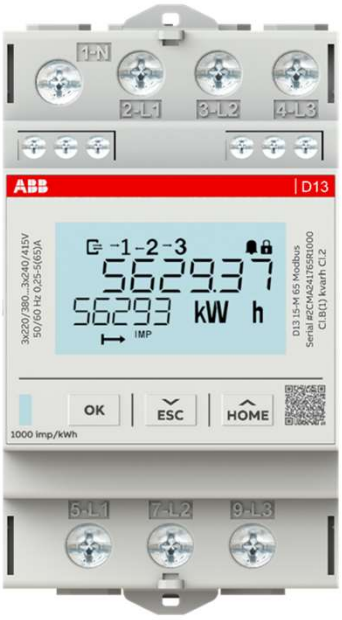
D13 15 & D11 15 EQ METERS

PEP ecopassport®

Product Environmental Profile



Product Environmental Profile - PEP Ecopassport.
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"

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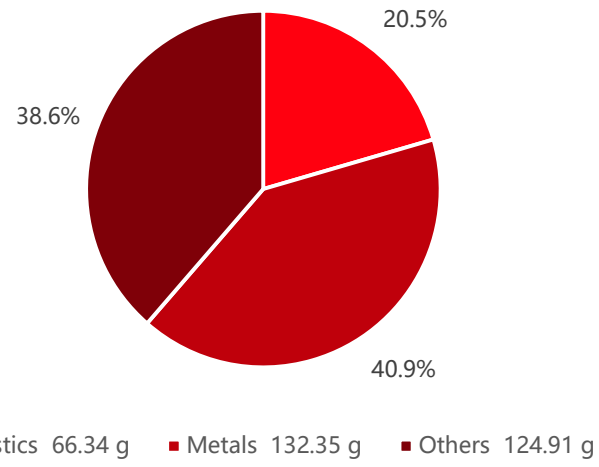
ABB Purpose & Embedding Sustainability

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

Reference product	ABB D13 15-M 65 Modbus - Code 2CMA241765R1000
Description of the product	D13 15 EQ Meters are renowned for their compactness and accuracy, with most models certified according to the MID Directive. They are ideal for three-phase 230 VAC systems and can display various quantities: active, reactive, and apparent energy; active, reactive, and apparent power; currents; frequencies; voltages; division of consumption into tariff; power factor; and import/export. All meters are equipped with outputs for pulse or alarm management. Depending on the version, they are equipped with built-in serial communication interfaces for Modbus RTU (RS485 version) and Meter BUS (M-Bus versions).
Functional unit	The functional unit for the D13 15-M 65 Modbus is to ensure all energy monitoring needs in the distribution system with rated voltage 230V, rated current 5A, current type AC and Ingress Protection IP2X, in the Industrial and residential application area, according to the appropriate use scenario, according to MID standard, and during the 10-year reference service life of the product.
Other products covered	D13 15-M 65 (2CMA241695R1000) D13 15 65 (2CMA241725R1000) D13 15-M 65 Modbus B (2CMA241765R1001) D13 15-M 65 Mbus (2CMA241845R1000) D13 P 15-M 65 Modbus (2CMA263275R1000) D11 15-M 40 (2CMA241645R1000) D11 15-M 40 B (2CMA241645R1001) D11 15 40 (2CMA241655R1000) D11 15-M 40 Modbus (2CMA241665R1000) D11 15-M 40 Modbus B (2CMA241665R1001) D11 15 40 Modbus (2CMA241675R1000) D11 15-M 40 Mbus (2CMA241685R1000)

Constituent Materials



Total weight of Reference product included packaging (g)	323.6	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%
PC	16.5	Iron	16.3	PCBA	15.4
Glass fibre	1.8	Steel	14.2	Wood	12.9
PBT	1.6	Copper	10.0	Cardboard	8.7
POM	0.3	Brass	0.4	Paper	1.5
Other thermoplastics	0.3	–	–	Cable	0.1

Total weight of the reference product 248.8 g plus packaging 74.7 g.

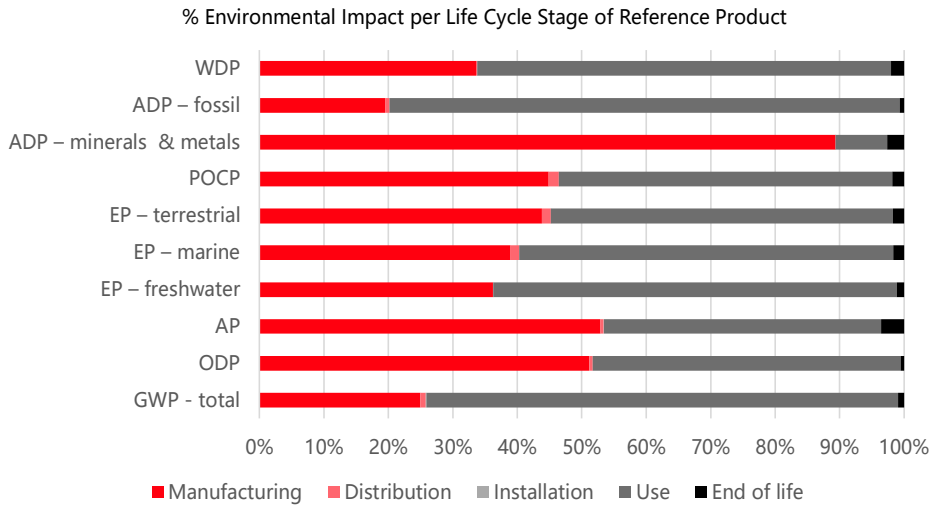
Additional Environmental Information

Manufacturing	The manufacturing stage includes the production and transportation to the manufacturer's last logistic platform of the product and its packaging. The plastic used in the product is partly recycled.
Distribution	The transport from the production plant to ABB Santa Palomba factory and from Santa Palomba to the logistic center of Vignate was taken into account. For the distribution of the product from Vignate to the final customer, the real global distribution of the product was adopted.
Installation	The installation phase only implies manual activities and no energy is consumed. This phase also includes the disposal of the packaging of the product. Statistical average data from Eurostat and OECD databases were considered for the disposal of the product and its packaging.
Use	During the use phase, D13 15-M 65 Modbus consumes energy during STANDBY and ON operating mode and dissipates some electricity due to power losses. The energy consumption has been calculated as follow: - STANDBY operating mode = 99.99%; - ON operating mode = 0.01%; - RSL of 10 years; - Functioning time of 100% of the RSL (α). No maintenance is planned for the product.
End of life	The default end of life scenario provided by the IEC/TR 62635 document has been adopted, considering the product transport by lorry over 1000 km and its disposal.
Benefits and loads beyond the system boundaries	The potential benefits derives from the impacts prevented by recycling and waste to energy recovery of the packaging in the installation phase.

Environmental Impacts

Reference lifetime	10 years
Product category	Other Equipment
Installation elements	No installation materials are required in the life cycle of the product.
Use scenario	The use stage electricity consumption is calculated as follows: E_use [kWh] = (P_use*8760*RSL*α)/1000 No maintenance is planned for the product.
Geographical representativeness	Global
Technological representativeness	Technological representativeness refers to the specific production process for primary data.
Software and database used	SimaPro 9.5 and ecoinvent 3.9.1
Energy model used	
Manufacturing	ABB GO energy mix 2022. The energy-related processes used for the remaining inputs are those included in the ecoinvent v3.9.1 datasets.
Installation	No energy consumption occur during the installation stage. The reference year for the treatment rates used for packaging disposal is 2020.
Use	Electricity, low voltage {Various regionalities according to product distribution data}
End of life	The energy-related processes used for the inputs of the end-of-life stage are those included in the ecoinvent datasets selected for the analysis.

Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
GWP-total	kg CO_2 eq.	3.33E+01	8.31E+00	2.72E-01	3.64E-02	2.43E+01	3.22E-01	-8.50E-01
GWP-fossil	kg CO_2 eq.	3.30E+01	8.20E+00	2.72E-01	3.10E-03	2.42E+01	3.02E-01	-8.55E-01
GWP-biogenic	kg CO_2 eq.	1.92E-01	9.62E-02	1.34E-04	3.32E-02	4.32E-02	1.97E-02	6.24E-03
GWP-luluc	kg CO_2 eq.	7.10E-02	1.63E-02	7.87E-05	1.30E-06	5.42E-02	3.44E-04	-1.46E-03
GWP-fossil = Global Warming Potential fossil fuels GWP-biogenic = Global Warming Potential biogenic GWP-luluc = Global Warming Potential land use and land use change								
ODP	kg CFC-11 eq.	9.49E-07	4.86E-07	5.18E-09	6.53E-11	4.53E-07	5.17E-09	-4.90E-08
ODP = Depletion potential of the stratospheric ozone layer								
AP	H+ eq.	2.18E-01	1.15E-01	1.16E-03	1.45E-05	9.37E-02	7.81E-03	-1.77E-02
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	kg P eq.	3.49E-02	1.26E-02	1.20E-05	3.77E-07	2.19E-02	3.98E-04	-1.91E-03
EP-marine	kg N eq.	3.42E-02	1.33E-02	4.53E-04	1.32E-05	1.98E-02	5.62E-04	-1.54E-03
EP-terrestrial	mol N eq.	3.43E-01	1.50E-01	4.84E-03	5.80E-05	1.82E-01	5.93E-03	-1.87E-02
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment EP-terrestrial = Eutrophication potential, Accumulated Exceedance								
POCP	kg NMVOC eq.	1.05E-01	4.71E-02	1.67E-03	2.22E-05	5.44E-02	1.93E-03	-5.77E-03
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	kg Sb eq.	3.52E-03	3.15E-03	4.18E-07	1.10E-08	2.82E-04	9.23E-05	-3.50E-04
ADP-fossil	MJ	5.52E+02	1.08E+02	3.82E+00	3.42E-02	4.37E+02	3.78E+00	-1.10E+01
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	m^3 eq. depr.	6.49E+00	2.18E+00	1.30E-02	2.86E-04	4.17E+00	1.31E-01	-2.74E-01
WDP = Water Deprivation potential								

Common base of mandatory indicators

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
PERE	MJ	1.36E+02	1.53E+01	3.62E-02	1.41E-03	1.20E+02	5.71E-01	-1.63E+00
PERM	MJ	7.80E-01	7.80E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.36E+02	1.61E+01	3.62E-02	1.41E-03	1.20E+02	5.71E-01	-1.63E+00
PENRE	MJ	5.50E+02	1.05E+02	3.82E+00	3.42E-02	4.37E+02	3.78E+00	-1.10E+01
PENRM	MJ	2.55E+00	2.55E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.52E+02	1.08E+02	3.82E+00	3.42E-02	4.37E+02	3.78E+00	-1.10E+01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM = Use of renewable primary energy resources used as raw materials
PERT = Total Use of renewable primary energy resources
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
PENRM = Use of non-renewable primary energy resources used as raw materials
PENRT = Total Use of non-renewable primary energy resources

Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy resources

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
SM	kg	7.36E-02	7.36E-02	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	3.72E-01	8.30E-02	4.36E-04	1.47E-05	2.84E-01	3.96E-03	-9.18E-03

SM = Use of secondary material
RSF = Use of renewable secondary fuels
NRSF = Use of non-renewable secondary fuels
FW = Use of net fresh water

Inventory flows indicator – Waste category indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Hazardous waste disposed	kg	2.32E-03	1.32E-03	2.47E-05	2.02E-07	9.55E-04	1.21E-05	-5.30E-05
Non- hazardous waste disposed	kg	3.52E+00	1.06E+00	1.89E-01	2.81E-02	2.08E+00	1.54E-01	-1.57E-01
Radioactive waste disposed	kg	2.72E-03	2.45E-04	7.56E-07	3.50E-08	2.46E-03	1.15E-05	-2.45E-05

Common base of mandatory indicators

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	3.28E-01	1.39E-01	0.00E+00	4.79E-03	0.00E+00	1.84E-01	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	1.72E-01	0.00E+00	0.00E+00	3.00E-02	0.00E+00	1.42E-01	0.00E+00

Inventory flow indicator – other indicators

Indicator	**Unit**	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Biogenic carbon content of the product	kg of C	4.67E-05	4.67E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	kg of C	2.36E-02	2.36E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Optional indicators

Environmental indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Total use of primary energy during the life cycle	MJ	6.89E+02	1.24E+02	3.85E+00	3.56E-02	5.57E+02	4.35E+00	-1.26E+01
Emissions of fine particles	incidence of diseases	1.16E-06	5.50E-07	1.62E-08	2.62E-10	5.66E-07	2.66E-08	-7.02E-08
Ionizing radiation, human health	kBq U235 eq.	1.08E+01	9.89E-01	3.18E-03	1.40E-04	9.72E+00	4.46E-02	-9.79E-02
Ecotoxicity (fresh water)	CTUe	3.48E+02	2.51E+02	1.85E+00	4.16E-02	8.78E+01	6.82E+00	-3.12E+01
Human toxicity, car-cinogenic effects	CTUh	2.85E-08	1.49E-08	7.68E-11	3.29E-12	1.05E-08	3.07E-09	-1.63E-09
Human toxicity, non-carcinogenic effects	incidence of diseases	1.34E-06	7.75E-07	2.88E-09	4.49E-11	4.09E-07	1.55E-07	-1.91E-07
Impact related to land use/soil quality		1.70E+02	6.04E+01	2.28E+00	1.70E-02	1.04E+02	3.53E+00	-7.46E+00

Other indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
No Other indicators used								

Environmental Impact Indicator Glossary

Impact indicators

Indicator	Description	Distri-bution
Global warming potential (GWP) - total	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. The total global warming potential (GWP-total) is the sum of three sub-categories of climate change. GWP-total = GWP-fossil + GWP-biogenic + GWP- land use and land use change	kg CO_2 eq.
Ozone depletion (ODP)	Emissions to air that contribute to the destruction of the stratospheric ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Acidification of soils and water caused by the release of certain gases to the atmosphere, such as nitrogen oxides and sulphur oxides	H+ eq.
Eutrophication (E)	Indicator of the contribution to eutrophication of water by the enrichment of the aquatic ecosystem with nutritional elements, e.g. industrial or domestic effluents, agriculture, etc. This indicator is divided to three: freshwater, marine and terrestrial.	kg P eq., kg N eq., mole N eq.
Photochemical ozone creation (POCP)	Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmosphere (smog) because of the rays of the sun.	kg NMVOC eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.
Depletion of abiotic resources – fossil fuels (ADPf)	The use of non-renewable fossil resources in an unsustainable way (e.g. from material to waste)	MJ (lower heating value)
Water Deprivation potential (WDP)	Deprivation-weighted water consumption. Assesses the potential of water deprivation, to either humans or ecosystems, building on the assumption that the less water remaining available per area, the more likely another user will be deprived.	m^3 eq. depr.

Resource use indicators

Indicator	Description	Distri-bution
Total use of primary energy	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy re-sources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

Extrapolation rules

The PEP can cover products different from the reference product if they belong to a homogeneous environmental family. This means that 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 D13 15 & D11 15 EQ meters family satisfy these conditions, so extrapolation rules were applied to assess the environmental impact of the products belonging to the family, following the PCR indication. No extrapolation rules are set in the PSR; thus, the next steps have been followed to define the extrapolation rule:

- 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 and differ between the different stages of the life cycle:

- For the manufacturing. Distribution. Installation and end-of-life stages:
  - Weight of the product;
  - Weight of the packaging.
- For manufacturing only:
  - Assembly energy consumption;
  - Product material composition.
- For the use stage:
  - Energy consumption.

The representative products considered for the calculation of the extrapolation rules are D13 15-M 65 Modbus (2CMA241765R1000) for D13 15 EQ meters variants and D11 15-M 40 (2CMA241645R1000) for D11 15 EQ meters variants.

The results of the sensitive analysis show that the sensitive parameters are the weight of the product, the use stage consumption, and the product material composition.

The products included in the D13 15 & D11 15 EQ meters family and considered for the application of the extrapolation rules are resented in the table below.

SKU	Model	Product type	Nominal voltage [V]	Maximum current [A]	Communication protocols [P]	Number of phase	Number of modules	Current type (AC/DC)	Weight (g)	Energy consumption (kWh)
2CMA241695R1000	D13 15-M 65	3PH+N	220/380 Vac 240/415 Vac	0,25-5(65) A	no	3+N	3	AC	250	37.4
2CMA241725R1000	D13 15 65	3PH+N	220/380 Vac 240/415 Vac	0,25-5(65) A	no	3+N	3	AC	250	37.4
2CMA241765R1000	D13 15-M 65 Modbus	3PH+N	220/380 Vac 240/415 Vac	0,25-5(65) A	ModBus RTU	3+N	3	AC	250	62.6
2CMA241765R1001	D13 15-M 65 Modbus B	3PH+N	220/380 Vac 240/415 Vac	0,25-5(65) A	ModBus RTU	3+N	3	AC	250	62.6
2CMA241845R1000	D13 15-M 65 Mbus	3PH+N	220/380 Vac 240/415 Vac	0,25-5(65) A	Mbus	3+N	3	AC	250	37.4
2CMA263275R1000	D13 P 15-M 65 Modbus	3PH+N	220/380 Vac 240/415 Vac	0,25-5(65) A	ModBus RTU	3+N	3	AC	250	62.6
2CMA241645R1000	D11 15-M 40	1PH	220/240 Vac	0,25-5(40) A	no	1	1	AC	70	34.1
2CMA241645R1001	D11 15-M 40 B	1PH	220/240 Vac	0,25-5(40) A	no	1	1	AC	70	34.1
2CMA241655R1000	D11 15 40	1PH	220/240 Vac	0,25-5(40) A	no	1	1	AC	70	34.1
2CMA241665R1000	D11 15-M 40 Modbus	1PH	220/240 Vac	0,25-5(40) A	ModBus RTU	1	1	AC	70	52.3
2CMA241665R1001	D11 15-M 40 Modbus B	1PH	220/240 Vac	0,25-5(40) A	ModBus RTU	1	1	AC	70	52.3
2CMA241675R1000	D11 15 40 Modbus	1PH	220/240 Vac	0,25-5(40) A	ModBus RTU	1	1	AC	70	52.3
2CMA241685R1000	D11 15-M 40 Mbus	1PH	220/240 Vac	0,25-5(40) A	Mbus	1	1	AC	70	35.8

The extrapolation rules have been calculated based on the environmental impact assessment results of the reference products D13 15-M 65 Modbus (2CMA241765R1000) for D13 15 EQ meters variants and D11 15-M 40 (2CMA241645R1000) for D11 15 EQ meters variants, and the sensitivity analysis carried out.

For the manufacturing stage, distribution stage and end-of-life stage, the parameter considered for the calculation of the Life Cycle Impact Assessment (LCIA) results of the variants is the weight of the product. For the use stage, the parameter considered for the calculation of the LCIA impacts of the variants is the average power loss during this stage. For the manufacturing stage only, the parameter considered for the calculation of the LCIA impacts of the variants is the product material composition.

The calculation of the LCIA impacts of the variants through these parameters indicated that the correlation between the impacts of the representative product and the variants is linear. For the creation of the extrapolation rules, the extrapolation principle applied is a linear correlation concerning weight for the production, distribution and end-of-life phase, concerning material composition for the production, and energy consumption for the use phase. Each environmental indicator value shall be calculated using the following formulas:

- For the manufacturing stage, distribution stage and end-of-life stage:

$$y = a_n x_1 + b_n$$

Where x_1 is the *weight of the product*.

- For use stage:

$$y = a_n x_2 + b_n$$

Where x_2 is the *energy consumption* of the product.

For the weight and energy consumption data of the variants, please refer to the table above.

The table below reports the linear coefficients a_n & b_n for each life cycle stage. For Manufacturing stage only, $a_{1\ (D13\ 15\ EQm)}$, $b_{1\ (D13\ 15\ EQm)}$, $a_{5\ (D13\ 15\ EQm)}$, and $b_{5\ (D13\ 15\ EQm)}$ coefficients shall be used only for the environmental impact calculation of D13 15 EQm variants; $a_{1\ (D11\ 15\ EQm)}$, $b_{1\ (D11\ 15\ EQm)}$, $a_{5\ (D11\ 15\ EQm)}$, and $b_{5\ (D11\ 15\ EQm)}$ coefficients shall be used only for the environmental impact calculation of D11 15 EQm variants.

IMPACT CATEGORY	MANUFACTURING				DISTRIBUTION		INSTALLATION		USE		END OF LIFE			
	$a_{1\ (D13\ 15\ EQm)}$	$b_{1\ (D13\ 15\ EQm)}$	$a_{1\ (D11\ 15\ EQm)}$	$b_{1\ (D11\ 15\ EQm)}$	a_2	b_2	a_3	b_3	a_4	b_4	$a_{5\ (D13\ 15\ EQm)}$	$b_{5\ (D13\ 15\ EQm)}$	$a_{5\ (D11\ 15\ EQm)}$	$b_{5\ (D11\ 15\ EQm)}$
GWP-total	0.00E+00	8.31E+00	0.00E+00	5.27E+00	8.88E-04	5.01E-02	1.67E-05	3.22E-02	3.86E-01	-5.33E-02	0.00E+00	3.22E-01	0.00E+00	7.55E-02
GWP-fossil	0.00E+00	8.20E+00	0.00E+00	5.25E+00	8.87E-04	5.01E-02	1.64E-06	2.69E-03	3.84E-01	-8.53E-14	0.00E+00	3.02E-01	0.00E+00	6.77E-02
GWP-biogenic	0.00E+00	9.62E-02	0.00E+00	1.19E-02	4.36E-07	2.46E-05	1.51E-05	2.95E-02	1.58E-03	-5.33E-02	0.00E+00	1.97E-02	0.00E+00	7.78E-03
GWP-luluc	0.00E+00	1.63E-02	0.00E+00	1.05E-02	2.57E-07	1.45E-05	6.78E-10	1.13E-06	8.58E-04	3.47E-17	0.00E+00	3.44E-04	0.00E+00	4.87E-05
ODP	0.00E+00	4.86E-07	0.00E+00	2.57E-07	1.69E-11	9.54E-10	3.75E-14	5.60E-11	7.17E-09	-7.41E-22	0.00E+00	5.17E-09	0.00E+00	1.33E-09
AP	0.00E+00	1.15E-01	0.00E+00	5.81E-02	3.79E-06	2.14E-04	8.42E-09	1.24E-05	1.48E-03	-2.78E-17	0.00E+00	7.81E-03	0.00E+00	1.92E-04
EP-freshwater	0.00E+00	1.26E-02	0.00E+00	7.29E-03	3.93E-08	2.22E-06	1.85E-10	3.30E-07	3.46E-04	1.21E-17	0.00E+00	3.98E-04	0.00E+00	1.57E-05
EP-marine	0.00E+00	1.33E-02	0.00E+00	8.00E-03	1.48E-06	8.35E-05	7.60E-09	1.13E-05	3.14E-04	1.56E-17	0.00E+00	5.62E-04	0.00E+00	9.45E-05
EP-terrestrial	0.00E+00	1.50E-01	0.00E+00	8.80E-02	1.58E-05	8.93E-04	3.40E-08	4.95E-05	2.88E-03	0.00E+00	0.00E+00	5.93E-03	0.00E+00	5.50E-04
POCP	0.00E+00	4.71E-02	0.00E+00	2.76E-02	5.44E-06	3.07E-04	1.32E-08	1.89E-05	8.60E-04	-4.86E-17	0.00E+00	1.93E-03	0.00E+00	1.95E-04
ADPE	0.00E+00	3.15E-03	0.00E+00	2.05E-03	1.37E-09	7.71E-08	6.29E-12	9.45E-09	4.46E-06	-2.71E-20	0.00E+00	9.23E-05	0.00E+00	2.44E-07
ADPF	0.00E+00	1.08E+02	0.00E+00	6.87E+01	1.25E-02	7.03E-01	1.94E-05	2.94E-02	6.91E+00	0.00E+00	0.00E+00	3.78E+00	0.00E+00	6.90E-01
WDP	0.00E+00	2.18E+00	0.00E+00	1.10E+00	4.24E-05	2.40E-03	1.55E-07	2.48E-04	6.59E-02	-8.88E-15	0.00E+00	1.31E-01	0.00E+00	7.78E-03
PE	0.00E+00	1.24E+02	0.00E+00	7.67E+01	1.26E-02	7.10E-01	2.01E-05	3.06E-02	8.81E+00	7.96E-13	0.00E+00	4.35E+00	0.00E+00	7.55E-01
PERE	0.00E+00	1.53E+01	0.00E+00	7.61E+00	1.18E-04	6.67E-03	6.70E-07	1.24E-03	1.90E+00	-5.40E-13	0.00E+00	5.71E-01	0.00E+00	6.50E-02
PERM	0.00E+00	7.80E-01	0.00E+00	4.43E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	0.00E+00	1.61E+01	0.00E+00	8.05E+00	1.18E-04	6.67E-03	6.70E-07	1.24E-03	1.90E+00	-5.40E-13	0.00E+00	5.71E-01	0.00E+00	6.50E-02
PENRE	0.00E+00	1.05E+02	0.00E+00	6.76E+01	1.25E-02	7.03E-01	1.94E-05	2.94E-02	6.91E+00	-6.25E-13	0.00E+00	3.78E+00	0.00E+00	6.90E-01
PENRM	0.00E+00	2.55E+00	0.00E+00	1.03E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	0.00E+00	1.08E+02	0.00E+00	6.87E+01	1.25E-02	7.03E-01	1.94E-05	2.94E-02	6.91E+00	-6.25E-13	0.00E+00	3.78E+00	0.00E+00	6.90E-01
SM	0.00E+00	7.36E-02	0.00E+00	4.08E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	0.00E+00	8.30E-02	0.00E+00	4.47E-02	1.42E-06	8.04E-05	6.98E-09	1.30E-05	4.49E-03	2.78E-17	0.00E+00	3.96E-03	0.00E+00	3.40E-04
HWD	0.00E+00	1.32E-03	0.00E+00	3.39E-04	8.04E-08	4.54E-06	1.19E-10	1.73E-07	1.51E-05	-2.17E-19	0.00E+00	1.21E-05	0.00E+00	2.62E-06
NHWD	0.00E+00	1.06E+00	0.00E+00	4.99E-01	6.17E-04	3.48E-02	1.92E-05	2.33E-02	3.29E-02	-5.11E-15	0.00E+00	1.54E-01	0.00E+00	3.97E-02
RWD	0.00E+00	2.45E-04	0.00E+00	1.56E-04	2.47E-09	1.39E-07	1.55E-11	3.12E-08	3.89E-05	-2.17E-18	0.00E+00	1.15E-05	0.00E+00	1.92E-06
CRU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	0.00E+00	1.39E-01	0.00E+00	1.68E-02	0.00E+00	0.00E+00	0.00E+00	4.79E-03	0.00E+00	0.00E+00	0.00E+00	1.84E-01	0.00E+00	4.09E-02
MER	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	1.36E-05	2.66E-02	0.00E+00	0.00E+00	0.00E+00	1.42E-01	0.00E+00	8.39E-02
PM	0.00E+00	5.50E-07	0.00E+00	3.18E-07	5.29E-11	2.99E-09	1.57E-13	2.23E-10	8.95E-09	5.29E-23	0.00E+00	2.66E-08	0.00E+00	3.17E-09
IRP	0.00E+00	9.89E-01	0.00E+00	6.35E-01	1.04E-05	5.86E-04	6.23E-08	1.24E-04	1.54E-01	-8.88E-15	0.00E+00	4.46E-02	0.00E+00	7.50E-03
ETP-fw	0.00E+00	2.51E+02	0.00E+00	1.56E+02	6.03E-03	3.41E-01	2.55E-05	3.52E-02	1.39E+00	-2.84E-14	0.00E+00	6.82E+00	0.00E+00	5.21E-01
HTP-c	0.00E+00	1.49E-08	0.00E+00	4.69E-09	2.51E-13	1.41E-11	1.76E-15	2.85E-12	1.66E-10	2.48E-23	0.00E+00	3.07E-09	0.00E+00	4.82E-10
HTP-nc	0.00E+00	7.75E-07	0.00E+00	2.16E-07	9.41E-12	5.31E-10	2.60E-14	3.84E-11	6.47E-09	4.24E-22	0.00E+00	1.55E-07	0.00E+00	1.21E-08
SQP	0.00E+00	6.04E+01	0.00E+00	2.80E+01	7.44E-03	4.20E-01	9.36E-06	1.47E-02	1.64E+00	5.68E-14	0.00E+00	3.53E+00	0.00E+00	3.18E-01
Biogenic C product	0.00E+00	4.67E-05	0.00E+00	4.67E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic C packaging	0.00E+00	2.36E-02	0.00E+00	1.35E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GWP-total: Global warming potential - total; **GWP-fossil**: Global warming potential - fossil fuels; **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, accumulated exceedance; **EP-freshwater**: Eutrophication potential - freshwater; **EP-marine**: Eutrophication potential - marine; **EP-terrestrial**: Eutrophication potential - terrestrial; **POCP**: Photochemical ozone creation potential; **ADPE**: Abiotic depletion potential - non-fossil resources; **ADPF**: Abiotic depletion potential - fossil resources; **WDP**: Water deprivation potential; **PE**: Total use of primary energy during the life cycle; **PERE**: Use of renewable primary energy as energy carrier; **PERM**: Use of renewable primary energy resources used as raw materials; **PERT**: Total use of renewable primary energy; **PENRE**: Use of non-renewable primary energy as energy carrier; **PENRM**: Use of non-renewable primary energy resources used as raw materials; **PENRT**: Total use of non-renewable primary energy resource; **SM**: Use of secondary material; **RSF**: Use of renewable secondary fuels; **NRSF**: Use of non-renewable secondary fuels; **FW**: Net use of fresh water; **HWD**: Hazardous waste disposed; **NHWD**: Non-hazardous waste disposed; **RWD**: Radioactive waste disposed; **CRU**: Components for re-use; **MFR**: Materials for recycling; **MER**: Materials for energy recovery; **EE**: Exported energy – total; **PM**: Particulate matter emissions; **IRP**: Ionizing radiation, human health; **ETP-fw**: Eco-toxicity – freshwater; **HTP-c**: Human toxicity, cancer effect; **HTP-nc**: Human toxicity, non-cancer effects; **SQP**: Land use related impacts/Soil quality.

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Date of issue: ***04-2024***	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 are compliant with XP C08-100-1 :2016 or 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"