

Elastimold® underground cable accessories – Grounding-aid device (GAD)

PEP ecopassport®

Product Environmental Profile



Registration number:	ABBG-00927-V01.01-EN	Drafting rules:	PCR-ed4-EN-2021 09 06
PEP Owner:	oscar.sarmiento-penuela@ch.abb.com	Supplemented by:	PSR-0001-ed4-EN-2022 11 16
Verifier accreditation number:	VH44	Information and reference documents:	www.pep-ecopassport.org
Date of issue:	September-25	Validity period:	5 years
Independent verification of the declaration and data in compliance with ISO 14025: 2006			
Internal:	<input type="checkbox"/>	External:	<input checked="" type="checkbox"/>
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (Ddomain)			
PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022 The components of the present PEP may not be compared with components from any other program.			
Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"			



ABB Purpose & Embedding Sustainability

ABB is dedicated to advancing sustainability through comprehensive Life Cycle Assessments (LCA), third-party verified Environmental Product Declarations (EPDs), and a circularity-focused evaluation of its product portfolio. LCA provides a holistic view of a product's environmental impact across its entire life cycle, from raw material extraction and manufacturing to transportation, usage, and end-of-life. These assessments support the creation of transparent EPDs, identify opportunities for environmental performance improvements, and guide strategic planning for a circularity approach.

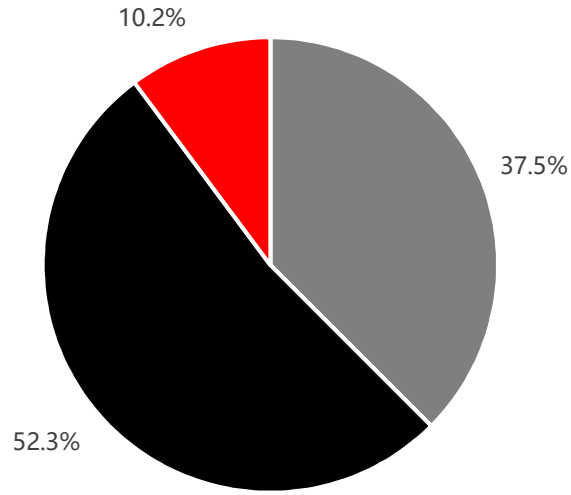


General information

Reference product	776BGADDR-K-CS1977
Description of the product	The GAD provides a permanent, reliable, direct 600 A or 900 A, 25 kA-rated ground connection without the need to reconfigure or install additional equipment such as reducing plugs or other temporary grounding adapters. The GAD comes complete with a removable protective cap with capacitive test point hat allows easy access to check if the system is de-energized and designed to be hotstick workable.
Functional unit	The functional unit for 776BGADDR-K-CS1977 is to connect together the power transmission cables, or connect them to equipments, for one unit and its packaging, under operating conditions identical to those of the cable, namely: 1 A during 40 years, with a use rate of 100%, according to the standards in force. (mention the relevant standards or refer the product technical data sheet).
Other products covered	List of the other products covered in this PEP is presented in the paragraph which concerned the extrapolation rules
Manufacturing address	1 Esna Dr. Hackettstown, NJ, USA



Constituent Materials



■ Plastics 1.44 kg ■ Metals 2.01 kg ■ Others 0.39 kg

Total weight of reference product and packaging

3.8

kg

Plastics as % of weight		Metals as % of weight		Others as % of weight	
Name and CAS number	Weight%	Name and CAS number	Weight%	Name and CAS number	Weight%
EPDM	35.8	Coppers	49.9	Cardboard	8.0
PVC	1.0	Steel	2.4	Wood	1.7
PE	0.4			Lubricant	0.3
PA	0.3			Paper	0.2
				Adhesive	<0.1
Plastics Total %	37.5	Metals Total %	52.3	Others Total %	10.2

The total mass of the reference product is 3.43 kg, with an additional 0.41 kg associated with packaging materials



Additional Information

Manufacturing	The manufacturing stage includes the production of the product and its packaging, as well as transportation to the manufacturer's final logistics platform (transportation from ABB's manufacturing facility in Hackettstown, NJ to distribution warehouse in Bromont). Manufacturing processes are conducted at ABB's facility in Hackettstown, NJ.
Distribution	Distribution from warehouse to end users is based on product-specific transport data for the reference year. The reference product is distributed in US and Canada
Installation	This phase includes the disposal of the product's packaging and installation materials as required by PSR-0001-ed4-EN-2022 11 16
Use	No material consumption occurs during the use stage.
End of life	The default end-of-life scenario specified in PSR-0001-ed4-EN-2022 11 16 has been adopted, assuming 100% landfill.
Benefits and loads beyond the system boundaries	Net benefits and loads beyond the system boundaries are modeled according to PCR-ed4-EN-2021 09 06 and EN 50693 standards



Environmental Impacts

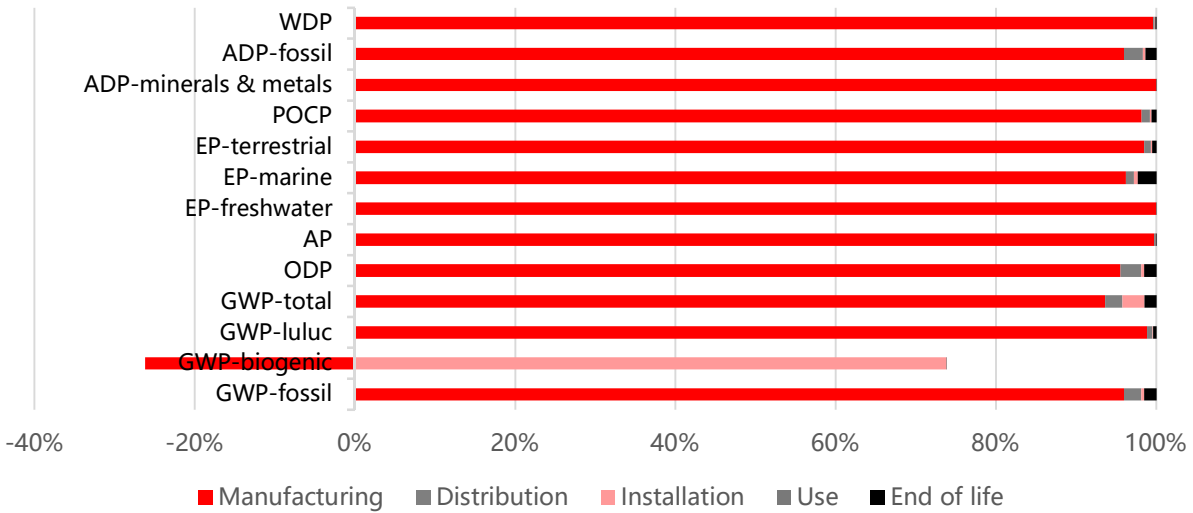
Reference lifetime	40 years
Product category	Category: Power connection accessories
Installation elements	During the installation is used Lube
Use scenario	No material or energy consumption occurs during the use phase. The product does not require maintenance.
Temporal representativeness	2022
Geographical representativeness	Global
Technological representativeness	Technological representativeness for primary data refers to the specific production processes. The technological coverage for each secondary process is specified in the metadata section of the ecoinvent database.
Software and database used	SimaPro 10.2 and ecoinvent 3.10

Energy model used

Manufacturing	Manufacturing & storage US: 100% hydroelectric as reported in the Renewable Energy Certificate. The energy-related processes used are those included in the datasets selected.
Installation	The energy-related processes used for the inputs are those included in the datasets selected.
Use	No energy consumption occurs during the use phase
End of life	The energy-related processes used for the inputs are those included in the datasets selected.

Common Base of Mandatory Indicators

% Environmental Impact per Life Cycle Stage of Reference Product



Environmental impact indicators based on functional unit

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
GWP-Total	kg CO2 eq.	5.48E+01	5.13E+01	1.16E+00	1.54E+00	0.00E+00	8.04E-01	-3.43E-02
GWP-Fossil	kg CO2 eq.	5.39E+01	5.17E+01	1.16E+00	2.31E-01	0.00E+00	8.04E-01	-3.43E-02
GWP-Biogenic	kg CO2 eq.	8.42E-01	-4.62E-01	4.76E-05	1.30E+00	0.00E+00	1.58E-04	-3.30E-05
GWP-Luluc	kg CO2 eq.	7.17E-02	7.08E-02	4.70E-04	7.80E-05	0.00E+00	2.84E-04	-3.34E-05
ODP	kg CFC-11 eq.	7.04E-07	6.72E-07	1.81E-08	2.79E-09	0.00E+00	1.06E-08	-3.14E-10
AP	H+ eq.	3.10E+00	3.09E+00	4.83E-03	8.23E-04	0.00E+00	2.97E-03	-1.27E-04
EP-Freshwater	kg P eq.	2.43E-01	2.42E-01	9.12E-05	1.66E-05	0.00E+00	5.50E-05	-1.06E-05
EP-Marine	kg N eq.	1.69E-01	1.62E-01	1.76E-03	7.51E-04	0.00E+00	3.95E-03	-2.71E-05
EP-Terrestrial	mol N eq.	2.24E+00	2.21E+00	1.92E-02	3.13E-03	0.00E+00	1.18E-02	-2.75E-04
POCP	kg NMVOC eq.	6.60E-01	6.48E-01	7.01E-03	1.22E-03	0.00E+00	4.14E-03	-9.59E-05
ADP-Minerals & Metals	kg SB eq.	3.95E-02	3.95E-02	3.18E-06	5.83E-07	0.00E+00	2.20E-06	-1.41E-08
ADP-Fossil	MJ	7.30E+02	7.01E+02	1.69E+01	2.57E+00	0.00E+00	9.97E+00	-4.73E-01
WDP	m³ eq. depr.	5.02E+01	5.00E+01	8.69E-02	3.64E-02	0.00E+00	7.51E-02	-4.27E-03

Resource use indicators

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
PERE	MJ	2.17E+02	2.17E+02	2.15E-01	3.88E-02	0.00E+00	1.27E-01	-3.78E-02
PERM	MJ	7.56E+00	7.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.25E+02	2.25E+02	2.15E-01	3.88E-02	0.00E+00	1.27E-01	-3.78E-02
PENRE	MJ	6.83E+02	6.53E+02	1.69E+01	2.57E+00	0.00E+00	9.97E+00	-4.73E-01
PENRM	MJ	4.77E+01	4.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	7.30E+02	7.01E+02	1.69E+01	2.57E+00	0.00E+00	9.97E+00	-4.73E-01

*Total not including Benefits and Loads

Common Base of Mandatory Indicators

Use of secondary materials, water, and energy resources

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
SM	kg	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	1.21E+00	1.21E+00	2.56E-03	1.20E-03	0.00E+00	2.06E-03	-1.66E-04

Waste category indicators

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
HWD	kg	4.27E-03	4.07E-03	1.14E-04	1.83E-05	0.00E+00	6.91E-05	-1.29E-06
N-HWD	kg	1.29E+01	9.06E+00	1.44E+00	5.01E-01	0.00E+00	1.93E+00	-6.19E-04
RWD	kg	1.21E-03	1.20E-03	3.66E-06	6.22E-07	0.00E+00	2.03E-06	-8.22E-07

Output flow indicators

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
CfRu	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfR	kg	1.53E+00	1.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	1.11E+00	6.46E-01	0.00E+00	4.61E-01	0.00E+00	0.00E+00	0.00E+00

Other indicators

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
Biogenic Carbon - Product	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon - Packaging	kg of C	2.46E-01	2.46E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Optional indicators

Indicator	Unit	Total*	Manufacturing	Distribution	Installation	Use	End of life	Benefits & Loads
Tot PE	MJ	9.55E+02	9.26E+02	1.71E+01	2.61E+00	0.00E+00	1.01E+01	-5.11E-01
Efp	Dise inc	8.10E-06	7.91E-06	1.19E-07	1.50E-08	0.00E+00	5.86E-08	-1.10E-09
IrHH	kBq U-235 eq	4.69E+00	4.66E+00	1.49E-02	2.53E-03	0.00E+00	8.30E-03	-3.37E-03
ETX FW	CTUe	3.64E+03	3.61E+03	4.07E+00	1.65E+01	0.00E+00	8.75E+00	-6.62E-02
HTX CE	CTUh	6.35E-07	6.24E-07	5.79E-09	9.53E-10	0.00E+00	4.34E-09	-4.11E-11
HTX N-CE	CTUh	3.20E-05	3.20E-05	1.09E-08	3.62E-09	0.00E+00	3.87E-08	-1.38E-10
IrLS	Pt	1.17E+03	1.14E+03	1.70E+01	1.68E+00	0.00E+00	7.63E+00	-4.97E-02

*Total not including Benefits and Loads

Extrapolation Rules Approach for Homogeneous Family

The PEP can cover products belonging to a homogeneous environmental family, even though they differ from the reference product. Therefore, the group of products must satisfy the following characteristics:

- same function;
- same product standard;
- similar manufacturing technology: the same type of materials and same manufacturing processes.

The product family satisfies these conditions, so extrapolation rules are applied following the PCR guidelines to assess the environmental impact of the products belonging to the family. The extrapolation rules are defined by the following steps:

- Analyse the products covered by the PEP belonging to the same homogenous family;
- Perform the LCA of a representative product of the homogeneous family;
- Identify and quantify the product parameters that vary between the various products of the homogeneous environmental family (i.e. dimensions, the weight of parts, materials, energy consumption, etc.).

Lastly, a sensitivity analysis was performed for each life cycle stage to identify which parameters of the ones selected are sensitive to environmental impacts to create extrapolation rules.

The parameters identified are listed below:

- product net weight;
- packaging weight related to one product.

The representative product considered for the calculation of the extrapolation rules is

- 776BGADDR-K-CS1977

This product is most representative for the sales.

The results of the sensitivity analysis show that all the parameters considered are sensitive.

The products included in the product family and considered for the application of the extrapolation rules are presented in the following table.

Variable Weights

SKU	SKU Weight (kg)	Protective Cap Weight (kg)	Polyethylene Film Weight (kg)	Packaging Weight (kg)	SKU which is grouped With
776BGADDR-K-CS1977	3.43E+00	7.48E-03	7.27E-03	4.10E-01	776BGADDR-K-CS1977
776BGADDRK	3.41E+00	7.48E-03	7.27E-03	4.10E-01	776BGADDR-K-CS1977
K676GADDR	9.58E-01	7.48E-03	0.00E+00	1.63E-01	K676GADDR
K676BGADDRK	4.88E+00	9.31E-02	7.27E-03	1.58E-01	K676BGADDRK
K676BGADDR-CS870	9.58E-01	7.48E-03	0.00E+00	1.63E-01	K676GADDR
K676BGADDR	9.58E-01	7.48E-03	0.00E+00	1.63E-01	K676GADDR
K676GADDRK	4.88E+00	9.31E-02	7.27E-03	1.58E-01	K676BGADDRK
776BGADDR	9.74E-01	7.48E-03	0.00E+00	1.58E-01	776BGADDR
K671GAD	2.35E+00	8.56E-02	7.27E-03	1.50E-01	K671GAD
K671B20GAD-CS870	2.35E+00	8.56E-02	7.27E-03	1.50E-01	K671GAD
K671BGAD	2.35E+00	8.56E-02	7.27E-03	1.50E-01	K671GAD
771GAD	2.37E+00	0.00E+00	7.27E-03	1.82E-01	771BGAD
771BGAD	2.37E+00	0.00E+00	7.27E-03	1.82E-01	771BGAD

Extrapolation Rules

The extrapolation rules are calculated based on the LCIA results of all the products (reference product + variants), and the sensitivity analysis carried out for the extrapolation rules.

A linear correlation between the LCIA impacts of the representative product and its variants is identified using these parameters for the distribution stage. To derive the best-fit linear equation, data were processed using Excel. In manufacturing, installation and end of life stage and in Benefits and Loads, to evaluate the environmental performance of all variants, impacts of each variants are extrapolated to be used for the impact calculation. To extrapolate the impacts of each variants, an LCA model is created for each variant. To determinate the environmental impact associated with each product, the impact of SKU which the product is grouped with (multiplication factor “a”) must be multiplied by the ratio between the weights of the SKU and the weights of the SKU which is grouped with. The table above can be referenced for the components’ weights for all the variants.

- **Manufacturing Stage:** $y = a * (x1/x2)$

a = Impact of SKU which is grouped with, x1 = Weight of SKU (kg) + Packaging weight (kg), x2 = Weight of SKU which is grouped with (kg) + Packaging Weight of SKU which is grouped with (kg)

- **Distribution Stage:** $y = ax1 + b$

x1 = Weight of SKU (kg) + Packaging weight (kg)

- **Installation Stage:** $y = a * (x1/x2)$

a = Impact of SKU which is grouped with, x1 = Packaging weight of SKU (kg), x2 = Packaging Weight of SKU which is grouped with (kg)

- **End-of-Life Stage:** $y = a * (x1/x2)$

a = Impact of SKU which is grouped with, x1 = Weight of SKU (kg), x2 = Weight of SKU which is grouped with (kg)

- **Benefits-and-Loads Stage:** $y = a * (x1/x2)$

a = Impact of SKU which is grouped with, x1 = Packaging Weight of SKU (kg)+LDPE and CAP Weight of SKU (kg), x2 = Packaging Weight of SKU which is grouped with (kg) +LDPE and CAP Weight of SKU which is grouped with (kg)

The table above can be referenced for the components’ weights and all their variants. The coefficients’ calculation for the use stage is not performed because this stage is not present in the Life cycle of the product and so there aren’t impacts related to this phase.

The following tables reports:

- the linear coefficients (a, b, etc.) for distribution stage;
- the multiplication factors for each life cycle stages of each product considered.

Extrapolation Factors

Manufacturing stage

Indicator	776BGADDR-K- CS1977	K676BGADDRK	K676GADDR	771BGAD	K671GAD
GWP-total	5.13E+01	5.17E+01	5.48E+00	4.35E+01	3.72E+01
GWP-fossil	5.17E+01	5.16E+01	5.76E+00	4.34E+01	3.72E+01
GWP-biogenic	-4.62E-01	-2.36E-02	-2.85E-01	-9.14E-03	-3.49E-02
GWP-luluc	7.08E-02	6.47E-02	4.47E-03	6.21E-02	5.20E-02
ODP	6.72E-07	7.15E-07	1.20E-07	4.50E-07	4.06E-07
AP	3.09E+00	2.64E+00	2.60E-02	2.93E+00	2.42E+00
EP-freshwater	2.42E-01	2.06E-01	1.57E-03	2.31E-01	1.90E-01
EP-marine	1.62E-01	1.44E-01	5.57E-03	1.49E-01	1.24E-01
EP-terrestrial	2.21E+00	1.93E+00	5.39E-02	2.06E+00	1.70E+00
POCP	6.48E-01	5.90E-01	2.68E-02	5.91E-01	4.93E-01
ADP-minerals & metals	3.95E-02	3.34E-02	7.11E-05	3.77E-02	3.10E-02
ADP-fossil	7.01E+02	7.73E+02	1.06E+02	5.56E+02	4.86E+02
WDP	5.00E+01	4.55E+01	2.35E+00	4.52E+01	3.77E+01
Efp	7.91E-06	7.20E-06	4.28E-07	7.13E-06	5.94E-06
IrHH	4.66E+00	4.43E+00	0.00E+00	4.06E+00	3.41E+00
ETX FW	3.61E+03	3.10E+03	6.35E+01	3.37E+03	2.79E+03
HTX CE	6.24E-07	5.63E-07	1.11E-07	5.19E-07	4.33E-07
HTX N-CE	3.20E-05	2.70E-05	7.45E-08	3.05E-05	2.51E-05
IrLS	1.14E+03	9.93E+02	6.57E+01	1.02E+03	8.52E+02
PERE	2.17E+02	2.30E+02	2.87E+01	1.78E+02	1.56E+02
PERM	7.56E+00	5.40E+00	2.99E+00	4.17E+00	3.68E+00
PERT	2.25E+02	2.35E+02	3.17E+01	1.82E+02	1.60E+02
PENRE	6.53E+02	6.77E+02	6.19E-02	5.38E+02	4.61E+02
PENRM	4.77E+01	9.58E+01	2.47E+01	1.78E+01	2.54E+01
PENRT	7.01E+02	7.73E+02	1.06E+02	5.56E+02	4.87E+02
SM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	1.21E+00	1.10E+00	6.19E-02	1.09E+00	9.04E-01
HWD	4.07E-03	5.19E-03	8.47E-04	2.48E-03	2.42E-03
N-HWD	9.06E+00	9.50E+00	9.67E-01	7.64E+00	6.50E+00
RWD	1.20E-03	1.14E-03	8.54E-05	1.05E-03	8.84E-04
CfRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	1.53E+00	1.37E+00	1.66E-01	1.34E+00	1.12E+00
MfER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	6.46E-01	1.40E+00	2.15E-01	2.38E-01	1.06E+00
Tot PE	9.26E+02	1.01E+03	1.37E+02	7.38E+02	6.47E+02
Biogenic C content-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic C content-packaging	2.46E-01	1.74E-01	9.40E-02	1.28E-01	1.20E-01

Extrapolation Factors

Distribution stage		
Indicator	a	b
GWP-total	3.02E-01	1.27E-10
GWP-fossil	3.02E-01	-7.51E-11
GWP-biogenic	1.24E-05	5.22E-13
GWP-luluc	1.22E-04	1.85E-13
ODP	4.71E-09	-3.59E-14
AP	1.26E-03	-3.12E-13
EP-freshwater	2.38E-05	-2.72E-13
EP-marine	4.58E-04	2.73E-14
EP-terrestrial	4.99E-03	1.20E-12
POCP	1.83E-03	3.11E-13
ADP-minerals & metals	8.28E-07	1.55E-14
ADP-fossil	4.41E+00	-2.68E-09
WDP	2.26E-02	-1.11E-11
Efp	3.09E-08	1.75E-13
IrHH	3.89E-03	3.70E-13
ETX FW	1.06E+00	2.01E-10
HTX CE	1.51E-09	2.08E-20
HTX N-CE	2.84E-09	1.15E-13
IrLS	4.44E+00	1.35E-09
PERE	5.59E-02	-1.75E-12
PERM	0.00E+00	0.00E+00
PERT	5.59E-02	-1.75E-12
PENRE	4.41E+00	-2.49E-09
PENRM	0.00E+00	0.00E+00
PENRT	4.41E+00	-2.49E-09
SM	0.00E+00	0.00E+00
RSF	0.00E+00	0.00E+00
NRSF	0.00E+00	0.00E+00
FW	6.68E-04	4.27E-13
HWD	2.97E-05	2.29E-13
N-HWD	3.75E-01	3.18E-11
RWD	9.52E-07	-5.61E-14
CfRU	0.00E+00	0.00E+00
MFR	0.00E+00	0.00E+00
MfER	0.00E+00	0.00E+00
EE	0.00E+00	0.00E+00
Tot PE	4.46E+00	-8.54E-11
Biogenic C content-product	0.00E+00	0.00E+00
Biogenic C content-packaging	0.00E+00	0.00E+00

Extrapolation Factors

Installation stage						
Indicator	776BGADDRK- CS1977	K676BGADDRK	K676GADDR	771BGAD	K671GAD	
GWP-total	1.54E+00	7.09E-01	5.39E-01	5.88E-01	6.75E-01	
GWP-fossil	2.31E-01	2.68E-01	8.54E-02	9.28E-02	2.51E-01	
GWP-biogenic	1.30E+00	4.40E-01	4.53E-01	4.95E-01	4.25E-01	
GWP-luluc	7.80E-05	4.42E-05	3.01E-05	3.34E-05	4.17E-05	
ODP	2.79E-09	1.61E-09	1.08E-09	1.19E-09	1.52E-09	
AP	8.23E-04	4.83E-04	3.22E-04	3.57E-04	4.56E-04	
EP-freshwater	1.66E-05	9.30E-06	6.49E-06	7.32E-06	8.74E-06	
EP-marine	7.51E-04	3.35E-04	2.73E-04	3.20E-04	3.12E-04	
EP-terrestrial	3.13E-03	1.91E-03	1.25E-03	1.38E-03	1.81E-03	
POCP	1.22E-03	6.94E-04	4.72E-04	5.25E-04	6.55E-04	
ADP-minerals & metals	5.83E-07	3.41E-07	2.28E-07	2.52E-07	3.22E-07	
ADP-fossil	2.57E+00	1.52E+00	1.02E+00	1.13E+00	1.44E+00	
WDP	3.64E-02	9.49E-03	6.11E-03	6.76E-03	8.95E-03	
Efp	1.50E-08	8.90E-09	6.00E-09	6.65E-09	8.41E-09	
IrHH	2.53E-03	1.34E-03	0.00E+00	1.03E-03	1.26E-03	
ETX FW	1.65E+01	4.05E+00	3.94E+00	4.16E+00	3.95E+00	
HTX CE	9.53E-10	5.79E-10	3.82E-10	4.22E-10	5.47E-10	
HTX N-CE	3.62E-09	1.79E-09	1.27E-09	1.43E-09	1.69E-09	
IrLS	1.68E+00	9.75E-01	6.64E-01	7.37E-01	9.20E-01	
PERE	3.88E-02	2.03E-02	1.39E-02	1.55E-02	1.92E-02	
PERM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
PERT	3.88E-02	2.03E-02	1.39E-02	1.55E-02	1.92E-02	
PENRE	2.57E+00	1.52E+00	1.77E-04	1.13E+00	1.44E+00	
PENRM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
PENRT	2.57E+00	1.52E+00	1.02E+00	1.13E+00	1.44E+00	
SM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
RSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FW	1.20E-03	2.78E-04	1.77E-04	1.96E-04	2.63E-04	
HWD	1.83E-05	1.06E-05	7.03E-06	7.78E-06	1.00E-05	
N-HWD	5.01E-01	2.50E-01	1.86E-01	2.10E-01	2.35E-01	
RWD	6.22E-07	3.28E-07	2.27E-07	2.53E-07	3.09E-07	
CfRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
MFR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
MfER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
EE	4.61E-01	1.15E+00	2.73E-01	2.71E-01	1.08E+00	
Tot PE	2.61E+00	1.54E+00	1.04E+00	1.15E+00	1.46E+00	
Biogenic C content-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Biogenic C content-packaging	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

Extrapolation Factors

End of life stage

Indicator	776BGADDRK-CS1977	K676BGADDRK	K676GADDR	771BGAD	K671GAD
GWP-total	8.04E-01	1.21E+00	2.58E-01	5.21E-01	5.04E-01
GWP-fossil	8.04E-01	1.21E+00	2.58E-01	5.21E-01	5.04E-01
GWP-biogenic	1.58E-04	3.07E-04	7.86E-05	7.17E-05	7.56E-05
GWP-luluc	2.84E-04	4.00E-04	7.95E-05	1.96E-04	1.87E-04
ODP	1.06E-08	1.50E-08	2.98E-09	7.29E-09	6.97E-09
AP	2.97E-03	4.20E-03	8.39E-04	2.05E-03	1.96E-03
EP-freshwater	5.50E-05	7.77E-05	1.55E-05	3.79E-05	3.63E-05
EP-marine	3.95E-03	7.63E-03	1.95E-03	1.85E-03	1.94E-03
EP-terrestrial	1.18E-02	1.67E-02	3.34E-03	8.15E-03	7.79E-03
POCP	4.14E-03	5.88E-03	1.18E-03	2.85E-03	2.72E-03
ADP-minerals & metals	2.20E-06	3.09E-06	6.13E-07	1.52E-06	1.46E-06
ADP-fossil	9.97E+00	1.41E+01	2.81E+00	6.87E+00	6.57E+00
WDP	7.51E-02	1.07E-01	2.12E-02	5.16E-02	4.94E-02
Efp	5.86E-08	8.29E-08	1.65E-08	4.04E-08	3.86E-08
IrHH	8.30E-03	1.18E-02	0.00E+00	5.70E-03	5.45E-03
ETX FW	8.75E+00	1.41E+01	3.45E+00	4.02E+00	4.10E+00
HTX CE	4.34E-09	5.76E-09	1.01E-09	3.19E-09	3.01E-09
HTX N-CE	3.87E-08	4.18E-08	3.39E-09	3.37E-08	3.10E-08
IrLS	7.63E+00	1.06E+01	2.05E+00	5.34E+00	5.09E+00
PERE	1.27E-01	1.80E-01	3.59E-02	8.75E-02	8.36E-02
PERM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	1.27E-01	1.80E-01	3.59E-02	8.75E-02	8.36E-02
PENRE	9.97E+00	1.41E+01	5.79E-04	6.87E+00	6.57E+00
PENRM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	9.97E+00	1.41E+01	2.81E+00	6.87E+00	6.57E+00
SM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	2.06E-03	2.92E-03	5.79E-04	1.41E-03	1.35E-03
HWD	6.91E-05	9.75E-05	1.94E-05	4.77E-05	4.56E-05
N-HWD	1.93E+00	3.66E+00	1.07E+00	8.41E-01	8.87E-01
RWD	2.03E-06	2.88E-06	5.76E-07	1.40E-06	1.34E-06
CfRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tot PE	1.01E+01	1.43E+01	2.84E+00	6.96E+00	6.65E+00
Biogenic C content-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic C content-packaging	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Extrapolation Factors

Benefits and Loads

Indicator	776BGADDR-K- CS1977	K676GADDR	K676BGADDRK	K671GAD	771BGAD
GWP-total	-3.43E-02	-2.14E-02	-8.46E-02	-7.95E-02	-2.13E-02
GWP-fossil	-3.43E-02	-2.14E-02	-8.44E-02	-7.93E-02	-2.12E-02
GWP-biogenic	-3.30E-05	-2.09E-05	-8.30E-05	-7.80E-05	-2.07E-05
GWP-luluc	-3.34E-05	-2.11E-05	-8.38E-05	-7.87E-05	-2.10E-05
ODP	-3.14E-10	-1.94E-10	-7.60E-10	-7.14E-10	-1.92E-10
AP	-1.27E-04	-7.98E-05	-3.17E-04	-2.98E-04	-7.93E-05
EP-freshwater	-1.06E-05	-6.72E-06	-2.67E-05	-2.51E-05	-6.68E-06
EP-marine	-2.71E-05	-1.70E-05	-6.75E-05	-6.34E-05	-1.69E-05
EP-terrestrial	-2.75E-04	-1.73E-04	-6.84E-04	-6.43E-04	-1.72E-04
POCP	-9.59E-05	-5.99E-05	-2.37E-04	-2.22E-04	-5.95E-05
ADP-minerals & metals	-1.41E-08	-8.75E-09	-3.45E-08	-3.24E-08	-8.69E-09
ADP-fossil	-4.73E-01	-2.95E-01	-1.16E+00	-1.09E+00	-2.93E-01
WDP	-4.27E-03	-2.69E-03	-1.07E-02	-1.00E-02	-2.67E-03
Efp	-1.10E-09	-6.96E-10	-2.76E-09	-2.59E-09	-6.91E-10
IrHH	-3.37E-03	-2.13E-03	0.00E+00	-7.95E-03	-2.12E-03
ETX FW	-6.62E-02	-4.16E-02	-1.65E-01	-1.55E-01	-4.13E-02
HTX CE	-4.11E-11	-2.55E-11	-1.01E-10	-9.45E-11	-2.54E-11
HTX N-CE	-1.38E-10	-8.70E-11	-3.45E-10	-3.24E-10	-8.64E-11
IrLS	-4.97E-02	-3.13E-02	-1.24E-01	-1.17E-01	-3.11E-02
PERE	-3.78E-02	-2.39E-02	-9.51E-02	-8.93E-02	-2.38E-02
PERM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	-3.78E-02	-2.39E-02	-9.51E-02	-8.93E-02	-2.38E-02
PENRE	-4.73E-01	-2.95E-01	-4.14E-04	-1.09E+00	-2.93E-01
PENRM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	-4.73E-01	-2.95E-01	-1.16E+00	-1.09E+00	-2.93E-01
SM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	-1.66E-04	-1.04E-04	-4.14E-04	-3.89E-04	-1.04E-04
HWD	-1.29E-06	-7.92E-07	-3.11E-06	-2.92E-06	-7.87E-07
N-HWD	-6.19E-04	-3.87E-04	-1.53E-03	-1.44E-03	-3.85E-04
RWD	-8.22E-07	-5.20E-07	-2.07E-06	-1.94E-06	-5.17E-07
CfRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tot PE	-5.11E-01	-3.19E-01	-1.26E+00	-1.18E+00	-3.17E-01
Biogenic C content-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic C content-packaging	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Comparability

EPDs published within the same product category, though originating from different programs, may not be comparable. Full conformance with a PCR allows PEP comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible.

Applicable product standards

Product technical and Certification specifications can be found in the product catalogue on ABB's website.

Glossary

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	Tropospheric ozone creation potential
ADP-m&m	Abiotic Depletion for non-fossil resources potential
ADP-fossil	Abiotic Depletion for fossil resources potential
WDP	Water deprivation potential

Resource indicators

PENRE	Use of non-renewable primary energy excluding 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)
PERE	Use of renewable primary energy excluding non-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)

Secondary materials, water and energy resources		Waste category indicators	
SM	Use of secondary materials	HWD	Hazardous waste disposed
RSF	Use of renewable secondary fuels	N-HWD	Non-hazardous waste disposed
NRSF	Use of non-renewable secondary fuels	RWD	Radioactive waste disposed
FW	Net use of fresh water		
Output flow indicators		Optional indicators	
CfRu	Components for re-use	Tot PE	Total use of primary energy during the life cycle
MfR	Materials for recycling		
MfER	Materials for energy recovery	Efp	Emissions of Fine particles
EE	Exported Energy	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

References

[1] PCR “PEP-PCR-ed4-EN-2021_09_06” - Product Category Rules for Electrical, Electronic and HVAC-R Products

[2] PSR-0001-ed4-EN-2022 11 16 - Specific rules for Wires, Cables and Accessories

[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 (2023). ecoinvent database version 3.10 - (<https://ecoinvent.org/>)

[7] SimaPro Software version 10.2 - PRé Sustainability

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

[9] 2B S.r.l, 2025, "Report LCA ABB_Grounding Aid Device"