05	3,02E-04	3,14E-05	-6,36E-03
ADP-minerals & metals[4]	kg Sbe	4,32E-04	3,17E-07	2,20E-06	4,35E-04	1,16E-07	1,68E-07	MND	MND	MND	MND	MND	MND	MND	MNR	2,20E-08	4,41E-07	8,84E-09	-1,30E-04
ADP-fossil resources	MJ	9,07E+01	1,34E+00	6,32E+00	9,84E+01	4,83E-01	8,46E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,75E-01	6,04E-02	-3,58E+01
Water use[5]	m^3e depr.	1,70E+00	5,87E-03	1,07E+01	1,24E+01	2,11E-03	1,57E-02	MND	MND	MND	MND	MND	MND	MND	MNR	6,31E-04	4,13E-02	3,59E-04	-5,00E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8]	MJ	4,95E+00	1,57E-02	3,56E+01	4,06E+01	5,66E-03	1,16E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,59E-03	1,95E-02	1,11E-03	-3,18E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	3,75E+00	3,75E+00	0,00E+00	-3,75E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	4,95E+00	1,57E-02	3,93E+01	4,43E+01	5,66E-03	-3,63E+00	MND	MND	MND	MND	MND	MND	MND	MNR	1,59E-03	1,95E-02	1,11E-03	-3,18E+00
Non-re. PER as energy	MJ	4,95E+01	1,34E+00	5,56E+00	5,64E+01	4,83E-01	8,46E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,75E-01	6,04E-02	-2,26E+01
Non-re. PER as material	MJ	4,11E+01	0,00E+00	9,88E-01	4,21E+01	0,00E+00	-1,35E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	-3,06E+01	-1,02E+01	1,46E+01
Total use of non-re. PER	MJ	9,07E+01	1,34E+00	6,55E+00	9,86E+01	4,83E-01	-5,08E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	-3,03E+01	-1,01E+01	-8,03E+00
Secondary materials	kg	1,77E-02	4,38E-04	1,30E-01	1,49E-01	1,59E-04	2,32E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,91E-05	1,16E-03	2,13E-05	-5,18E-03
Renew. secondary fuels	MJ	1,51E-02	5,63E-06	8,46E-02	9,98E-02	2,06E-06	2,16E-06	MND	MND	MND	MND	MND	MND	MND	MNR	3,95E-07	9,61E-06	8,20E-07	-3,58E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	4,71E-02	1,59E-04	2,51E-01	2,99E-01	5,70E-05	3,86E-04	MND	MND	MND	MND	MND	MND	MND	MNR	1,83E-05	2,26E-04	6,48E-05	-1,93E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,73E-01	1,92E-03	2,97E-02	2,05E-01	6,95E-04	4,46E-03	MND	MND	MND	MND	MND	MND	MND	MNR	1,87E-04	3,10E-03	6,00E-03	-1,31E-01
Non-hazardous waste	kg	9,27E+00	3,07E-02	5,81E-01	9,88E+00	1,11E-02	5,85E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3,07E-03	4,40E-01	2,39E-01	-5,18E+00
Radioactive waste	kg	1,62E-04	8,86E-06	4,21E-05	2,13E-04	3,19E-06	3,35E-06	MND	MND	MND	MND	MND	MND	MND	MNR	9,43E-07	5,30E-07	0,00E+00	-8,00E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,26E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	3,40E-02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,81E-01	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	1,27E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	2,98E+00	9,15E-02	3,45E-01	3,42E+00	3,30E-02	7,28E-02	MND	MND	MND	MND	MND	MND	MND	MNR	9,29E-03	1,27E+00	2,88E-02	-1,74E+00
Ozone depletion Pot.	kg CFC-$_{11}$e	1,48E-07	1,62E-08	1,93E-08	1,84E-07	5,83E-09	2,27E-09	MND	MND	MND	MND	MND	MND	MND	MNR	1,71E-09	1,77E-09	6,26E-10	-5,86E-08
Acidification	kg SO_2e	2,46E-02	2,98E-04	1,05E-03	2,60E-02	1,08E-04	1,41E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,09E-05	1,96E-04	1,69E-05	-1,36E-02
Eutrophication	kg $PO_4^{3}e$	8,46E-03	6,84E-05	7,07E-04	9,24E-03	2,47E-05	7,56E-04	MND	MND	MND	MND	MND	MND	MND	MNR	7,03E-06	4,58E-04	1,33E-03	-3,41E-03
POCP ("smog")	kg C_2H_4e	1,41E-03	1,21E-05	8,69E-05	1,51E-03	4,37E-06	9,55E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,21E-06	1,21E-05	5,24E-06	-6,66E-04
ADP-elements	kg Sbe	4,32E-04	3,10E-07	2,10E-06	4,35E-04	1,13E-07	1,64E-07	MND	MND	MND	MND	MND	MND	MND	MNR	2,13E-08	4,33E-07	8,54E-09	-1,30E-04
ADP-fossil	MJ	9,07E+01	1,34E+00	6,31E+00	9,83E+01	4,83E-01	8,46E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,75E-01	6,04E-02	-3,55E+01

VERIFICATION STATEMENT AND VERIFICATION PROCESS FOR THIS EPD

It has been carefully revised by Quality and Environment Technical department staff and Manager and is part of the study and research into the product's ecological passport and following the process, methodology and checklists of the Standards EN 15804+A2 & ISO 14025 / ISO 21930

This EPD has not been verified in accordance with ISO 14025 by an independent third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044.

This EPD must be considered as "Type II".

LIABILITY

I confirm that I have sufficient knowledge and experience of electrical products, extruded products in this specific product category, the construction industry, the electrical and IEC and EN relevant standards, and the geographical area of the EPD to carry out this verification.

I work at JSL - Material Eléctrico company since 1991 and I am the JSL delegate on the Technical Committees TC 23 and TC 64 on Electrical Standards and Standardization of the IPQ – Portuguese Quality Institute

All the information provided is true and in good faith. It has been calculated in the most objective manner and with the minimum possible errors.

Place: Queluz de Baixo

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