PRODUCT ENVIRONMENTAL PROFILE

Environmental Product Declaration

MT567Wireless Temperature Monitor

REGISTRATION NUMBER ABBG-00460-V01.01-EN		IN COMPLIANCE WITH PCR-ED4-EN-2021 09 06 SUPPLEMENTED BY PSR-0005-ED3.1-EN-2023 12 08
VERIFIER ACCREDITATION NUMBER VH51		INFORMATION AND REFERENCE DOCUMENTS www.pep-ecopassport.org
DATE OF ISSUE 12-2024		VALIDITY PERIOD 5 years
INDEPENDENT VERIFICATION OF THE DECLARATION AND DATA, IN COMPLIANCE WITH ISO 14025: 2006		
INTERNAL ☐	EXTERNAL ☒	
THE PCR REVIEW WAS CONDUCTED BY A PANEL OF EXPERTS CHAIRED BY JULIE ORGELET (DDEMAIN)		PEP eco PASS PORT®
PEPS ARE COMPLIANT WITH XP C08-100-1:2016 AND EN 50693:2019 THE COMPONENTS OF THE PRESENT PEP MAY NOT BE COMPARED WITH COMPONENTS FROM ANY OTHER PROGRAM		
DOCUMENT IN COMPLIANCE WITH ISO 14025: 2006 « ENVIRONMENTAL LABELS AND DECLARATIONS. TYPE III ENVIRONMENTAL DECLARATIONS »		

EPD Owner	ABB S.p.A Via Luciano Lama,33, 20099 Sesto San Giovanni (MI)-Italy www. abb.com
Manufacturer name and address	Xiamen, Fujian, China
Company contacts	EPD_ELSP@in.abb.com
Reference product	MT567 Wireless Temperature Monitor
Description of the product	The wireless temperature monitor MT567 is used for receiving signals from wireless temperature sensor to measure the temperature of busbar. MT567 can directly display the temperature and send to the host computer through the communication interface. MT567 needs 110-240V AC power supply. The main unit MT567 receives the temperature information of busbar from wireless temperature sensor through Zigbee Green Power communication protocol.
Functional unit	The functional unit is to monitor the temperature sensor installed in critical electrical connection in the switchgear at a rated operational voltage (110-240V AC) during a service lifetime of 20 years. This Product is considered as Passive product continuous operation product through which the main current passes during continuous operation. The load rate/ rated current considered is 30% and use time rate is 100%
Reference lifetime	20 years
Product category	Electrical, Electronic and HVAC-R Products (Other Equipment)
Use Scenario	The use phase has been modeled based on the sales mix data (2023), and the corresponding low voltage electricity countries mix.
Geographical representativeness	Raw materials & Manufacturing: [Global] Assembly: [China] Distribution / Use: [Global] specific sales mix EoL: [Global]
Technological representativeness	Materials and processes data are specific to the production of MT567
LCA Study	This study is based on the LCA study described in the LCA report 1TGD097013
EPD type	Product family declaration
EPD scope	“Cradle to grave”
Year of reported primary data	June 2024
LCA software	SimaPro 9.6.0.1 (2024)
LCI database	Ecoinvent v3.10 (2024)
LCIA methodology	EN 15804:2012+A2:2019

Contents

ABB Purpose & Embedding Sustainability

ABB is a leading global technology company that energizes the transformation of society and industry to achieve a more productive, sustainable future. By connecting software to its electrification, robotics, automation and motion portfolio, ABB pushes the boundaries of technology to drive performance to new levels. With a history of excellence stretching back more than 130 years, ABB's success is driven by about 105 thousand talented employees in over 100 countries.

ABB's Electrification business offers a wide-ranging portfolio of products, digital solutions and services, from substation to socket, enabling safe, smart and sustainable electrification. Offerings encompass digital and connected innovations for low voltage and medium voltage, including EV infrastructure, solar inverters, modular substations, distribution automation, power protection, wiring accessories, switchgear, enclosures, cabling, sensing, and control.

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources, and championing ethical and humane behavior.

General Information

ABB Xiamen Hub, with an investment of 2 billion yuan (approximate $300 million) and covering an area of ~ 430 K square meters, officially came into service in Nov. 2018. It integrated six ABB companies in Xiamen to create smarter production workshop and workplace with higher efficiency through optimized resource allocation and unified management. ABB in Xiamen, with nearly 3,500 employees in total, has a full range of businesses including R&D, manufacturing, engineering, sales and services, as well as ABB China's supply chain management and corporate functions.

Quality/Environmental/Health Management System in compliance with the following standards:

ISO 9001/2015 - Quality Management System
ISO 14001/2015 - Environmental management system
ISO 45001:2018 - Occupational Health and Safety Management System
ISO 50001：2018-Energy Management System
ISO 14064-1：2018 greenhouse gases verification statement (2023)
Sedex Members Ethical Trade Audit (SMETA)

The ABB Xiamen facility offers a wide range of low voltage switchgear assembly, including complete packages and services for AC stations. Smart systems and technologies for electrical distribution are supplied to utilities, industrial, and tertiary sector customers.

The packaging of the product takes place in ABB facility in Xiamen, China

MT567

The wireless temperature monitor MT567 is used for receiving signals from wireless temperature sensor to measure the temperature of busbar. MT567 can directly display the temperature and send to the host computer through the communication interface. MT567 needs 110-240VAC power supply. The main unit MT567 receives the temperature information of busbar from wireless temperature sensor through Zigbee Green Power communication protocol.

The product declared in this Life Cycle Assessment includes example configuration of MT567 with operator panel which is usually installed on the door panel of the cabinet and wireless temperature sensor. MT567 monitoring of the copper bars temperature in the switchgear, including the main bus, ACB cabinet copper bars and fixed circuit outlet copper bars, I/O bar connection joints etc., to prevent bad lapping, which may lead to copper bars temperature rise, and even burn the switchgear

MT567 product rating:

Product	Rated operational voltage [U_e]	Rated Frequency [Hz]
MT567	110-240V AC	50-60 Hz

Table 1: Technical characteristics of MT567

(Refer Technical catalogue for complete details)

Constituent Materials

MT567 Wireless Temperature Monitor

MT567 weighs 250 g including its paper documentation and packaging.

Materials	Name	IEC 62474 MC	[g]	Weight %
Metals	Cu and Cu Alloys	M-121	5.7	2.3%
	Steel	M-119	0.2	<0.1%
Plastics	Polyamide	M-258	85.6	34.1%
Other	Others	N/A	104.2	41.5%
	Paper/Cardboard	M-341	55.2	22.0%
Total			250.9	100.00%

Table 2: Weight of materials MT567

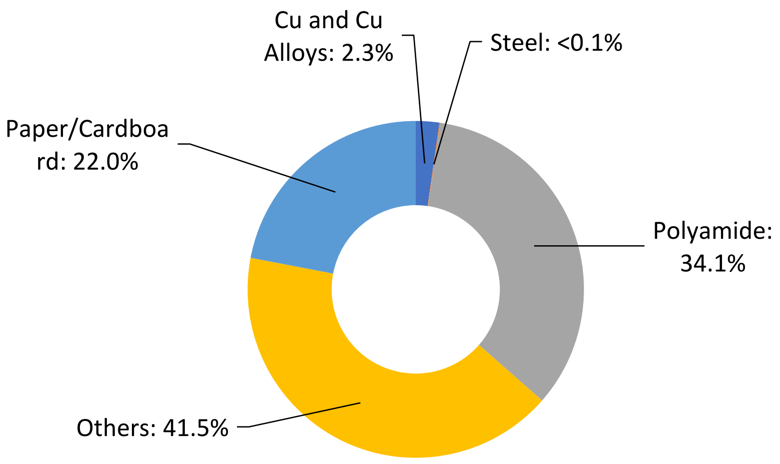

Figure 1: Composition of MT567 Wireless Temperature Monitor

The following tables shows the packaging weights of the MT567

Material	Weight (g)
Cardboard	39.4
Paper	15.8
Total	**55.2**

Table 3: Weight of materials MT567 Wireless Temperature Monitor – Packaging

No cut-off criteria have been applied to the analysis of the product and its packaging. Additional packaging for semifinished products along the supply chain have been considered.

The following dataset from Ecoinvent [6] is used for modeling the packaging.

Type	Dataset
Cardboard	Corrugated board box {RoW}| market for corrugated board box | Cut-off, S
Paper	Printed paper {GLO}| market for printed paper | Cut-off, S

Table 4: Packaging materials dataset

LCA background information

Functional unit and Reference Flow

The functional unit is the reference unit used to quantify the performance of the service delivered by a product to the user. The main purpose of the functional unit is to provide a reference to which inputs and outputs are related in the LCA.
The functional unit is to monitor the temperature sensor installed in critical electrical connection in the switchgear at a rated operational voltage 110-240V AC during a service lifetime of 20 years. This Product is considered as Passive product continuous operation product through which the main current passes during continuous operation. The load rate/ rated current considered is 30% and use time rate is 100%.

The Reference Flow of the study is a single MT567 (including its packaging) with mass described in chapter 1.3, table 2.

System boundaries and life cycle stages

The life cycle of MT567, an EEPS (Electronic and Electrical Products and Systems), is a "from cradle to grave" analysis and covers the following main life cycle stages: manufacturing, including the relevant acquisition of raw material, preparation of semi-finished goods, etc. and processing steps; distribution; installation, including the relevant steps for the preparation of the product for use; use including the required maintenance steps within the RSL (reference service life of the product) associated to the reference product; end-of-life stage, including the necessary steps until final disposal or recovery of the product system. The following table shows the stages of the product life cycle and the information stages according to EN 50693:2019 [3] for the evaluation of electronic and electrical products and systems.

Manufacturing	Distribution	Installation	Use	End-of-Life (EoL)
Acquisition of raw materials Transport to manufacturing site Components/parts manufacturing Assembly Packaging EoL treatment of generated waste	Transport to distributor/ logistic center Transport to place of use	Installation EoL treatment of generated waste (packaging)	Usage Maintenance	Deinstallation Collection and transport EoL treatment

Table 5: Phase for the evaluation of construction products according to EN50693:2019 [3].

The stages of the product life cycle and the information considered for the evaluation of the product are:

- Manufacturing stage includes raw materials, manufacturing of the product and its sub-assemblies. Transport of semi-finished items and subassemblies to ABB. Consumption of energy at ABB, waste due to manufacturing of products and packaging.
- The distribution stage includes the impacts related to the distribution of the product from ABB to the installation site.
- The installation stage includes the end of life of the packaging.
- The use stage includes the impact related to energy consumption during the service life of the product.
- End of life includes the operations for the disposal of the product at the end of its service life.

Temporal and geographical boundaries

The ABB component suppliers are sourced all over the world. All primary data collected are from June 2024, which is a representative production year for production technology of MT567 which is produced at Xiamen factory, China. The technological representativeness for the Secondary data is Ecoinvent v3.10 [6].

The selected ecoinvent [6] processes in the LCA model have a global representativeness, due to the unclear origin of each component. In this way, a conservative approach has been adopted.

Boundaries in the life cycle

As indicated in the PCR capital goods such as buildings, machinery, tools and infrastructure, the packaging for internal transport which cannot be allocated directly to the production of the reference product, may be excluded from the system boundary.

Infrastructures, when present, such as processes deriving from the ecoinventv3.10[6] database have not been excluded.

Data quality

In this LCA, both primary and secondary data are used. Site specific foreground data have been provided by ABB. Main data sources are the bill of materials & drawings which are available on the ABB tool of MNS Engineering (ME tool) & PLM system. For all processes for which primary are not available, generic data originating from the ecoinvent database [6], allocation cut-off by classification, are used. The ecoinvent database available in the SimaPro software [7] is used for the calculations.

The data quality characterized by quantitative and qualitative aspects, is presented in Appendix 1. Each data quality parameter has been rated according to DQR tables from Chapter 7.19.2.2 of the Product Environmental Footprint Guide v.6.3 to give an indication of geography, technology, and temporal representativeness.

Environmental impact indicators

The information obtained from the inventory analysis is aggregated according to the effects related to the various environmental issues. According to "PCR-ed4-EN-2021 09 06" and EN 50693 [3] the environmental impact indicators must be determined using the characterization factors and impact assessment methods specified in EN 15804:2012+A2:2019 [8].

PCR-ed4-EN-2021 09 06 and the EN 50693:2019 [3] standard establish four indicators for climate change: Climate change (total) which includes all greenhouse gases; Climate change (fossil fuels); Climate change (biogenic) which includes the emissions and absorption of biogenic carbon dioxide and biogenic carbon stored in the product; Climate change (land use) - land use and land use transformation. Other indicators as per the PCR [1].

Allocation rules

An allocation key is used for consumptions related to the manufacturing process in the production site, as well for company waste. Since the factory produces several other products only a part of the environmental impact has been allocated to MT567 production line.
The allocation coefficient has been assigned based on area on which the MT567 production takes place in LVS factory as well as the allocated amount resource consumption for assembly of MT567 at supplier's end.

Limitations and simplifications

Raw materials life cycle stage includes the extraction of raw materials as well as the transport distances to the manufacturing suppliers. These distances are assumed to be 1000 km assuming no specific data available (PCR-ed4-EN-2021_09_06, ch 2.5.3). This distance has been added to the one already included in the market processes used for the model, because of a conservative choice made by the LCA operators.

Scraps for metal working and plastic processes are included as per the PSR [2]. Packaging 10%, and for other processes 30% scrap rate has been used. For thermoplastic injection 10%, thermoset injection/molding 10% is used as per the PSR [2].

The only limitations and simplifications applied to this study are listed in the following table:

Category	Description
Packaging	An average raw material packaging content of 5% of the mass of the reference equipment has been considered as follow- Wood 50%, Cardboard 40%, Low density polyethylene 10%.
Transport	Specific transport parameters along the entire supply chain of the two reference products have been considered as representative for all the products covered by the study
MU Emissions	Impacts related to the production, transportation and installation of capital goods (buildings, infrastructure, machinery, internal transport packaging) and general operations that cannot be directly allocated to products have been excluded

Table 6: list of limitations and simplifications

Energy Models

LCA Stage	EN 15804:2012 +A2:2019 module	Energy model	Notes
Raw material extraction and processing	A1-A2	Electricity, {RoW}| market group for | Cut-off	Based on materials and supplier's locations
Manufacturing	A3	Electricity, low voltage {CN}| market group for electricity, low voltage | Cut-off, S	CN Country Mix
Installation (Packaging EoL)	A5	Electricity, {GLO}| market group for | Cut-off	
Use Stage	B1	Electricity, [country]x | market for | Cut-off, S **	Low voltage, based on 2024 country sales mix
EoL	C1-C4	Electricity, {GLO}| market group for | Cut-off	

Table 7: Energy models used in each LCA stage.

** Please refer the use phase for further description

Inventory analysis

In this LCA, both primary and secondary data are used. Site specific foreground data have been provided by ABB. For data collection, Bills of Material (BOM) extracted from ABB's internal ME tool and PLM system were used. They are a list of all the components and assemblies that constitute the finished product, organized by hierarchy level. Each item is matched with its code, quantity, weight, and supplier. The BOMs were then processed, adding material, surface area, volume, and weight data, taken from technical drawings/datasheets. Finally, the manufacturing process and surface treatment were assigned, according to information provided by R&D personnel. Road distances between the suppliers and ABB were calculated using Google Maps, and marine distances using Distances & Time (Searates).

All primary data collected from ABB are from 2024, which was a representative production year. The ecoinvent cut-off by classification system processes [6] are used to represent the LCA model to improve both the inventory and modelling phase of the product, a specific modular dataset framework has been adopted. Raw materials and Manufacturing processes datasets from Ecoinvent database [6] have been clustered and listed inside two distinct master data tables ABB Raw Materials and ABB Materials & Processes. Data used in the analysis is not older than 10 years.

Manufacturing stage

MT567 consist of main unit which receives the temperature information of busbar from wireless temperature sensor, an operator panel and wireless temperature sensor. The material involved in manufacturing include metal parts, plastic parts and power circuit board. All the components have been modelled according to their specific raw materials and manufacturing processes.

The single use packaging as well as paper documentation are also included in the analysis in the manufacturing stage. ABB receives packaging components from outside suppliers and packages the product before shipping them. An average raw material packaging content of 5% of the mass of the reference product has been considered, broken down as follows: - Wood 50%, Cardboard 40%, Low-density polyethylene 10%. Full list of waste treatments datasets from Ecoinvent [6] available in Annex [13].

Most of the inputs to the products' manufacturing stage are already produced component parts from the supply chain. In the ABB manufacturing plant MT567 is packed to final product. All the semi-finished and ancillary products are produced by ABB's suppliers.

All the specific distances from the last subassembly suppliers' factories up to the ABB manufacturing facility have been calculated.

The electric energy mix used for the manufacturing phase is representative for average electricity of CN region for the year 2024.

Distribution

The transport distances from ABB manufacturing plant to the distribution centers (regional distribution centers / local sales organizations) have been calculated considering the total products sales mix data from 2024 (Based on sales forecast).
The other parameter affecting the environmental impact for this LCA stage is the total mass of the product (including its packaging). Different mass values for each specific configuration covered by this study have been considered in the model.

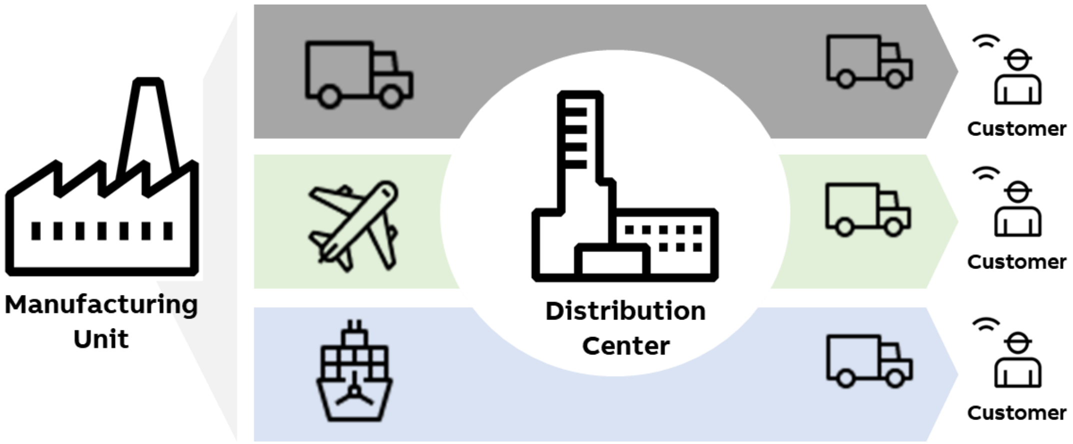

Figure 2: Distribution methodology.

The average total distance per product has then been split among different transport methods according to the source data.
In the following table, a representative list of chosen transportation datasets from Ecoinvent [6] used for this stage.

Type	Dataset	Parameter
Transport	Transport, freight, lorry >32 metric ton, EURO4 {ROW}| market for transport, freight, lorry >32 metric ton, EURO4 | Cut-off, S	Lorry size class >32t / Avg Load Factor 15,96t / GVW 29,96t
	Transport, freight, lorry >32 metric ton, EURO4 {RER}| market for transport, freight, lorry >32 metric ton, EURO4 | Cut-off, S	Lorry size class >32t / Avg Load Factor 15,96t / GVW 29,96t
	Transport, freight, aircraft, unspecified {GLO}| transport, freight, aircraft, all distances to generic market for transport, freight, aircraft, unspecified | Cut-off, S	

Installation

The installation phase only implies manual activities, and no energy is consumed. This phase also includes the disposal of the packaging of the MT567.

For the disposal of the packaging after installation of MT567 at the end of its life, a transport distance of 100 km (according to PSR [2]) was assumed. The actual disposal site is unknown and is managed by the customer. The disposal scenario of packaging has been considered as per Eurostat2021 for European countries and 100% incineration for non-European countries as per the PSR [2].

Use

Use stage is modelled according to IEC61439-1:2020 Annex K and PSR for Electrical switch-gear and control gear Solutions.
The Energy model used for this phase was built based on the 2024 actual sales mix data for the entire product range (SAP ERP sales data as a source). This approach has been taken since this list of countries will be the most representative also for the product.
During the use phase, the MT567 unit dissipates some energy due to loss in power circuit.
Since all electrical equipment is excluded from the study and the MT567 functional unit is categorized as "Other equipment" with scenario "Passive product continuous operation" according to PSR in § 3.15, the specific operating conditions, use-time rate of 30% and load rate of 100% can be assumed.
Power loss depends on the square of the current, thus the power must be recalculated using factor from load rate squared. The principle is shown in formulas:

Parameters		**MT567**
Load rate	[%]	30
h/year	[h]	8760
RSL	[years]	20
Use Time rate	[%]	100

$$E_{use}\,[kWh] = \frac{P_{use} * 8760 * RSL * \alpha}{1000}$$

.

End of life

The end-of-life stage is modelled according to PCR [1] and IEC/TR 62635 [9]. The percentages for end-of-life treatments of materials are taken from IEC/TR 62635 [9].

Since no specific data is available, the transport distances from the place of use to the place of disposal are assumed to be 1000 km (local/domestic transport by lorry, according to PCR [1]

Environmental impacts

The following table show the environmental impact indicators of the life cycle of a single MT567, as indicated by PCR [1] and EN 50693:2019 [3]. The indicators are divided into the contribution of the processes to the different stages (manufacturing, distribution, installation, use and end-of-life).

MT567

Impact category	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
GWP-total	kg CO2 eq	2.23E+02	7.29E+00	9.04E-01	1.48E-01	2.14E+02	1.70E-01
GWP-fossil	kg CO2 eq	2.22E+02	7.37E+00	9.04E-01	3.97E-03	2.14E+02	1.70E-01
GWP-biogenic	kg CO2 eq	4.42E-01	-9.25E-02	1.25E-04	1.44E-01	3.91E-01	1.67E-04
GWP-luluc	kg CO2 eq	2.63E-01	9.63E-03	6.82E-05	1.23E-06	2.53E-01	1.79E-05
ODP	kg CFC11 eq	1.20E-06	9.61E-08	1.41E-08	5.65E-11	1.09E-06	4.14E-10
AP	mol H+ eq	1.25E+00	9.78E-02	3.76E-03	2.78E-05	1.15E+00	1.84E-04
EP-freshwater	kg P eq	1.32E-01	9.91E-03	1.53E-05	4.92E-07	1.22E-01	6.34E-06
EP-marine	kg N eq	2.36E-01	1.22E-02	1.51E-03	1.79E-05	2.22E-01	7.41E-05
EP-terrestrial	mol N eq	2.36E+00	1.31E-01	1.65E-02	1.22E-04	2.21E+00	6.33E-04
POCP	kg NMVOC eq	6.72E-01	4.04E-02	5.36E-03	3.48E-05	6.27E-01	2.03E-04
ADP-m&m	kg Sb eq	3.90E-03	2.85E-03	2.91E-07	8.27E-09	1.05E-03	6.68E-08
ADP-fossil	MJ	2.57E+03	9.46E+01	1.20E+01	3.76E-02	2.46E+03	4.39E-01
WDP	m3	3.56E+01	2.95E+00	1.88E-02	2.03E-03	3.26E+01	4.06E-03
PENRE	MJ	2.57E+03	9.12E+01	1.20E+01	3.76E-02	2.46E+03	4.39E-01
PENRM	MJ	3.33E+00	3.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.57E+03	9.46E+01	1.20E+01	3.76E-02	2.46E+03	4.39E-01
PERE	MJ	3.46E+02	1.09E+01	4.90E-02	9.77E-04	3.35E+02	1.77E-02
PERM	MJ	2.23E-01	2.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.47E+02	1.11E+01	4.90E-02	9.77E-04	3.35E+02	1.77E-02
SM	kg	1.26E-03	1.26E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PET	MJ	2.92E+03	1.06E+02	1.21E+01	3.86E-02	2.80E+03	4.56E-01
FW	m3	1.97E+00	8.60E-02	6.22E-04	7.57E-05	1.88E+00	1.43E-04
HWD	kg	4.34E-03	7.92E-04	8.31E-05	3.31E-07	3.46E-03	2.47E-06
N-HWD	kg	8.03E+00	4.06E-01	5.69E-02	3.41E-02	7.40E+00	1.37E-01
RWD	kg	4.49E-03	1.62E-04	9.77E-07	1.41E-08	4.32E-03	2.67E-07
CfR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfR	kg	1.55E-01	2.18E-02	0.00E+00	2.82E-02	0.00E+00	1.05E-01
MfER	kg	1.25E-01	0.00E+00	0.00E+00	7.91E-02	0.00E+00	4.57E-02
EN	MJ by energy vector	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Efp	disease inc.	1.03E-05	4.88E-07	1.24E-08	3.15E-10	9.79E-06	3.16E-09
IrHH	kBq U-235 eq	1.86E+01	6.56E-01	4.01E-03	5.61E-05	1.80E+01	1.08E-03
ETX FW	CTUe	8.87E+02	2.11E+02	8.88E-01	2.52E-01	6.74E+02	1.47E+00
HTX CE	CTUh	2.51E-07	1.95E-08	1.04E-09	3.55E-11	2.30E-07	1.54E-10
HTX N-CE	CTUh	2.39E-06	3.29E-07	9.13E-09	2.99E-10	2.05E-06	3.37E-09
IrLS	Pt	5.30E+02	4.93E+01	1.37E+00	2.55E-02	4.79E+02	3.58E-01

Table 8: Impact indicators for MT567

Impact category	Unit	MT567
Biogenic Carbon content of the product	kg	0
Biogenic Carbon content of the associated packaging	kg	2.21E-02

Table 9: Inventory flow other indicators

Environmental impact indicators

GWP-total	Global Warming Potential total (Climate change)
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential
EP-freshwater	Eutrophication potential - freshwater compartment
EP-marine	Eutrophication potential - fraction of nutrients reaching marine end compartment
EP-terrestrial	Eutrophication potential -Accumulated Exceedance
POCP	Formation potential of tropospheric ozone
ADP-m&m	Abiotic Depletion for non-fossil resources potential
ADP-fossil	Abiotic Depletion for fossil resources potential, WDP
WDP	Water deprivation potential.

Resource use indicators

PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw material
PERM	Use of renewable primary energy resources used as raw material
PERT	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw material
PENRM	Use of non-renewable primary energy resources used as raw material
PENRT	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)
PET	Total use of primary energy in the lifecycle

Secondary materials, water and energy resources

SM	Use of secondary materials
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	FW: Net use of fresh water

Waste category indicators

HWD	Hazardous waste disposed
N-HWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed

Output flow indicators

CfR	Component for reuse

MfR	Materials for recycling
MfER	Materials for energy recovery
EN	Exported Energy

Others indicators

Efp	Emissions of Fine particles
IrHH	Ionizing radiation, human health
ETX FW	Ecotoxicity, freshwater
HTX CE	Human toxicity, carcinogenic effects
HTX N-CE	Human toxicity, non-carcinogenic effects
IrLS	Impact related to Land use / soil quality

Table 10: Inventory flow other indicators

Additional environmental information

According to the waste treatment scenario calculation in Simapro [7], based on the recycling rate in the technical report IEC/TR 62635 Edition 1.0 [9] Table D.6, the following recyclability potentials were calculated. The recyclability potential is calculated based on the product weight (excluding packaging).

Product	Recyclability potential
MT567	53.6%

Table 11: Recyclability potential of MT567

References

[1] PCR "PEP-PCR-ed4-EN-2021_09_06" - Product Category Rules for Electrical, Electronic and HVAC-R Products (published: 6th September 2021)

[2] PSR "PSR-0005-ed3.1-EN-2023 12 08" - SPECIFIC RULES FOR Electrical switchgear and control gear Solutions

[3] EN 50693:2019 - Product category rules for life cycle assessments of electronic and electrical products and systems

[4] ISO 14040:2006 - Environmental management -Life cycle assessment - Principles and framework

[5] ISO 14044:2006 - Environmental management - Life cycle assessment - Requirements and guidelines

[6] ecoinvent v3.10 (2024). ecoinvent database version 3.9 - (https://ecoinvent.org/)

[7] SimaPro Software version 9.6.0.1 - PRé Sustainability

[8] UNI EN 15804:2012+A2:2019: Sustainability of constructions - Environmental product declarations (September 2019).

[9] IEC/TR 62635 - Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment - Edition 1.0 2012-10