

Product Environmental Profile

**MiNi SMMSe
VRF Outdoor unit**

**Toshiba
Carrier Corporation**



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1 – GENERAL INFORMATIONS

1.1 Commercial reference for the reference product

Reference product	MiNi SMMSe - MCY-MHP0604HS8-E
Product family	VRF (Variable Refrigerant Flow)
Product sub-category	MiNi SMMSe VRF 2-pipe Outdoor unit
Function	Heating and Cooling
Application	Commercial
Technology	Twin rotary inverter-controlled compressor
Operational Efficiency	SEER/SCOP: 9.74/4.38
Type	Air/Air – Reversible
Refrigerant	R410a
References covered	MCY-MHP0404HS8-E, MCY-MHP0504HS8-E, MCY-MHP0604HS8-E , MCY-MHP0806HS8-E, MCY-MHP1006HS8-E, MCY-MHP1206HS8-E, MCY-MHP0404HS-E, MCY-MHP0504HS-E, MCY-MHP0604HS-E, MCY-MHP0406HT-E, MCY-MHP0506HT-E1.
Homogeneous environmental family	The reference device is part of a range comprising several sizes with identical functions, meeting the same standards, identical technology, and manufacturing processes, and operating in a similar way.

1.2 Functional Unit

"To produce 1 kW of heating or cooling under typical usage conditions over the 22-year reference lifetime of the product, based on seasonal performance metrics in accordance with EN 14825 or equivalent international standards."

Total energy output calculation for functional unit
$$Prev = (theating * Ph + tcooling * Pc) / (theating + tcooling) = 17.25kW$$

1.3 Declared Unit

"To produce cooling of 15.5 kW or heating of 18 kW thanks to VRF outdoor unit according to the appropriate usage scenario and during the 22-year reference lifetime of the product."

1.4 Additional environmental information

The environmental impacts are assessed for the product, conducted in accordance with ISO standards 14040 and 14044 using One Click LCA V0.44.6. This analysis encompasses all stages of the product's lifecycle, including manufacturing, distribution, installation (including packaging end of life), maintenance, disposal and benefits and loads beyond the system boundary.

1.5 Manufacturing

- Production



The Life Cycle Analysis on which this Product Environmental Profile (PEP) is based was conducted with respect to the criteria set by PCR-ed4-EN-2021-09-06 and PSR-0013-ed3.1-EN-2025-06-17 for the PEP ecopassport® Programme. The product's life cycle begins with the extraction and refining of raw materials, including metals, non-metals, plastics, electronics and packaging. These materials are processed into components through impact extrusion, punching, pipe cutting and assembled into the final product. Packaging materials are used for protection during transportation. The raw materials for the product were majorly obtained from suppliers in China and Thailand. The materials are delivered to the manufacturing facility via road and sea transport. Primary data were provided by the manufacturer and represent all information for calendar year 2024. This stage is modelled based on the material weight and the distances from the supplier location to the manufacturing site, using the supplier data. Regional relevant datasets specific to the manufacturing site in China were applied, ensuring that the environmental impacts are accurately accounted for based on the local energy mix, including natural gas and solar energy. Energy consumption data from the China manufacturing facility is accounted for components and assemblies produced in-house for the unit. During the manufacturing stage at the China facility, waste is primarily generated from assembling product components and is considered as per Toshiba plant level data. The transport distance of 100 kilometers to the waste processing facility is considered, as recommended in PCR-ed4-EN-2021-09-06.

- Energy model

Market for electricity, medium voltage, China; ecoinvent v3.11

Electricity production, natural gas, combined cycle power plant, China; ecoinvent v3.11

Electricity production, photovoltaic, 570kWp open ground installation, multi-Si, China; ecoinvent v3.11

1.6 Distribution



In this stage, units are shipped from the manufacturing site China to installation sites in France via road and sea. Transportation impacts occurred from final product delivery to installation site (A4) cover fuel direct exhaust emissions and environmental impacts of fuel production. Transportation distances are considered as per PSR-0013-ed3.1-EN-2025-06-17 guidelines.

1 – GENERAL INFORMATIONS

1.7 Installation



The installation of the product does not require any specialized procedures and is performed primarily through manual labor. In accordance with PSR-0013 (Section 3.2.3), the energy consumption of portable hand tools has been excluded from the assessment. However, a conservative assumption has been applied for loading and unloading activities: the use of a diesel-powered forklift consuming approximately 3 liters of diesel per hour has been included, based on Hyster XT forklift estimated diesel fuel consumption. Apart from this lifting-machine usage, no additional installation energy is required. The disposal of the packaging materials is accounted for during the installation phase including transport of 100 km to waste processing and disposal. All packaging components are recycled, landfilled and incinerated as per recycling rates mentioned in the PSR-0013-ed3.1-EN-2025-06-17 and reference section.

1.8 Use



This stage encompasses all energy and materials related to product usage, maintenance, and the impact of operational energy use over the reference service life of 22 years. The use phase of the VRF includes refrigerant leakage emissions (B1), refrigerant maintenance (B2), operational energy use (B6), and operational water use (B7). The stages of repair (B3), replacement (B4), and rehabilitation (B5) are not applicable for this assessment as per PSR-0013-ed3.1-EN-2025-06-17 guidelines.

Refrigerant emission during the use phase (B1) of the equipment is calculated in accordance with the guidelines outlined in the PSR. The formula from PSR-0013-ed3.1-EN-2025-06-17 is as below

$$E_{fu} = Q_{fu} * DVR$$

E_{fu} = Momentary leakage = 1.10 kg

Q_{fu} = Amount of fugitive emissions = 0.050 kg

DVR = Reference service lifetime = 22 years

Q_{fu} : The amount of annual fugitive emissions is estimated as below,

For a non-hermetically sealed VRF system with 1 outdoor unit and 4 indoor units,

Case of non-removable not linked with brazed units or permanent fittings:

- Total number of removable fittings linked to the units: 10
- $Q_{fu} = 5 \times 10 = 50\text{g/year}$

The maintenance for the MiNi SMMSe MCY-MHP0604HS8-E VRF unit, as estimated according to the guidelines outlined in PSR-0013-ed3.1-EN-2025-06-17 primarily involves refrigerant refilling. The transportation of the refrigerant to the installation site is also accounted in this stage. By default, the refill threshold to be considered is 90% of the total load. The number of refills, N, is calculated as follows:

$$n = 1 + \frac{1-S_r}{T_{fu}}$$

$$N = ENT SUP[RLT/n]$$

Where:

n = Refill interval

N = Total number of refills over the equipment's lifetime

According to the number of refills, the production of new refrigerant to be partial refill.

$$N * (1 - S_r) * C_t$$

S_r = Refill threshold = 0.90

C_t = Refrigerant charge = 6.40 kg

T_{fu} = Leakage rate = $Q_{fu} / C_t = 0.0078125$

N = 1.59 ~ 2 (rounded off to the next whole number)

Refrigerant refill = 1.28 kg

The product's operational energy use and environmental impact have been assessed over its reference service life of 22 years, with distribution to installation sites across France. Energy consumption during the operational phase is calculated as specified in PSR-0013-ed3.1-EN-2025-06-17. The typical scenario for calculating environmental impacts related to this energy consumption is defined as below.

$$C_{tot}(in kWh) = \left(\frac{P_h}{SCOP * \left(1 + \frac{Fregul}{100}\right)} * t_{heating} + \frac{P_c}{SEER} * t_{cooling} \right) * RLT$$

Where:

C_{tot} = Total energy consumption = 148001 kWh

P_h = Capacity of the equipment = 18.00 kW

P_c = Capacity of the equipment = 15.50 kW

SCOP = Seasonal coefficient of performance for heating = 4.38

SEER = Seasonal energy efficiency ratio for cooling = 9.74

Type of Generator-air/air P>12kW

$t_{heating}$ = Number of equivalent active mode hours of the device on active heating mode = 1400 hrs

$t_{cooling}$ = Number of equivalent active mode hours of the device on active cooling mode = 600 hrs

1 – GENERAL INFORMATIONS

RLT = Reference Lifetime = 22 years

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- Energy model

Market for electricity, low voltage, France; ecoinvent v3.11

In accordance with the breakdown of Module B specified in the Product Specific Rules (PSR-0013-ed3.1-EN-2025-06-17), stages B3 (repair), B4 (replacement), and B5 (refurbishment) are not applicable to this assessment. Additionally, as the unit's water consumption during the operational phase is considered negligible, emissions associated with stage B7 are reported as zero.

1.9 End of life

The deconstruction phase mainly involves manual labor, which has minimal environmental impact as per EN 15804:2012+A2:2019. The MiNi SMMSe is assumed to be transported by truck to a waste facility 100 km away for dismantling. At the end of a product's life, materials are disposed of through recycling, landfill, or incineration, with rates sourced from PCR-ed4-EN-2021-09-06 and other credible references. Steel is efficiently managed, with 80% recycled and 20% landfilled. Aluminum follows with 70% recycling and 30% landfill, while copper is recycled at 60%, with the remaining 40% going to landfill. Other ferrous metals like cast iron also show strong recycling performance at 80%, with 20% landfilled. In contrast, polypropylene (PP), a commonly used plastic, has a lower recycling rate of 20%, with 40% landfilled and 40% incinerated without energy recovery. Rubber is not recycled and is split evenly between landfill and incineration (50% each). Printed Circuit Boards (PCBs), based on the PCB E-Scrap Market report, have a low recycling rate of 12.5%, with 87.5% ending up in landfill. Lastly, cardboard is highly sustainable with 91% recycled and 5% incinerated, with 4% landfill disposal. This data underscores the need for improved recycling systems, especially for plastics and electronics, while highlighting the success of metal and packaging material recovery.

1.10 Benefits and loads beyond the system boundary D

Module D accounts for potential benefits beyond the system boundary in accordance with EN 15804+A2, PEP-PCR ed4 and PSR 0013-ed3.1. It includes substitution benefits from recycled outputs in A5 and C3, where recovered metals, plastics, PCBs and cardboard are assumed to replace equivalent virgin materials. Only recycling and energy-recovery routes generate credits; landfill, non-energy incineration and refrigerant destruction do not. Burdens from collection, transport and sorting are already included in C1–C4, so Module D reports only the net avoided impacts and does not influence the primary life-cycle results.

1.11 Technical description of the product

The MiNi SMMSe series, including the MCY-MHP0604HS8-E model, represents a high-performance range of modular VRF systems engineered for energy-efficient climate control in diverse building environments. These units feature twin rotary inverter-controlled compressors and utilize R410A refrigerant, delivering superior seasonal efficiency (SEER up to 9.74, SCOP up to 4.57) across cooling and heating modes. Intelligent refrigerant distribution and vector-controlled operation ensure consistent performance across multiple indoor units—up to 12 per system. With extended piping lengths (up to 180 meters), slim dimensions, and optional PMV kits for enhanced acoustic comfort, the series offers flexible installation and quiet operation. The product family spans capacities from 4 HP to 12 HP, supporting a wide range of applications while maintaining compliance with modern energy and environmental standards.

The technical details and standards of MiNi SMMSe MCY-MHP0604HS8-E included in the assessment are as follows:

- Compressor Type: Twin rotary inverter-controlled
- Refrigerant: R410A
- Energy Efficiency: Achieved through vector-controlled inverter and advanced heat exchange technology
- Indoor Unit Connectivity: Supports up to 12 independently controlled indoor units
- Installation Flexibility: Maximum piping length of up to 180 meters
- Noise Management: Night operation mode for reduced sound levels
- Refrigerant Optimization: Intelligent refrigerant control eliminates supply variation across indoor units
- Optional Features: PMV kit available for quieter operation

The Table below shows the technical specifications of the product family.

Parameter	MCY-MHP0404HS-E	MCY-MHP0504HS-E	MCY-MHP0604HS-E	MCY-MHP0404HS8-E	MCY-MHP0504HS8-E	MCY-MHP0604HS8-E	MCY-MHP0806HS8-E	MCY-MHP1006HS8-E	MCY-MHP1206HS8-E	MCY-MHP0406HT-E	MCY-MHP0506HT-E1
HP	4	5	6	4	5	6	8	10	12	4	5
Cooling (kW)	12.10	14.00	15.50	12.10	14.00	15.50	22.40	28.00	33.5	12.10	14.00
Heating (kW)	12.50	16.00	18.00	12.50	16.00	18.00	22.40	28.00	33.5	12.50	16.00
Power Input C (kW)	2.83	3.50	4.29	2.82	3.47	4.25	6.67	9.34	12.18	3.73	4.33
Power Input H (kW)	2.59	3.75	4.31	2.57	3.72	4.27	5.20	7.00	7.94	2.83	4.00
EER	4.28	4.00	3.61	4.29	4.03	3.65	3.36	3.00	2.75	3.24	3.23
COP	4.83	4.27	4.18	4.86	4.30	4.22	4.31	4.00	4.22	4.42	4.00

1 – GENERAL INFORMATIONS

SEER	9.42	9.23	9.68	9.47	9.29	9.74	8.09	7.40	6.70	8.08	7.77
SCOP	4.17	4.23	4.36	4.19	4.25	4.38	4.50	4.42	4.30	3.83	3.88
Length (mm)	390	390	390	390	390	390	390	390	390	390	390
Width (mm)	990	990	990	990	990	990	990	990	990	990	990
Height (mm)	1235	1235	1235	1235	1235	1235	1740	1740	1740	910	910
Weight (kg)	127	127	127	125	125	125	147	147	156	100	100

1.12 Sales scenarios

Sales of the device are distributed as follows:

Region	Shares in Sales (%)
France	100

This distribution affects the distance travelled during the phase and the electric mix used during the usage phase.

2 – CONSTITUENT MATERIALS

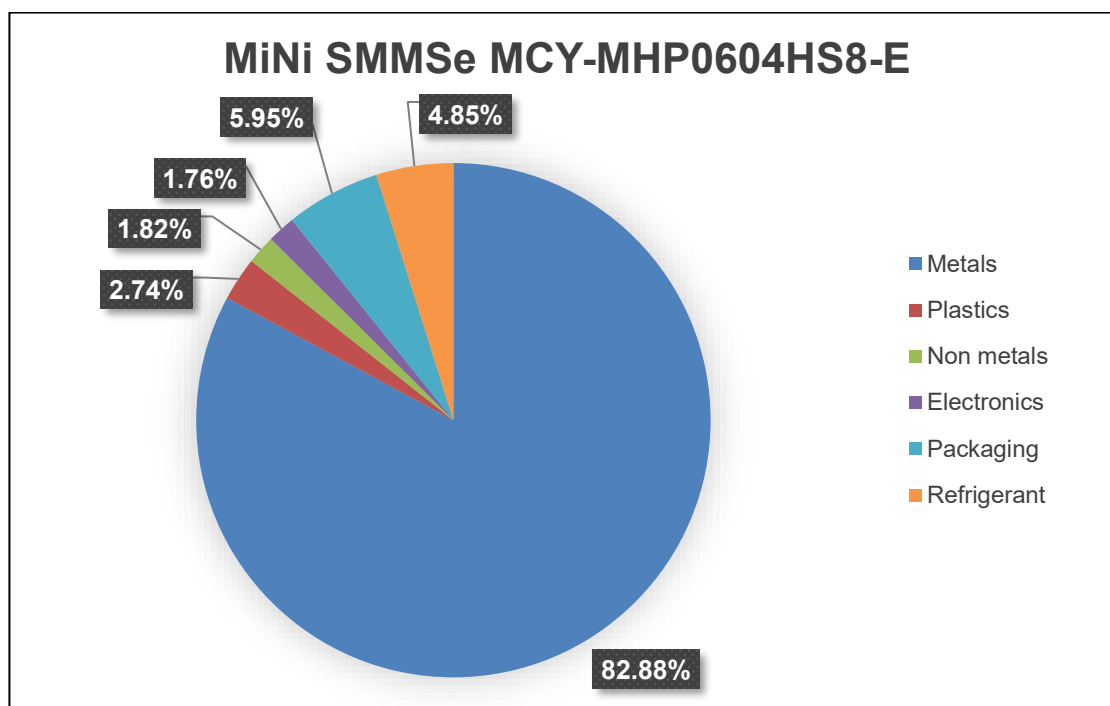
2.1 Reference product

Modelled total weight with other necessary details:

PEP Material Category		Material	Weight [kg]	Weight [%]	Overall Percentage [%]	Post-consumer material weight [%]	Biogenic material [kg C] / declared unit	Biogenic material [kg C] / functional unit
Metals		Steel	76.12	57.68	82.88	0.00	0.00	0.00
		Copper	18.68	14.15		0.00	0.00	0.00
		Aluminium	14.59	11.05		0.00	0.00	0.00
Plastics		Plastics	3.62	2.74	2.74	0.00	0.00	0.00
Others	Non-Metals	Sound insulation cotton	2.40	1.82	14.38	0.00	0.00	0.00
	Electronics	PCB, Thermistor	2.32	1.76		0.00	0.00	0.00
	Packaging	Cardboard	7.85	5.95		0.00	3.93	0.23
	Miscellaneous	Refrigerant	6.40	4.85		0.00	0.00	0.00
Total			131.98	100.00	100.00	0.00	3.93	0.23

**1 kg biogenic carbon is equivalent to 44/12 kg of CO₂ (EN 16449:2014).

2.2 Constituent materials



3 – ENVIRONMENTAL IMPACTS

3.1 LCA impacts per Functional Unit

The impact results presented below were obtained using the methods defined in PCR-ed4-EN-2021-09-06 and PSR-0013-ed3.1-EN-2025-06-17. The results have been developed considering the supply of 1 kW of heating or cooling. The real impact of the life cycle stages of the installed product in a real situation is to be calculated by the user of the result by multiplying the impact considered by the total cooling capacity in kW.

CORE ENVIRONMENTAL IMPACT INDICATORS – EF 3.1

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	D
GWP – total ¹	kg CO ₂ eq./FU	1.07E+03	7.83E+01	2.95E+00	1.03E+00	8.99E+02	1.44E+02	1.12E+00	MND	MND	MND	7.54E+02	0.00E+00	8.79E+01	0.00E+00	1.94E-01	3.63E+00	8.41E+01	-2.62E+01
GWP – fossil	kg CO ₂ eq./FU	1.06E+03	7.83E+01	2.95E+00	6.43E-01	8.93E+02	1.44E+02	1.12E+00	MND	MND	MND	7.48E+02	0.00E+00	8.79E+01	0.00E+00	1.94E-01	3.62E+00	8.41E+01	-2.61E+01
GWP – biogenic	kg CO ₂ eq./FU	0.00E+00	-3.79E-01	0.00E+00	3.79E-01	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	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 – LULUC	kg CO ₂ eq./FU	1.00E+00	2.20E-01	1.47E-03	7.36E-05	7.71E-01	0.00E+00	4.25E-04	MND	MND	MND	7.71E-01	0.00E+00	8.79E-03	0.00E+00	7.54E-05	8.70E-03	1.43E-05	-2.97E-02
Ozone depletion pot.	kg CFC-11 eq./FU	2.45E-05	3.26E-06	4.31E-08	9.51E-09	2.11E-05	0.00E+00	4.92E-09	MND	MND	MND	2.11E-05	0.00E+00	4.51E-08	0.00E+00	3.52E-09	4.11E-08	4.96E-10	-1.43E-07
Acidification potential	mol H ⁺ eq./FU	7.03E+00	1.27E+00	4.71E-02	5.69E-03	5.69E+00	0.00E+00	3.97E-03	MND	MND	MND	5.69E+00	0.00E+00	1.45E-02	0.00E+00	4.16E-04	1.39E-02	1.82E-04	-5.25E-01
EP-freshwater ²	kg P eq. /FU	5.02E-01	9.97E-02	1.61E-04	2.37E-05	4.01E-01	0.00E+00	4.54E-05	MND	MND	MND	4.01E-01	0.00E+00	1.76E-03	0.00E+00	1.37E-05	1.73E-03	1.32E-05	-4.23E-02
EP-marine	kg N eq./FU	1.20E+00	1.01E-01	1.17E-02	2.66E-03	1.08E+00	0.00E+00	8.23E-04	MND	MND	MND	1.08E+00	0.00E+00	4.25E-03	0.00E+00	9.86E-05	2.96E-03	1.19E-03	-4.28E-02
EP-terrestrial	mol N eq./FU	1.05E+01	1.23E+00	1.29E-01	2.89E-02	9.05E+00	0.00E+00	9.04E-03	MND	MND	MND	9.04E+00	0.00E+00	3.14E-02	0.00E+00	1.07E-03	2.95E-02	8.06E-04	-5.02E-01
POCP ("smog") ³	kg NMVOC eq./FU	3.39E+00	3.71E-01	3.74E-02	8.64E-03	2.96E+00	0.00E+00	3.14E-03	MND	MND	MND	2.96E+00	0.00E+00	1.05E-02	0.00E+00	6.55E-04	9.62E-03	2.51E-04	-1.50E-01
ADP-minerals & metals ⁴	kg Sb eq./FU	5.06E-02	1.41E-02	6.32E-06	3.41E-07	3.64E-02	0.00E+00	5.57E-05	MND	MND	MND	3.63E-02	0.00E+00	1.73E-05	0.00E+00	6.43E-07	1.66E-05	5.33E-08	-4.82E-03
ADP-fossil resources	MJ/FU	9.94E+04	7.36E+02	3.88E+01	8.35E+00	9.86E+04	0.00E+00	1.54E+01	MND	MND	MND	9.86E+04	0.00E+00	4.88E+01	0.00E+00	2.72E+00	4.57E+01	4.06E-01	-2.82E+02
Water use ⁵	m ³ eq. depr. /FU	1.27E+03	2.28E+01	1.47E-01	2.57E-02	1.25E+03	0.00E+00	6.26E-02	MND	MND	MND	1.25E+03	0.00E+00	2.12E+00	0.00E+00	1.33E-02	2.08E+00	3.28E-02	-7.88E+00

MND abbreviation stands for Module Not Declared

1. GWP = Global Warming Potential

2. EP = Eutrophication potential. The required characterization method and data are in kg P-eq. Multiply by 3.07 to get PO₄-eq.

3. POCP = Photochemical ozone formation

4. ADP = Abiotic depletion potential

5. EF 3.1 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EF 3.1

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	D
Particulate matter	Disease Incidence/FU	5.60E-05	6.32E-06	1.53E-07	1.62E-07	4.90E-05	0.00E+00	3.26E-08	MND	MND	MND	4.90E-05	0.00E+00	3.02E-07	0.00E+00	1.43E-08	2.85E-07	2.76E-09	-2.41E-06
Ionizing radiation ⁶	kBq U235 eq./FU	4.43E+03	2.92E+00	2.50E-02	4.51E-03	4.42E+03	0.00E+00	8.12E-03	MND	MND	MND	4.42E+03	0.00E+00	8.32E-01	0.00E+00	3.08E-03	8.29E-01	4.23E-04	-1.40E+00
Ecotoxicity (freshwater)	CTU eq./FU	6.32E+04	1.17E+04	4.61E+00	6.38E+00	4.92E+04	1.12E-02	7.71E-01	MND	MND	MND	4.92E+04	0.00E+00	2.39E+03	0.00E+00	3.85E-01	1.06E+02	2.28E+03	-4.09E+03
Human toxicity, cancer	CTUh/FU	7.25E-07	1.39E-07	5.61E-10	7.36E-11	5.73E-07	0.00E+00	3.78E-10	MND	MND	MND	5.72E-07	0.00E+00	1.32E-08	0.00E+00	3.24E-11	1.29E-08	1.98E-10	-5.31E-08
Human tox. non-cancer	CTUh/FU	4.29E-05	1.09E-05	1.74E-08	1.41E-09	3.19E-05	7.01E-11	2.83E-09	MND	MND	MND	3.19E-05	0.00E+00	5.82E-08	0.00E+00	1.72E-09	4.78E-08	8.70E-09	-4.00E-06
SQP ⁷	- /FU	6.12E+03	5.03E+02	1.39E+01	6.72E-01	5.56E+03	0.00E+00	1.86E+00	MND	MND	MND	5.56E+03	0.00E+00	4.08E+01	0.00E+00	1.65E+00	3.83E+01	8.64E-01	-1.95E+02

6. EF 3.1 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

7. SQP = Land use related impacts/soil quality.

3 – ENVIRONMENTAL IMPACTS

USE OF NATURAL RESOURCES

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Renew. PER as energy ⁸	MJ/FU	1.00E+04	9.22E+01	4.25E-01	-7.25E+00	9.92E+03	0.00E+00	2.76E+00	MND	MND	MND	9.91E+03	0.00E+00	6.20E+00	0.00E+00	4.44E-02	6.14E+00	7.48E-03	-2.79E+01
Renew. PER as material	MJ/FU	1.64E+01	1.83E+01	0.00E+00	-7.54E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	5.70E+00	0.00E+00	0.00E+00	5.70E+00	0.00E+00	-1.54E-01
Total use of renew. PER	MJ/FU	1.00E+04	1.11E+02	4.25E-01	-1.48E+01	9.92E+03	0.00E+00	2.76E+00	MND	MND	MND	9.91E+03	0.00E+00	1.19E+01	0.00E+00	4.44E-02	1.18E+01	7.48E-03	-2.81E+01
Non-re. PER as energy	MJ/FU	9.94E+04	7.25E+02	3.88E+01	8.35E+00	9.86E+04	0.00E+00	1.54E+01	MND	MND	MND	9.86E+04	0.00E+00	2.39E+01	0.00E+00	2.72E+00	3.48E+01	-1.36E+01	-2.80E+02
Non-re. PER as material	MJ/FU	7.32E+00	3.99E+00	0.00E+00	-6.14E-02	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	3.39E+00	0.00E+00	0.00E+00	3.39E+00	0.00E+00	-1.21E+01
Total use of non-re. PER	MJ/FU	9.94E+04	7.25E+02	3.88E+01	8.29E+00	9.86E+04	0.00E+00	1.54E+01	MND	MND	MND	9.86E+04	0.00E+00	2.74E+01	0.00E+00	2.72E+00	3.83E+01	-1.36E+01	-2.92E+02
Secondary materials	kg/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renew. secondary fuels	MJ/FU	1.37E-01	7.94E-02	1.39E-04	1.04E-05	5.69E-02	0.00E+00	2.17E-05	MND	MND	MND	5.69E-02	0.00E+00	6.23E-04	0.00E+00	1.59E-05	6.03E-04	4.04E-06	-4.79E-02
Non-ren. secondary fuels	MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³ /FU	2.98E+01	6.43E-01	4.05E-03	5.32E-04	2.90E+01	0.00E+00	5.38E-03	MND	MND	MND	2.90E+01	0.00E+00	5.40E-02	0.00E+00	3.71E-04	5.46E-02	-9.22E-04	-2.13E-01

MND abbreviation stands for Module Not Declared

⁸) PER abbreviation stands for primary energy resources

END OF LIFE – WASTE

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Hazardous waste	kg/FU	8.11E+01	1.27E+01	6.03E-02	1.08E-02	6.55E+01	0.00E+00	1.15E-02	MND	MND	MND	6.55E+01	0.00E+00	2.78E+00	0.00E+00	2.85E-03	2.34E+00	4.39E-01	-7.94E+00
Non-hazardous waste	kg/FU	2.56E+03	4.27E+02	1.00E+00	2.39E-01	2.12E+03	0.00E+00	2.48E-01	MND	MND	MND	2.12E+03	0.00E+00	9.35E+00	0.00E+00	5.28E-02	7.88E+00	1.41E+00	-1.76E+02
Radioactive waste	kg/FU	1.27E+00	1.91E-03	6.09E-06	1.12E-06	1.27E+00	0.00E+00	1.82E-04	MND	MND	MND	1.27E+00	0.00E+00	2.13E-04	0.00E+00	3.54E-07	2.13E-04	1.04E-07	-3.48E-04

MND abbreviation stands for Module Not Declared

END OF LIFE – OUTPUT FLOWS

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Components for re-use	kg/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	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/FU	5.61E+00	0.00E+00	0.00E+00	4.14E-01	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	5.19E+00	0.00E+00	0.00E+00	5.19E+00	0.00E+00	0.00E+00
Materials for energy rec	kg/FU	1.62E-01	0.00E+00	0.00E+00	2.26E-02	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	1.40E-01	0.00E+00	0.00E+00	0.00E+00	1.40E-01	0.00E+00
Exported energy	MJ/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared

ENVIRONMENTAL IMPACTS – TRACI 2.1.

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Global Warming Pot.	kg CO ₂ eq./FU	1.03E+03	7.13E+01	2.92E+00	6.61E-01	8.76E+02	1.33E+02	3.25E-01	MND	MND	MND	7.42E+02	0.00E+00	8.14E+01	0.00E+00	1.91E-01	3.57E+00	7.77E+01	-2.60E+01
Ozone Depletion	kg CFC-11 eq./FU	2.53E-05	3.02E-06	4.54E-08	1.00E-08	2.22E-05	0.00E+00	5.18E-09	MND	MND	MND	2.22E-05	0.00E+00	4.75E-08	0.00E+00	3.72E-09	4.33E-08	5.22E-10	-1.59E-07
Acidification	kg SO ₂ eq./FU	5.68E+00	9.91E-01	4.01E-02	5.26E-03	4.63E+00	0.00E+00	1.36E-03	MND	MND	MND	4.63E+00	0.00E+00	1.22E-02	0.00E+00	3.56E-04	1.17E-02	1.83E-04	-4.17E-01
Eutrophication	kg N eq./FU	6.21E-01	9.16E-02	1.77E-03	4.01E-04	5.24E-01	0.00E+00	1.70E-04	MND	MND	MND	5.24E-01	0.00E+00	2.56E-03	0.00E+00	4.72E-05	2.41E-03	1.07E-04	-3.37E-02
POCP ("smog")	kg O ₃ eq./FU	5.69E+01	5.91E+00	7.59E-01	1.74E-01	4.99E+01	0.00E+00	3.39E-02	MND	MND	MND	4.99E+01	0.00E+00	1.82E-01	0.00E+00	7.36E-03	1.70E-01	4.80E-03	-2.50E+00
ADP-fossil	MJ/FU	5.00E+01	6.67E+00	3.88E+01	7.13E-02	4.53E+00	0.00E+00	4.53E+00	MND	MND	MND	0.00E+00	0.00E+00	-6.20E-02	0.00E+00	2.72E+00	-2.92E+00	1.35E-01	0.00E+00

MND abbreviation stands for Module Not Declared

3 – ENVIRONMENTAL IMPACTS

3.1 LCA impacts per Declared Unit

In the scope of building Life Cycle Analysis, the environmental impacts of the entire product over its reference service life should be considered, not the principal results of the PEP which correspond to the functional unit of the product. It is therefore necessary to multiply the principal results of the PEP by the FU Factor of the reference product, and if necessary, apply the extrapolation rules.

CORE ENVIRONMENTAL IMPACT INDICATORS – EF 3.1

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	D
GWP – total ¹	kg CO ₂ eq.	1.84E+04	1.35E+03	5.09E+01	1.77E+01	1.55E+04	2.48E+03	1.93E+01	MND	MND	MND	1.30E+04	0.00E+00	1.52E+03	0.00E+00	3.34E+00	6.26E+01	1.45E+03	-4.52E+02
GWP – fossil	kg CO ₂ eq.	1.83E+04	1.35E+03	5.09E+01	1.11E+01	1.54E+04	2.48E+03	1.93E+01	MND	MND	MND	1.29E+04	0.00E+00	1.52E+03	0.00E+00	3.34E+00	6.24E+01	1.45E+03	-4.51E+02
GWP – biogenic	kg CO ₂ eq.	0.00E+00	-6.54E+00	0.00E+00	6.54E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	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 – LULUC	kg CO ₂ eq.	1.73E+01	3.79E+00	2.53E-02	1.27E-03	1.33E+01	0.00E+00	7.33E-03	MND	MND	MND	1.33E+01	0.00E+00	1.52E-01	0.00E+00	1.30E-03	1.50E-01	2.46E-04	-5.12E-01
Ozone depletion pot.	kg CFC-11 eq.	4.22E-04	5.62E-05	7.43E-07	1.64E-07	3.64E-04	0.00E+00	8.49E-08	MND	MND	MND	3.64E-04	0.00E+00	7.78E-07	0.00E+00	6.08E-08	7.09E-07	8.55E-09	-2.46E-06
Acidification potential	mol H ⁺ eq.	1.21E+02	2.19E+01	8.13E-01	9.82E-02	9.82E+01	0.00E+00	6.84E-02	MND	MND	MND	9.81E+01	0.00E+00	2.50E-01	0.00E+00	7.17E-03	2.40E-01	3.14E-03	-9.05E+00
EP-freshwater ²	kg P eq.	8.66E+00	1.72E+00	2.78E-03	4.09E-04	6.91E+00	0.00E+00	7.83E-04	MND	MND	MND	6.91E+00	0.00E+00	3.04E-02	0.00E+00	2.37E-04	2.99E-02	2.28E-04	-7.29E-01
EP-marine	kg N eq.	2.07E+01	1.75E+00	2.01E-01	4.58E-02	1.86E+01	0.00E+00	1.42E-02	MND	MND	MND	1.86E+01	0.00E+00	7.33E-02	0.00E+00	1.70E-03	5.11E-02	2.05E-02	-7.38E-01
EP-terrestrial	mol N eq.	1.81E+02	2.12E+01	2.23E+00	4.98E-01	1.56E+02	0.00E+00	1.56E-01	MND	MND	MND	1.56E+02	0.00E+00	5.41E-01	0.00E+00	1.84E-02	5.09E-01	1.39E-02	-8.66E+00
POCP (“smog”) ³	kg NMVOC eq.	5.84E+01	6.40E+00	6.46E-01	1.49E-01	5.11E+01	0.00E+00	5.42E-02	MND	MND	MND	5.10E+01	0.00E+00	1.82E-01	0.00E+00	1.13E-02	1.66E-01	4.33E-03	-2.58E+00
ADP-minerals & metals ⁴	kg Sb eq.	8.72E-01	2.44E-01	1.09E-04	5.89E-06	6.28E-01	0.00E+00	9.61E-04	MND	MND	MND	6.27E-01	0.00E+00	2.98E-04	0.00E+00	1.11E-05	2.86E-04	9.19E-07	-8.32E-02
ADP-fossil resources	MJ	1.71E+06	1.27E+04	6.69E+02	1.44E+02	1.70E+06	0.00E+00	2.66E+02	MND	MND	MND	1.70E+06	0.00E+00	8.42E+02	0.00E+00	4.69E+01	7.88E+02	7.00E+00	-4.87E+03
Water use ⁵	m ³ eq. depr	2.19E+04	3.93E+02	2.54E+00	4.44E-01	2.15E+04	0.00E+00	1.08E+00	MND	MND	MND	2.15E+04	0.00E+00	3.66E+01	0.00E+00	2.29E-01	3.58E+01	5.65E-01	-1.36E+02

MND abbreviation stands for Module Not Declared

1. GWP = Global Warming Potential

2. EP = Eutrophication potential. Required characterization method and data are in kg P-eq. Multiply by 3.07 to get PO₄e

3. POCP = Photochemical ozone formation

4. ADP = Abiotic depletion potential

5. EF 3.1 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EF 3.1

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	D
Particulate matter	Disease Incidence	9.65E-04	1.09E-04	2.64E-06	2.79E-06	8.46E-04	0.00E+00	5.62E-07	MND	MND	MND	8.45E-04	0.00E+00	5.21E-06	0.00E+00	2.47E-07	4.92E-06	4.76E-08	-4.16E-05
Ionizing radiation ⁶	kBq U235 eq.	7.64E+04	5.04E+01	4.31E-01	7.78E-02	7.63E+04	0.00E+00	1.40E-01	MND	MND	MND	7.63E+04	0.00E+00	1.44E+01	0.00E+00	5.32E-02	1.43E+01	7.29E-03	-2.42E+01
Ecotoxicity (freshwater)	CTU eq.	1.09E+06	2.01E+05	7.95E+01	1.10E+02	8.48E+05	1.94E-01	1.33E+01	MND	MND	MND	8.48E+05	0.00E+00	4.12E+04	0.00E+00	6.64E+00	1.82E+03	3.94E+04	-7.06E+04
Human toxicity, cancer	CTUh	1.25E-05	2.40E-06	9.67E-09	1.27E-09	9.88E-06	0.00E+00	6.52E-09	MND	MND	MND	9.87E-06	0.00E+00	2.27E-07	0.00E+00	5.59E-10	2.23E-07	3.42E-09	-9.16E-07
Human tox. non-cancer	CTUh	7.40E-04	1.88E-04	3.00E-07	2.44E-08	5.51E-04	1.21E-09	4.88E-08	MND	MND	MND	5.51E-04	0.00E+00	1.00E-06	0.00E+00	2.97E-08	8.24E-07	1.50E-07	-6.90E-05
SQP ⁷	-	1.06E+05	8.67E+03	2.39E+02	1.16E+01	9.59E+04	0.00E+00	3.20E+01	MND	MND	MND	9.59E+04	0.00E+00	7.03E+02	0.00E+00	2.84E+01	6.60E+02	1.49E+01	-3.37E+03

MND abbreviation stands for Module Not Declared

6. EF 3.1 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator

7. SQP = Land use related impacts/soil quality

3 – ENVIRONMENTAL IMPACTS

USE OF NATURAL RESOURCES

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Renew. PER as energy	MJ	1.73E+05	1.59E+03	7.33E+00	-1.25E+02	1.71E+05	0.00E+00	4.76E+01	MND	MND	MND	1.71E+05	0.00E+00	1.07E+02	0.00E+00	7.66E-01	1.06E+02	1.29E-01	-4.81E+02
Renew. PER as material	MJ	2.83E+02	3.15E+02	0.00E+00	-1.30E+02	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	9.84E+01	0.00E+00	0.00E+00	9.84E+01	0.00E+00	-2.65E+00
Total use of renew. PER	MJ	1.73E+05	1.91E+03	7.33E+00	-2.55E+02	1.71E+05	0.00E+00	4.76E+01	MND	MND	MND	1.71E+05	0.00E+00	2.05E+02	0.00E+00	7.66E-01	2.04E+02	1.29E-01	-4.84E+02
Non-re. PER as energy	MJ	1.71E+06	1.25E+04	6.69E+02	1.44E+02	1.70E+06	0.00E+00	2.66E+02	MND	MND	MND	1.70E+06	0.00E+00	4.13E+02	0.00E+00	4.69E+01	6.01E+02	-2.35E+02	-4.83E+03
Non-re. PER as material	MJ	1.26E+02	6.89E+01	0.00E+00	-1.06E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	5.85E+01	0.00E+00	0.00E+00	5.85E+01	0.00E+00	-2.09E+02
Total use of non-re. PER	MJ	1.71E+06	1.25E+04	6.69E+02	1.43E+02	1.70E+06	0.00E+00	2.66E+02	MND	MND	MND	1.70E+06	0.00E+00	4.72E+02	0.00E+00	4.69E+01	6.60E+02	-2.35E+02	-5.04E+03
Secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-0.00E+00
Renew. secondary fuels	MJ	2.36E+00	1.37E+00	2.39E-03	1.80E-04	9.81E-01	0.00E+00	3.74E-04	MND	MND	MND	9.81E-01	0.00E+00	1.07E-02	0.00E+00	2.75E-04	1.04E-02	6.97E-05	-8.27E-01
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m³	5.13E+02	1.11E+01	6.99E-02	9.18E-03	5.01E+02	0.00E+00	9.28E-02	MND	MND	MND	5.01E+02	0.00E+00	9.32E-01	0.00E+00	6.40E-03	9.41E-01	-1.59E-02	-3.67E+00

MND abbreviation stands for Module Not Declared

8. PER abbreviation stands for primary energy resources

END OF LIFE – WASTE

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Hazardous waste	kg	1.40E+03	2.19E+02	1.04E+00	1.86E-01	1.13E+03	0.00E+00	1.98E-01	MND	MND	MND	1.13E+03	0.00E+00	4.80E+01	0.00E+00	4.91E-02	4.04E+01	7.57E+00	-1.37E+02
Non-hazardous waste	kg	4.41E+04	7.36E+03	1.73E+01	4.13E+00	3.66E+04	0.00E+00	4.28E+00	MND	MND	MND	3.66E+04	0.00E+00	1.61E+02	0.00E+00	9.11E-01	1.36E+02	2.43E+01	-3.04E+03
Radioactive waste	kg	2.19E+01	3.29E-02	1.05E-04	1.93E-05	2.19E+01	0.00E+00	3.14E-03	MND	MND	MND	2.19E+01	0.00E+00	3.68E-03	0.00E+00	6.11E-06	3.67E-03	1.80E-06	-6.01E-03

MND abbreviation stands for Module Not Declared

END OF LIFE – OUTPUT FLOWS

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
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	MND	MND	MND	0.00E+00	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	9.67E+01	0.00E+00	0.00E+00	7.14E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	8.96E+01	0.00E+00	0.00E+00	8.96E+01	0.00E+00	0.00E+00
Materials for energy rec	kg	2.80E+00	0.00E+00	0.00E+00	3.90E-01	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	2.41E+00	0.00E+00	0.00E+00	0.00E+00	2.41E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared

ENVIRONMENTAL IMPACTS – TRACI 2.1.

Impact Category	Unit	Total	Manufacturing	Distribution & Installation		B1-B7	Use							C1-C4	End of Life				Benefits & Loads
			A1-A3	A4	A5		B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	
Global Warming Pot.	kg CO ₂ eq.	1.78E+04	1.23E+03	5.03E+01	1.14E+01	1.51E+04	2.30E+03	5.60E+00	MND	MND	MND	1.28E+04	0.00E+00	1.40E+03	0.00E+00	3.29E+00	6.16E+01	1.34E+03	-4.49E+02
Ozone Depletion	kg CFC-11 eq.	4.37E-04	5.21E-05	7.84E-07	1.73E-07	3.83E-04	0.00E+00	8.94E-08	MND	MND	MND	3.83E-04	0.00E+00	8.20E-07	0.00E+00	6.41E-08	7.47E-07	9.01E-09	-2.74E-06
Acidification	kg SO ₂ eq.	9.80E+01	1.71E+01	6.91E-01	9.08E-02	7.99E+01	0.00E+00	2.35E-02	MND	MND	MND	7.99E+01	0.00E+00	2.11E-01	0.00E+00	6.14E-03	2.02E-01	3.15E-03	-7.19E+00
Eutrophication	kg N eq.	1.07E+01	1.58E+00	3.06E-02	6.92E-03	9.04E+00	0.00E+00	2.94E-03	MND	MND	MND	9.04E+00	0.00E+00	4.42E-02	0.00E+00	8.15E-04	4.15E-02	1.85E-03	-5.82E-01
POCP ("smog")	kg O ₃ eq.	9.82E+02	1.02E+02	1.31E+01	3.00E+00	8.61E+02	0.00E+00	5.85E-01	MND	MND	MND	8.60E+02	0.00E+00	3.14E+00	0.00E+00	1.27E-01	2.93E+00	8.28E-02	-4.32E+01
ADP-fossil	MJ	8.63E+02	1.15E+02	6.70E+02	1.23E+00	7.81E+01	0.00E+00	7.81E+01	MND	MND	MND	0.00E+00	0.00E+00	1.07E+00	0.00E+00	4.70E+01	-5.04E+01	2.33E+00	0.00E+00

MND abbreviation stands for Module Not Declared

4 – EXTRAPOLATION TO THE OTHER SIZES IN THE RANGE

4.1 Extrapolation Coefficients

The products mentioned in the LCA report, belong to the same homogeneous environmental family as the reference product. The group of products shall have the following characteristics:

- Same main functionality,
- Same product standards,
- Similar manufacturing technology: same type of materials and manufacturing processes.

The extrapolation coefficients for similar commercial references are as follows

#	Stages/Models	MCY- MHP0404 HS8-E	MCY- MHP0504 HS8-E	MCY- MHP0604 HS8-E	MCY- MHP0806 HS8-E	MCY- MHP1006 HS8-E	MCY- MHP1206 HS8-E	MCY- MHP0404 HS-E	MCY- MHP0504 HS-E	MCY- MHP0604 HS-E	MCY- MHP0406 HT-E	MCY- MHP0506 HT-E1
Declared Unit	Manufacturing stage	1.01	1.01	1.00	1.17	1.17	1.02	1.02	1.02	1.24	0.82	0.82
	Distribution stage	1.01	1.01	1.00	1.17	1.17	1.02	1.02	1.02	1.24	0.82	0.82
	Installation stage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	B1 Stage	1.00	1.00	1.00	1.45	1.45	1.00	1.00	1.00	1.45	1.94	1.94
	B2 stage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	B6 stage	0.74	0.92	1.00	1.29	1.62	0.74	0.92	1.00	2.07	0.82	1.02
	B7 stage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	C stage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	D stage	1.01	1.01	1.00	1.17	1.17	1.02	1.02	1.02	1.24	0.82	0.82
Functional Unit	Manufacturing stage	1.40	1.13	1.00	0.90	0.72	1.38	1.14	1.02	0.64	1.14	0.92
	Distribution stage	1.40	1.13	1.00	0.90	0.72	1.38	1.14	1.02	0.64	1.14	0.92
	Installation stage	1.39	1.12	1.00	0.77	0.62	1.35	1.12	1.00	0.51	1.39	1.12
	B1 Stage	1.39	1.12	1.00	1.12	0.90	1.35	1.12	1.00	0.75	2.70	2.17
	B2 stage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	B6 stage	1.03	1.03	1.00	0.99	1.00	1.00	1.03	1.00	1.07	1.14	1.14
	B7 stage	1.39	1.12	1.00	0.77	0.62	1.35	1.12	1.00	0.51	1.39	1.12
	C stage	1.39	1.12	1.00	0.77	0.62	1.35	1.12	1.00	0.51	1.39	1.12
	D stage	1.40	1.13	1.00	0.90	0.72	1.38	1.14	1.02	0.64	1.14	0.92

5 – DECLARATION AND CONTACT INFORMATION

5.1 Declaration

Registration number: TACE-00005-V01.01-EN	Drafting rules: PEP-PCR-ed4-EN-2021 09 06 » Supplemented by «PEP- PSR-0013-ed3.1-EN-2025-06-17»
Verifier accreditation number: VH42	Information and reference documents: www.pep-ecopassport.org
Date of issue: 07-2026	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 is compliant with NF C08-100-1:2016 and EN 50693 :2019 or NF E38-500:2022	
The elements of the present PEP cannot be compared with elements from another program.	
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"	



5.2 Contact information

The illustrations in this document are provided for information only and do not form part of any sales offer or contact. The manufacturer reserves the right to change any product specifications without notice.

PEP Owner

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5.3 References

1. EN 14511 – Air Conditioners, Heat Pumps, and Chillers Performance Standard.
2. EN 14825 – Seasonal Performance and Part-Load Testing Standard.
3. EN 15804+A2 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
4. EN 16147--Heat pumps with electrically driven compressors.
5. F-Gas-European regulation n° 517/2014 relating to fluorinated greenhouse gases.
6. ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures.
7. ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
8. ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
9. ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.
12. PCR-ed4-EN-2021 09 06; Product Category Rules for Electrical, Electronic and HVAC-R Products.
13. PSR-0013-ed3.1-EN-2025-06-17; SPECIFIC RULES FOR THERMODYNAMIC GENERATORS WITH ELECTRIC COMPRESSION FOR SPACE HEATING AND/OR COOLING AND/OR THE PRODUCTION OF DOMESTIC HOT WATER.
14. Regulation (EU) 1516/2007- REGULATION (EC) No 1516/2007 OF THE COMMISSION dated 19 December 2007 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council.
15. Regulation (EU) No. 813/2013- REGULATION (EU) No. 813/2013 of the Commission dated 2 August 2013 in application of Directive 2009/125/EC of the European Parliament.
16. Gas m3 To kWh Calculator: Gas Cubic Meter To kWh Conversion + Chart - LearnMetrics
17. Hyster XT forklift - What is the fuel consumption of a diesel forklift?