Ty-Rap® TyGenic™ Antimicrobial Detectable Cable Ties

PEP ecopassport®

Product Environmental Profile

Registration number:	**ABBG-00943-V01.01-EN**	Drafting rules:	**PCR-ed4-EN-2021 09 06**
Contact information:	**oscar.sarmiento-penuela@ch.abb.com**	Supplemented by:	**PSR-0003-ed2.1-EN-2023 12 08**
Verifier accreditation number:	**VH44**	Information and reference documents:	**www.pep-ecopassport.org**
Date of issue:	**August-25**	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)

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"

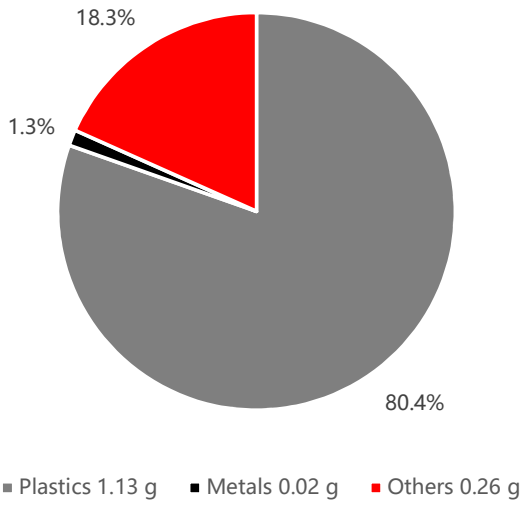
ABB Purpose & Embedding Sustainability

ABB is committed to perform the Life Cycle Assessment (LCA) of most of its products in order to obtain the PEP certification. LCA evaluates the environmental performances and potential environmental impacts throughout a product's life cycle, from raw material to end of life, including manufacturing, transportation, distribution, and use. It helps to identify opportunities to improve the environmental performance of products, establish strategic plans and priorities and create Environmental Product Declarations.

General information

Reference product	Ty-Rap® - TY525MR-NDT
Description of the product	Ty-Rap® are cable ties characterized by a corrosion-resistant, non-magnetic stainless-steel locking barb in its head that grips tightly and allows for a completely adjustable fit. Moreover, its raised tail makes it easy to pick up, even with gloved hand, and its easy-grip tail surface makes it easy to pull tight, even in wet or cold conditions. The Ty-Rap® TyGenic™ antimicrobial detectable cable tie is molded from an FDA-compliant proprietary nylon resin blend that contains both an EPA-registered antimicrobial additive and detectable particles. The antimicrobial additive is effective against a broad spectrum of micro-organisms, including various bacteria, viruses, protozoans, and fungi, such as mold and mildew.
Functional unit	The functional unit for Ty-Rap® - TY525MR-NDT is to mount a cable or a tube at a point with a cable tie with a clamping capacity between 3 mm and 45 mm for a reference lifetime of 20 years.
Other products covered	List of the other products covered in this PEP is presented in the paragraph which concerned the extrapolation rules.
Manufacturing address	6000 Kecskemét, Kadafalva-Heliport, (HU) www.new.abb.com

Constituent Materials



Total weight of reference product and packaging	**1.4**	**g**

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%
PA	77.1	**Steel**	1.3	**Paper**	6.9
PE	3.3			**Wood**	11.4

The total mass of the reference product is 1.1 g, with an additional 0.3 g associated with packaging materials.

Additional Information

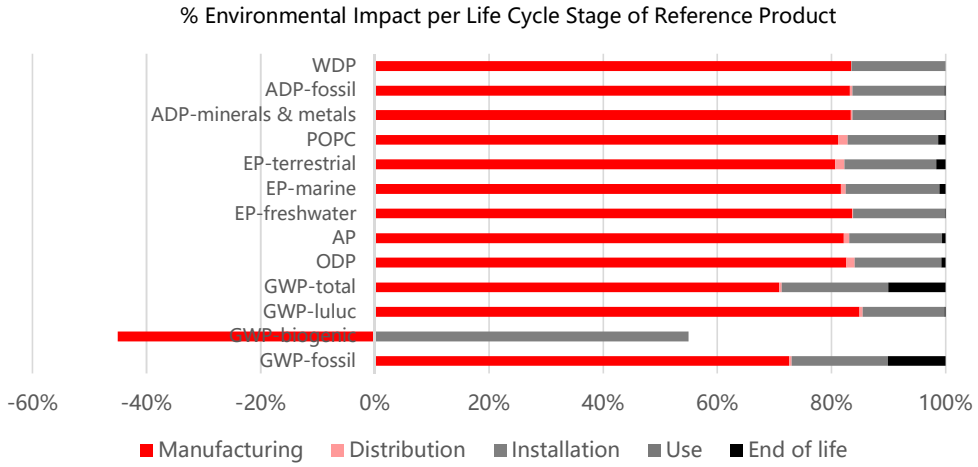
Manufacturing	The manufacturing stage includes the production of the product and its packaging, as well as transportation to the manufacturer's final logistic platform. Manufacturing processes are conducted at ABB's facility in Kecskemét (HU).
Distribution	Transportation from ABB's manufacturing facility in Kecskemét to distribution warehouse in Houdeng-Goegnies, Belgium is considered. Distribution from warehouse to end users is based on product-specific transport data for the reference year. The reference product is distributed all over the world.
Installation	This phase includes the disposal of the product's packaging, as required by PSR-0003-ed2.1-EN-2023 12 08, and the waste treatment of product's installation scraps.
Use	No material or energy consumption occurs during the use phase. The product does not require maintenance.
End of life	The default end-of-life scenario specified in PSR-0003-ed2.1-EN-2023 12 08 has been adopted, assuming 100% incineration without energy recovery.
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	20 years
Product category	Other Cable Management Products
Installation elements	No additional elements needed during installation.
Use scenario	No material or energy consumption occurs during the use phase. The product does not require maintenance.
Geographical & Temporal representativeness	Global, 2022
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 & Ecoinvent 3.10

Energy model used	
Manufacturing	The energy-related processes used are those included in the ecoinvent datasets.
Installation	The energy-related processes used are those included in the ecoinvent datasets.
Use	No energy consumption occurs during the use phase. The product does not require maintenance.
End of life	The energy-related processes used are those included in the ecoinvent datasets.

Common base of mandatory indicators



Environmental impact indicators

Indicator		Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
GWP	Total	kg CO2 eq.	2.68E-02	1.90E-02	1.18E-04	5.00E-03	0.00E+00	2.70E-03	0.00E+00
	Fossil	kg CO2 eq.	2.67E-02	1.94E-02	1.18E-04	4.50E-03	0.00E+00	2.70E-03	0.00E+00
	Biogenic	kg CO2 eq.	8.90E-05	-4.08E-04	4.32E-08	4.96E-04	0.00E+00	4.68E-07	0.00E+00
	Luluc	kg CO2 eq.	8.67E-06	7.36E-06	4.44E-08	1.25E-06	0.00E+00	1.87E-08	0.00E+00
ODP		kg CFC-11 eq.	1.55E-10	1.28E-10	2.25E-12	2.36E-11	0.00E+00	1.19E-12	0.00E+00
AP		H+ eq.	1.05E-04	8.61E-05	1.01E-06	1.70E-05	0.00E+00	6.64E-07	0.00E+00
EP	Freshwater	kg P eq.	5.16E-06	4.31E-06	7.26E-09	8.29E-07	0.00E+00	8.40E-09	0.00E+00
	Marine	kg N eq.	3.30E-05	2.69E-05	3.01E-07	5.40E-06	0.00E+00	3.73E-07	0.00E+00
	Terrestrial	mol N eq.	2.00E-04	1.61E-04	3.31E-06	3.22E-05	0.00E+00	3.24E-06	0.00E+00
POCP		kg NMVOC eq.	6.48E-05	5.26E-05	1.08E-06	1.03E-05	0.00E+00	8.47E-07	0.00E+00
ADP	Minerals & metals	kg SB eq.	9.59E-08	8.00E-08	2.82E-10	1.55E-08	0.00E+00	1.80E-10	0.00E+00
	Fossil	MJ	3.73E-01	3.10E-01	1.66E-03	6.02E-02	0.00E+00	7.21E-04	0.00E+00
WDP		m³ eq. depr.	1.89E-02	1.58E-02	7.30E-06	3.11E-03	0.00E+00	1.22E-05	0.00E+00

Resource use indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
PERE	MJ	1.98E-02	1.69E-02	2.34E-05	2.84E-03	0.00E+00	2.81E-05	0.00E+00
PERM	MJ	5.51E-03	5.36E-03	0.00E+00	1.47E-04	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.53E-02	2.23E-02	2.34E-05	2.99E-03	0.00E+00	2.81E-05	0.00E+00
PENRE	MJ	3.15E-01	2.61E-01	1.66E-03	5.11E-02	0.00E+00	7.21E-04	0.00E+00
PENRM	MJ	5.83E-02	4.92E-02	0.00E+00	9.14E-03	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.73E-01	3.10E-01	1.66E-03	6.02E-02	0.00E+00	7.21E-04	0.00E+00

Common base of mandatory indicators

Use of secondary materials, water, and energy resources

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
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	4.77E-04	3.95E-04	2.29E-07	7.86E-05	0.00E+00	3.10E-06	0.00E+00

Waste category indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
HWD	kg	8.31E-07	6.93E-07	1.06E-08	1.14E-07	0.00E+00	1.30E-08	0.00E+00
N-HWD	kg	1.87E-03	1.44E-03	1.20E-04	2.80E-04	0.00E+00	2.87E-05	0.00E+00
RWD	kg	8.16E-07	6.81E-07	4.51E-10	1.34E-07	0.00E+00	4.40E-10	0.00E+00

Output flow indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
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	1.92E-04	1.64E-04	0.00E+00	2.78E-05	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	1.88E-02	0.00E+00	0.00E+00	5.29E-03	0.00E+00	1.35E-02	0.00E+00

Other indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life	Benefits
Biogenic C-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 C-packaging	kg of C	1.75E-04	1.70E-04	0.00E+00	4.77E-06	0.00E+00	0.00E+00	0.00E+00

Optional indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
Tot PE	MJ	3.98E-01	3.33E-01	1.69E-03	6.32E-02	0.00E+00	7.49E-04	0.00E+00
Efp	Dise inc	9.33E-10	7.68E-10	1.04E-11	1.50E-10	0.00E+00	4.39E-12	0.00E+00
IrHH	kBq U-235 eq	3.41E-03	2.85E-03	1.82E-06	5.60E-04	0.00E+00	1.73E-06	0.00E+00
ETX FW	CTUe	1.33E-01	1.05E-01	3.77E-04	2.17E-02	0.00E+00	5.86E-03	0.00E+00
HTX CE	CTUh	5.33E-11	4.36E-11	6.89E-13	8.42E-12	0.00E+00	5.73E-13	0.00E+00
HTX N-CE	CTUh	2.77E-10	2.23E-10	9.68E-13	4.58E-11	0.00E+00	6.32E-12	0.00E+00
IrLS	Pt	1.06E-01	9.45E-02	1.43E-03	1.03E-02	0.00E+00	2.92E-04	0.00E+00

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 reachin 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	
SM	Use of secondary materials
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
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	
CfRu	Components for re-use
MfR	Materials for recycling
MfER	Materials for energy recovery
EE	Exported Energy

Optional indicators	
Tot PE	Total use of primary energy during the life cycle
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

References

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

[2] PSR “PSR-0003-ed2.1-EN-2023 12 08" Specific rules for cable management 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 (2023). ecoinvent database version 3.10 - (https://ecoinvent.org/)

[7] SimaPro Software version 10.2.0.2 - PRé Sustainability

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

[9] 2B Srl, LCA report of Ty-Rap® TyGenic™ Antimicrobial Detectable Cable Ties

Approach for extrapolation rules applied to a homogeneous environmental 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;
- same manufacturing technology: the same type of materials and same manufacturing processes.

The Ty-Rap cable ties 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 and its variant;
- 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 is performed for each life cycle stafe to identify the sensitive parameters to environmental impacts.

The identified parameters are listed below:

- Product weight
- Packaging weight

The representative product considered for the calculation of the extrapolation rules is Ty-Rap® - TY525MR-NDT. This product is most representative for sales.

The products included in the Ty-Rap cable ties product family and considered for the application of the extrapolation rules are presented in the following table.

Catalog Number	Product Weight (kg)	Packaging weight (kg)
TY523MR-NDT	2.34E-04	1.35E-04
TY524MR-NDT	7.35E-04	2.20E-04
TY525MR-NDT	1.15E-03	3.16E-04
TY527MR-NDT	5.42E-03	8.44E-04
TY528MR-NDT	2.89E-03	4.24E-04

Extrapolation rules

The extrapolation rules are calculated based on the LCIA results of all the five products (reference product and its variants).

To evaluate the environmental performance of all the variants, multiplication factors were extrapolated to be used for the impact's calculation. To extrapolate the multiplication factors, an LCA model has been created for each variant. The impact of each product was related to the reference product for each of the life cycle stages considered.

To determinate the environmental impacts associated with each product, the multiplication factor must be multiplied by the impacts of the reference product. Each environmental indicator value for each phase shall be calculated using the following formula:

$$y = a\,x$$

Where:

- y is the impact of the chosen category to be calculated;
- x is the impact of the chosen category of reference product;
- a is the multiplication factor.

The following tables report the multiplication factors for each life cycle stage of each product considered.

Net Benefits & Loads beyond system boundaries are equal to 0 for all the impact categories for all the products considered in this study.

MANUFACTURING STAGE				
Impact category indicator	**TY523MR-NDT**	**TY524MR-NDT**	**TY527MR-NDT**	**TY528MR-NDT**
GWP-total	2.10E-01	6.29E-01	4.63E+00	2.51E+00
GWP-fossil	2.14E-01	6.29E-01	4.58E+00	2.48E+00
GWP-biogenic	4.14E-01	6.45E-01	2.14E+00	1.15E+00
GWP-luluc	2.42E-01	7.57E-01	4.79E+00	2.29E+00
ODP	2.41E-01	7.01E-01	4.64E+00	2.37E+00
AP	2.14E-01	6.36E-01	4.57E+00	2.47E+00
EP-freshwater	2.18E-01	7.17E-01	4.91E+00	2.44E+00
EP-marine	2.11E-01	6.03E-01	4.46E+00	2.48E+00
EP-terrestrial	2.17E-01	6.39E-01	4.52E+00	2.44E+00
POCP	2.22E-01	6.44E-01	4.51E+00	2.43E+00
ADP-minerals & metals	2.18E-01	8.50E-01	5.43E+00	2.42E+00
ADP-fossil	2.17E-01	6.23E-01	4.54E+00	2.47E+00
WDP	2.10E-01	5.73E-01	4.42E+00	2.51E+00
Tot PE	2.21E-01	6.33E-01	4.54E+00	2.45E+00
PERE	2.39E-01	7.91E-01	4.93E+00	2.28E+00
PERM	3.69E-01	6.81E-01	2.90E+00	1.48E+00
PERT	2.71E-01	7.65E-01	4.44E+00	2.09E+00
PENRE	2.14E-01	6.36E-01	4.60E+00	2.48E+00
PENRM	2.32E-01	5.55E-01	4.23E+00	2.46E+00
PENRT	2.17E-01	6.23E-01	4.54E+00	2.47E+00
SM	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
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	2.10E-01	5.82E-01	4.45E+00	2.51E+00
HWD	2.88E-01	6.85E-01	4.35E+00	2.26E+00
N-HWD	2.28E-01	7.09E-01	4.50E+00	2.32E+00
RWD	2.11E-01	6.75E-01	4.80E+00	2.48E+00
CfRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfR	2.66E-01	9.73E-01	5.67E+00	2.27E+00
MfER	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
Efp	2.16E-01	6.88E-01	4.76E+00	2.45E+00
IrHH	2.11E-01	6.73E-01	4.79E+00	2.48E+00
ETX FW	2.15E-01	7.35E-01	4.99E+00	2.45E+00
HTX CE	2.26E-01	1.74E+00	8.73E+00	2.14E+00
HTX N-CE	2.11E-01	6.48E-01	4.68E+00	2.48E+00
IrLS	2.92E-01	7.13E-01	3.90E+00	1.93E+00
Biogenic Carbon-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon-packaging	3.54E-01	6.73E-01	2.92E+00	1.49E+00

DISTRIBUTION STAGE				
Impact category indicator	**TY523MR-NDT**	**TY524MR-NDT**	**TY527MR-NDT**	**TY528MR-NDT**
GWP-total	2.38E-01	6.38E-01	5.61E+00	1.86E+00
GWP-fossil	2.38E-01	6.38E-01	5.61E+00	1.86E+00
GWP-biogenic	2.80E-01	7.68E-01	6.74E-01	2.07E+00
GWP-luluc	2.29E-01	6.10E-01	6.65E+00	1.82E+00
ODP	2.43E-01	6.55E-01	4.95E+00	1.89E+00
AP	1.82E-01	4.68E-01	1.20E+01	1.60E+00
EP-freshwater	2.49E-01	6.72E-01	4.32E+00	1.92E+00
EP-marine	1.95E-01	5.07E-01	1.06E+01	1.66E+00
EP-terrestrial	1.94E-01	5.05E-01	1.06E+01	1.65E+00
POCP	2.05E-01	5.39E-01	9.34E+00	1.71E+00
ADP-minerals & metals	2.51E-01	6.79E-01	4.03E+00	1.93E+00
ADP-fossil	2.41E-01	6.47E-01	5.26E+00	1.88E+00
WDP	2.50E-01	6.75E-01	4.18E+00	1.92E+00
Tot PE	2.41E-01	6.47E-01	5.24E+00	1.88E+00
PERE	2.51E-01	6.77E-01	4.12E+00	1.93E+00
PERM	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	2.51E-01	6.77E-01	4.12E+00	1.93E+00
PENRE	2.41E-01	6.47E-01	5.26E+00	1.88E+00
PENRM	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	2.41E-01	6.47E-01	5.26E+00	1.88E+00
SM	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
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	2.50E-01	6.75E-01	4.18E+00	1.92E+00
HWD	2.45E-01	6.59E-01	4.82E+00	1.90E+00
N-HWD	2.60E-01	7.06E-01	3.01E+00	1.97E+00
RWD	2.52E-01	6.83E-01	3.90E+00	1.93E+00
CfRU	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
MfER	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
Efp	2.53E-01	6.84E-01	3.85E+00	1.94E+00
IrHH	2.52E-01	6.83E-01	3.91E+00	1.93E+00
ETX FW	2.46E-01	6.62E-01	4.69E+00	1.90E+00
HTX CE	2.44E-01	6.57E-01	4.87E+00	1.89E+00
HTX N-CE	2.52E-01	6.82E-01	3.92E+00	1.93E+00
IrLS	2.59E-01	7.02E-01	3.17E+00	1.96E+00
Biogenic Carbon-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon-packaging	0.00E+00	0.00E+00	0.00E+00	0.00E+00

INSTALLATION STAGE				
Impact category indicator	**TY523MR-NDT**	**TY524MR-NDT**	**TY527MR-NDT**	**TY528MR-NDT**
GWP-total	2.38E-01	6.28E-01	4.34E+00	2.36E+00
GWP-fossil	2.21E-01	6.20E-01	4.52E+00	2.47E+00
GWP-biogenic	3.88E-01	6.94E-01	2.71E+00	1.35E+00
GWP-luluc	2.06E-01	7.66E-01	5.16E+00	2.47E+00
ODP	2.10E-01	6.97E-01	4.82E+00	2.46E+00
AP	2.06E-01	6.33E-01	4.61E+00	2.49E+00
EP-freshwater	2.05E-01	7.17E-01	5.00E+00	2.49E+00
EP-marine	2.07E-01	6.00E-01	4.48E+00	2.50E+00
EP-terrestrial	2.09E-01	6.35E-01	4.55E+00	2.47E+00
POCP	2.09E-01	6.39E-01	4.57E+00	2.47E+00
ADP-minerals & metals	2.05E-01	8.53E-01	5.52E+00	2.45E+00
ADP-fossil	2.05E-01	6.19E-01	4.60E+00	2.51E+00
WDP	2.04E-01	5.71E-01	4.44E+00	2.53E+00
Tot PE	2.05E-01	6.28E-01	4.63E+00	2.51E+00
PERE	2.05E-01	8.09E-01	5.35E+00	2.47E+00
PERM	2.04E-01	6.39E-01	4.71E+00	2.51E+00
PERT	2.05E-01	8.01E-01	5.32E+00	2.47E+00
PENRE	2.05E-01	6.33E-01	4.65E+00	2.50E+00
PENRM	2.04E-01	5.41E-01	4.33E+00	2.54E+00
PENRT	2.05E-01	6.19E-01	4.60E+00	2.51E+00
SM	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
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	2.04E-01	5.80E-01	4.47E+00	2.53E+00
HWD	2.09E-01	6.68E-01	4.70E+00	2.46E+00
N-HWD	2.13E-01	7.07E-01	4.58E+00	2.38E+00
RWD	2.05E-01	6.74E-01	4.84E+00	2.50E+00
CfRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MfR	2.05E-01	1.02E+00	6.16E+00	2.42E+00
MfER	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	3.36E-01	6.22E-01	3.54E+00	1.96E+00
Efp	2.06E-01	6.86E-01	4.82E+00	2.48E+00
IrHH	2.05E-01	6.72E-01	4.83E+00	2.50E+00
ETX FW	2.07E-01	7.25E-01	5.00E+00	2.47E+00
HTX CE	2.12E-01	1.77E+00	8.98E+00	2.18E+00
HTX N-CE	2.08E-01	6.45E-01	4.67E+00	2.49E+00
IrLS	2.07E-01	7.37E-01	4.96E+00	2.45E+00
Biogenic Carbon-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon-packaging	2.04E-01	6.39E-01	4.71E+00	2.51E+00

END OF LIFE STAGE				
Impact category indicator	**TY523MR-NDT**	**TY524MR-NDT**	**TY527MR-NDT**	**TY528MR-NDT**
GWP-total	2.04E-01	5.41E-01	4.33E+00	2.54E+00
GWP-fossil	2.04E-01	5.41E-01	4.33E+00	2.54E+00
GWP-biogenic	2.04E-01	5.45E-01	4.35E+00	2.54E+00
GWP-luluc	2.04E-01	6.36E-01	4.70E+00	2.51E+00
ODP	2.04E-01	6.03E-01	4.57E+00	2.52E+00
AP	2.04E-01	5.71E-01	4.45E+00	2.53E+00
EP-freshwater	2.04E-01	7.36E-01	5.08E+00	2.49E+00
EP-marine	2.04E-01	5.61E-01	4.41E+00	2.53E+00
EP-terrestrial	2.04E-01	5.66E-01	4.43E+00	2.53E+00
POCP	2.04E-01	5.74E-01	4.46E+00	2.53E+00
ADP-minerals & metals	2.04E-01	6.12E-01	4.61E+00	2.52E+00
ADP-fossil	2.04E-01	6.30E-01	4.68E+00	2.52E+00
WDP	2.04E-01	6.26E-01	4.66E+00	2.52E+00
Tot PE	2.04E-01	6.28E-01	4.67E+00	2.52E+00
PERE	2.04E-01	5.77E-01	4.47E+00	2.53E+00
PERM	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	2.04E-01	5.77E-01	4.47E+00	2.53E+00
PENRE	2.04E-01	6.30E-01	4.68E+00	2.52E+00
PENRM	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	2.04E-01	6.30E-01	4.68E+00	2.52E+00
SM	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
NRSF	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	2.04E-01	5.49E-01	4.36E+00	2.54E+00
HWD	2.04E-01	5.75E-01	4.46E+00	2.53E+00
N-HWD	2.04E-01	6.45E-01	4.73E+00	2.51E+00
RWD	2.04E-01	5.78E-01	4.47E+00	2.53E+00
CfRU	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
MfER	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	2.04E-01	5.40E-01	4.33E+00	2.54E+00
Efp	2.04E-01	6.67E-01	4.82E+00	2.51E+00
IrHH	2.04E-01	5.79E-01	4.48E+00	2.53E+00
ETX FW	2.04E-01	5.48E-01	4.36E+00	2.54E+00
HTX CE	2.04E-01	6.23E-01	4.65E+00	2.52E+00
HTX N-CE	2.04E-01	5.46E-01	4.35E+00	2.54E+00
IrLS	2.04E-01	7.36E-01	5.08E+00	2.49E+00
Biogenic Carbon-product	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon-packaging	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.