Leading Grid Connections.

ENVIRONMENTAL PRODUCT DECLARATION

CABLE TERMINATIONS - 320652

Type II (Self-Declaration)

ISO 14021

March 11, 2026

hsp-grid.com

General Information

Environmental product Declaration

This EPD is a self-declared environmental claim following **ISO 14021 (Environmental Labels and Declarations — Self-Declared Environmental Claims – Type II Environmental Labeling).**
As a self-declared EPD, it is issued by HSP Hochspannungsgeräte GmbH without independent third-party verification but follows standardized criteria to ensure transparency and accuracy.

PRODUCT NAME	Cable Terminations - 320652
MANUFACTURER	HSP Hochspannungsgeräte GmbH
MANUFACTURING LOCATION	Troisdorf, Germany

STANDARD APPLIED	EN15804+A2:2019
DECLARED UNIT	1 Unit
SCOPE	Cradle-to-Grave
LCA METHODOLOGY	ISO 14040:2006, ISO 14044:2006
PUBLICATION DATE	March 2026

Our Life Cycle Assessments (LCAs) provide valuable insights into the environmental performance of our products, enabling informed decision-making that drives resource efficiency and carbon footprint reduction.

Company

HSP Hochspannungsgeräte GmbH | Germany

As a global market leader in the field of high-voltage bushings, HSP specializes in the development of innovative and sustainable product solutions for the energy sector.

Since 1893, our expertise has been in the manufacture of high-voltage bushings, which make an important contribution to the global energy transition and security of supply. We create safe and reliable pathways for electric power worldwide – and sustainable value for our customers.

Agility, enthusiasm, and expertise are the core values we bring to life with our products and services.

For decades, we have been driving high-quality innovations in high-voltage technology. And we're not slowing down.

Product Description

Cable Terminations – 320652
≥ 700 kV

Our dry-type cable terminations with **capacitive graded, resin-impregnated bushing technology** offer a safe and maintenance-free connection for voltages of **≥170 kV**, developed in close collaboration with leading cable manufacturers.
This breakthrough in termination design ensures homogenous field distribution, compact dimensions, and environmental safety, all while delivering exceptional long-term performance.

Characteristics

- Immune to moisture ingress or leakage due to failure-proof solid insulation.
- Quick assembly and minimal outage time ensure efficient commissioning.
- Compact dimensions minimize space requirements and simplify integration.

General

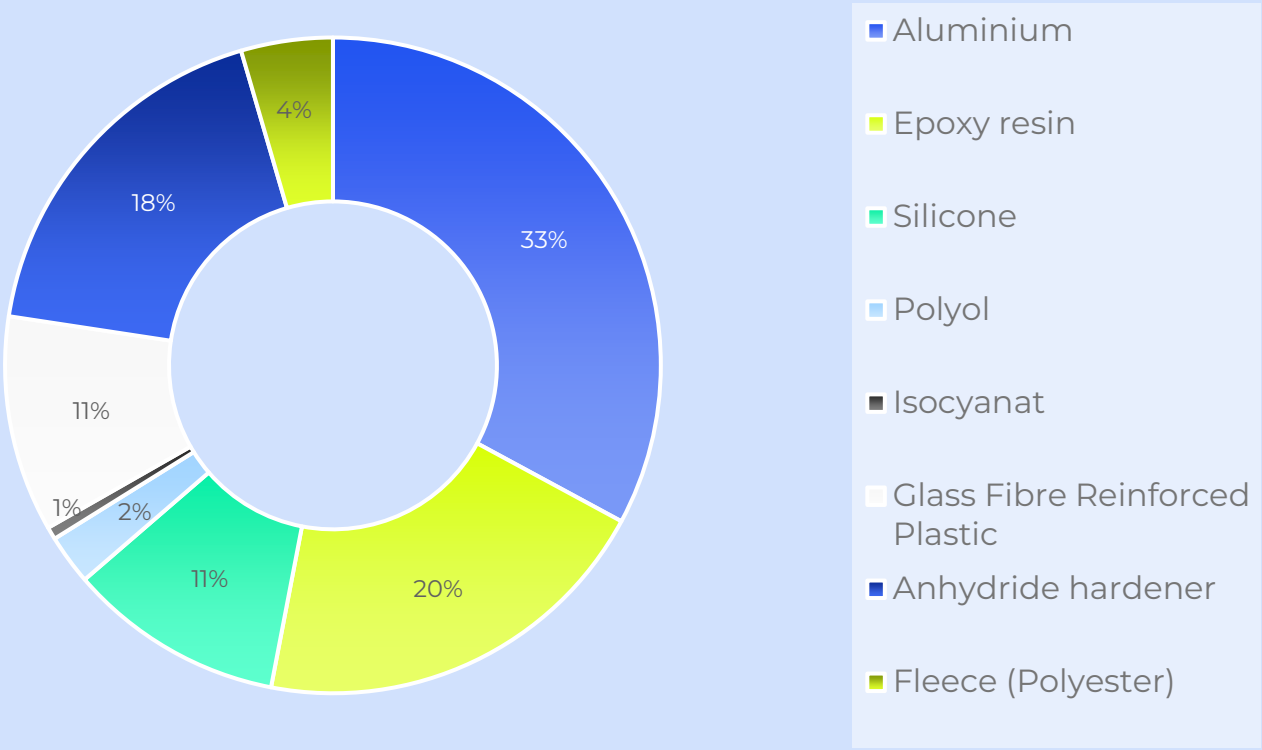
- Each cable end is tailored to the specific connector geometry — available in male or female versions.
- Designed to withstand internal failure without risk of rupture.

Sustainability

- **Eco-Friendly Design:** 100% free from oil and SF_6 insulating gases.

Material Composition

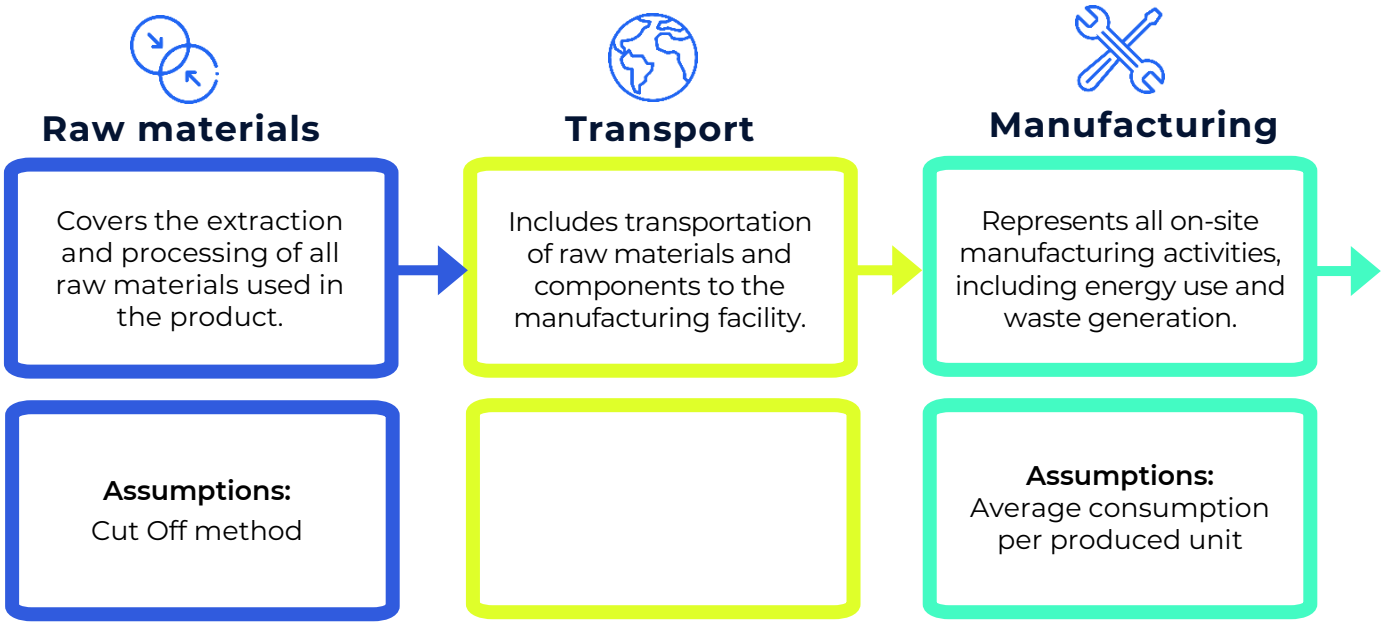
The following chart shows the material composition of the reference product used in the life cycle assessment, based on data from the Bill of Materials (BoM). Each material is expressed as a percentage of the total product weight.

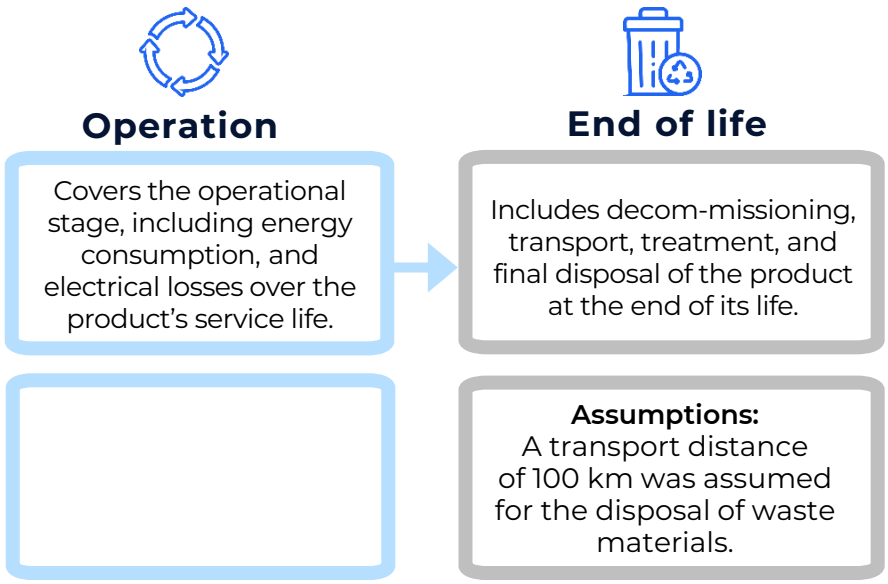


Life Cycle Stages

Understanding Product Life Cycle Stages

Life Cycle Assessment (LCA) is a standardized method for evaluating the environmental impacts of a product across defined stages of its life cycle. In a cradle-to-grave assessment, the system boundary includes all stages - from raw material extraction, material processing, transportation, and manufacturing, through the operation and end-of-life treatment.
This comprehensive scope provides a full-chain perspective on environmental performance, capturing impacts from manufacturing, operation, and final disposal.





Results

Key environmental performance indicators

The environmental footprint of the product is characterized across the following impact categories, calculated using the EN15804+A2 methodology.
The assessment was conducted using the EcoChain Mobius LCA tool, with background data sourced from the Ecoinvent database.

IMPACT CATEGORY	UNIT	RAW MATERIALS	TRANSPORT (RAW MATERIALS)	MANUFA-CTURING	TRANSPORT (CUSTOMER)	OPERATION	END OF LIFE
Acidification (AP)	mol H+ eq	14,20	1,52	0,30	0,60	55,29	0,18
Climate change – biogenic (GWP-b)	kg CO_2 eq	12,53	0,04	235,51	-178,07	2193,01	0,08
Climate change – fossil (GWP-f)	kg CO_2 eq	2705,19	113,98	254,26	98,79	25051,56	719,28
Climate change - land use and LU change (GWP-luluc)	kg CO_2 eq	3,77	0,06	0,01	0,11	34,18	0,01
Climate change – total (GWP-t)	kg CO_2 eq	2720,99	114,07	489,76	-79,19	27277,32	719,36
Components for re-use (CRU)	kg	0,00	0,00	0,00	0,00	0,00	0,00
Ecotoxicity, freshwater (ETF)	CTUe	68576,40	1257,39	2012,37	2350,09	197271,76	1601,85
Ecotoxicity, freshwater - inorganics (ETF-i)	CTUe	13209,24	329,71	802,87	271,51	11612,25	1359,66
Ecotoxicity, freshwater - metals (ETF-m)	CTUe	43416,71	833,10	1196,47	1839,87	185011,91	235,56
Ecotoxicity, freshwater - organics (ETF-o)	CTUe	11951,33	94,59	13,03	240,36	676,20	6,63
Energy, primary total (PET)	MJ	46050,37	1720,08	4148,77	3520,71	429431,33	235,41
Energy, primary, non-renewable (PENRT)	MJ	43560,93	1703,88	4137,89	2217,08	374814,62	229,27
Energy, primary, non-renewable, excluding materials (PENRE)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Energy, primary, non-renewable, materials (PENRM)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Energy, primary, renewable (PERT)	MJ	2489,44	16,20	10,87	1303,63	54616,71	6,14
Energy, primary, renewable, excluding materials (PERE)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Energy, primary, renewable, materials (PERM)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Eutrophication, freshwater (EP-fw)	kg P eq	0,08	0,00	0,00	0,00	4,04	0,00
Eutrophication, marine (EP-m)	kg N eq	2,69	0,36	0,07	0,14	10,24	0,08
Eutrophication, terrestrial (EP-t)	mol N eq	25,80	4,05	0,77	1,71	127,00	0,83

HSP Leading Grid Connections.

Key environmental performance indicators

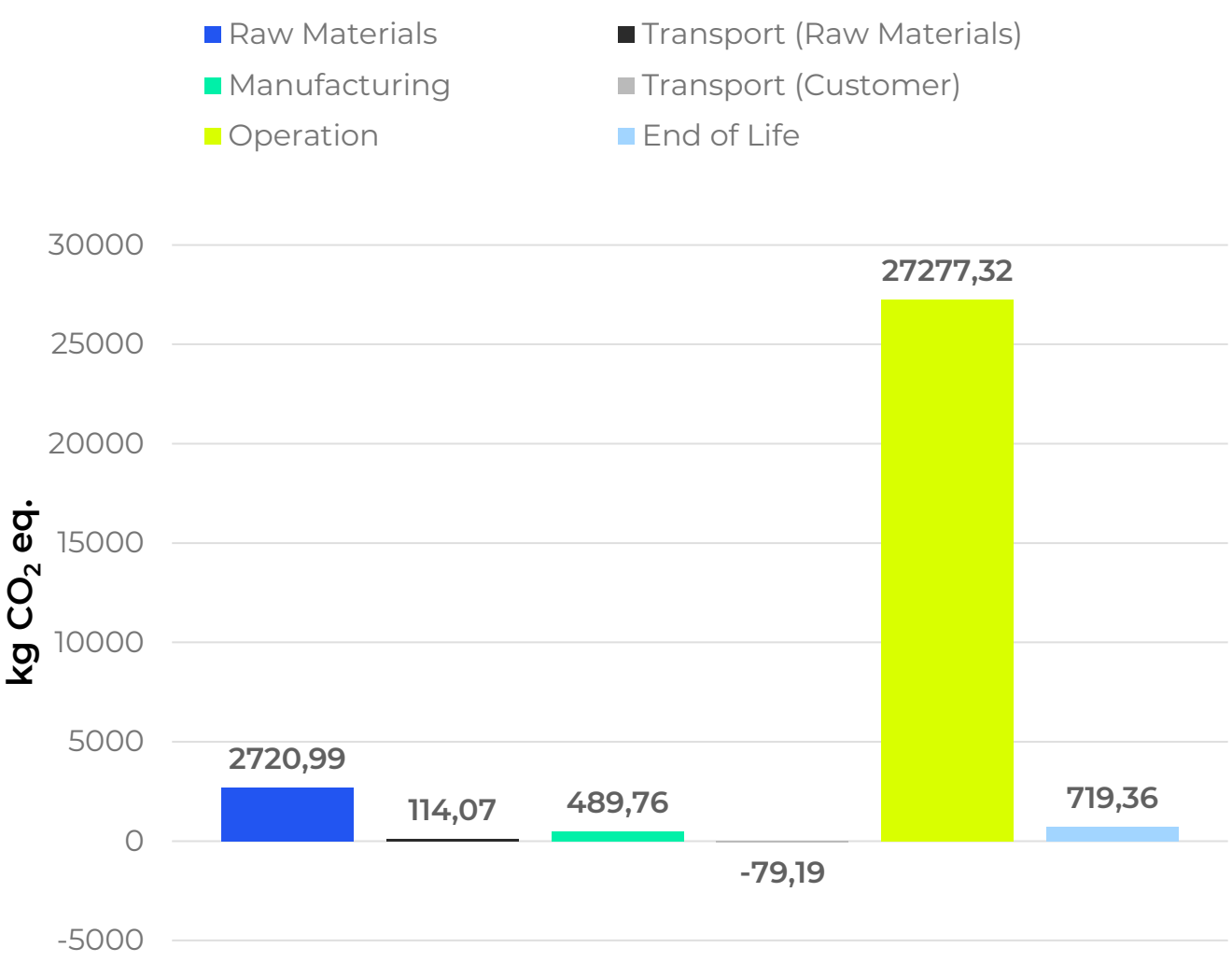
IMPACT CATEGORY	UNIT	RAW MATERIALS	TRANSPORT (RAW MATERIALS)	MANUFAC-TURING	TRANSPORT (CUSTOMER)	OPERATION	END OF LIFE
Exported energy, electric (EEE)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Exported energy, thermal (EET)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, cancer (HTC)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, cancer - inorganics (HTC-i)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, cancer - metals (HTC-m)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, cancer - organics (HTC-o)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, non-cancer (HTNC)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, non-cancer - inorganics (HTNC-i)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, non-cancer - metals (HTNC-m)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Human toxicity, non-cancer - organics (HTNC-o)	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
Ionising radiation (IR)	kBq U-235 eq	62,29	6,71	1,03	4,33	1144,57	0,57
Land use (SQP)	Pt	6083,89	819,00	122,85	7147,16	47254,12	100,76
Materials for energy recovery (MER)	kg	0,00	0,00	0,00	0,00	0,00	0,00
Materials for recycling (MFR)	kg	0,00	0,00	0,00	0,00	0,00	0,00
Ozone depletion (ODP)	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
Particulate matter (PM)	disease inc.	0,00	0,00	0,00	0,00	0,00	0,00
Photochemical ozone formation (POCP)	kg NMVOC eq	9,08	1,10	0,27	0,61	31,39	0,21
Resource use, fossils (ADP-f)	MJ	40699,55	1604,59	3738,35	2049,31	348593,75	212,99
Resource use, minerals and metals (ADP-mm)	kg Sb eq	0,02	0,00	0,00	0,00	0,03	0,00
Secondary fuel, non-renewable (NRSF)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Secondary fuel, renewable (RSF)	MJ	0,00	0,00	0,00	0,00	0,00	0,00
Secondary material (SM)	kg	0,00	0,00	0,00	0,00	0,00	0,00
Waste, hazardous (HWD)	kg	0,41	0,00	0,01	0,00	0,12	0,00
Waste, non hazardous (NHWD)	kg	323,82	57,65	18,29	15,94	1519,56	17,06
Waste, radioactive (RWD)	kg	0,06	0,01	0,00	0,00	1,46	0,00
Water use (WDP)	m^3 depriv.	1408,00	4,70	13,04	96,62	928,38	34,04
Water, fresh water use (FW)	m^3	38,53	0,16	0,43	2,71	151,33	1,06

Climate Change

Global Warming Potential per life cycle stage

The Global Warming Potential (GWP) results represent the product's contribution to climate change, expressed as kilograms of CO_2-equivalents, based on emissions of greenhouse gases across the life cycle stages.

The following chart illustrates the product's global warming potential (GWP) from Cradle-to-Grave. The operation stage emerges as the stage with the most significant overall impact on the GWP.



Legal Disclaimer

This Environmental Product Declaration is for informational purposes only and is based on the standards mentioned above.

This EPD does not guarantee the composition of a product or that it will maintain a specific composition over time. To the fullest extent permitted by applicable law, all warranties, representations, conditions, and any other implied terms - whether by statute or common law - are expressly excluded.

HSP, therefore, assumes no liability for any errors or consequences arising from the use of this information to the maximum extent allowed by law.

Please note that the data and the values in this EPD are valid only within the specified context and cannot be used directly to conduct an environmental assessment of an installation.

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