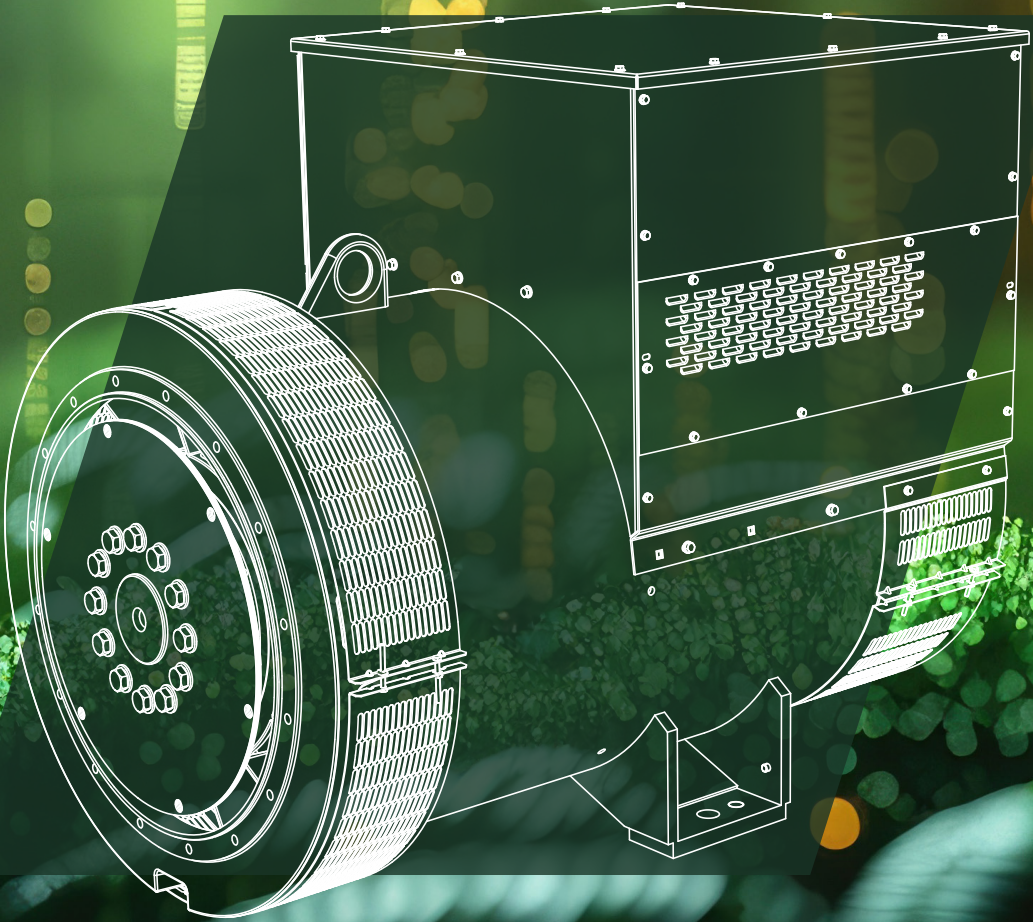




Power

Environmental Product Declaration



LSA 50.2

A **LEROY-SOMER**™ Product

	Auditor's name: Chrystel Simone	Product category rules: "PCR-ed4-FR-2021_09_06"
	Publication date: 10-2024	Validity period: 5 years
	Independent verification of declaration and data in accordance with ISO 14025:2010	
	Internal <input type="checkbox"/> External <input checked="" type="checkbox"/>	
Document complying with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"		

NIDEC POWER'S ENVIRONMENTAL COMMITMENTS

Contributing to sustainable development

- Integrating environmental management into all of our activities through our ISO 14001 certification
- Decarbonizing our internal and external activities

Considering the environment in product design and providing information in compliance with ISO 14025

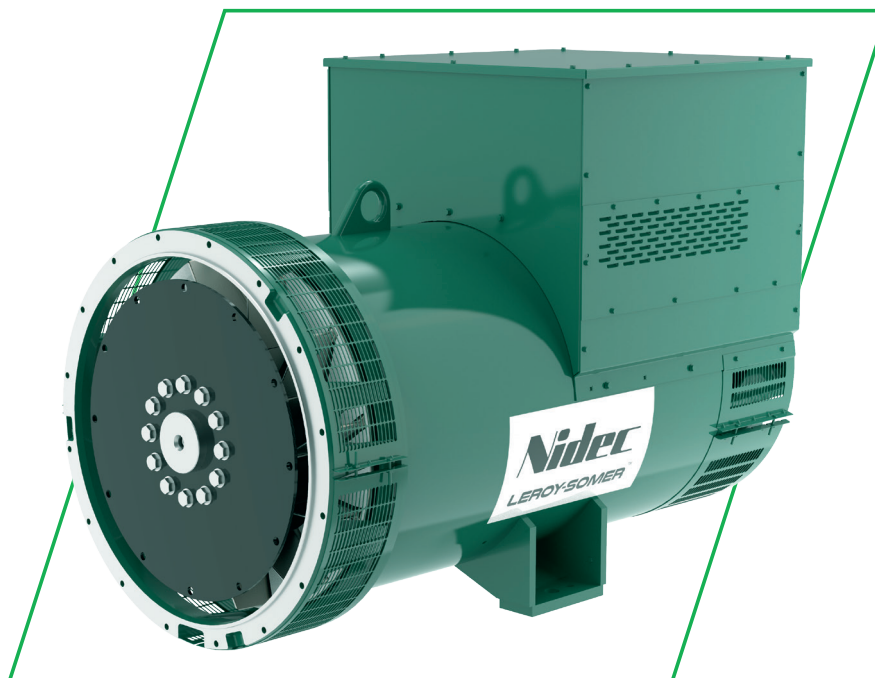
- Reducing the product environmental impact by integrating life cycle analysis from the design stage
- Working with our suppliers on the composition and origin of components

Offering our customers environmentally friendly solutions

- Developing a regionalization strategy to be closer to the user
- Providing efficient products that align with the context of electrification and grid intermittency

DESCRIPTION

Model	50.2
Reference	50.2VL10
Family	1 100 to 1 640 kVA - 50 Hz / 1 250 to 2 000 kVA - 60 Hz
Equipment	Low Voltage Alternator - 4 poles



VERIFICATION

Auditor's name: Chrystel Simone	Product category rules: "PCR-ed4-FR-2021_09_06"
Publication date: 10-2024	Validity period: 5 years
Independent verification of declaration and data in accordance with ISO 14025:2010	
Internal <input type="checkbox"/> External <input checked="" type="checkbox"/>	
Document complying with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"	

PRODUCT RANGE COVERED BY “EPD”

LSA 50.2VL10 is the heaviest reference product in the range. Extrapolation coefficients are available in the appendix for assessing the environmental impact of the other models in the range.

Total product weight of the product: 3 375 kg (including packaging)

FUNCTIONAL UNIT AND REFERENCE FLOW

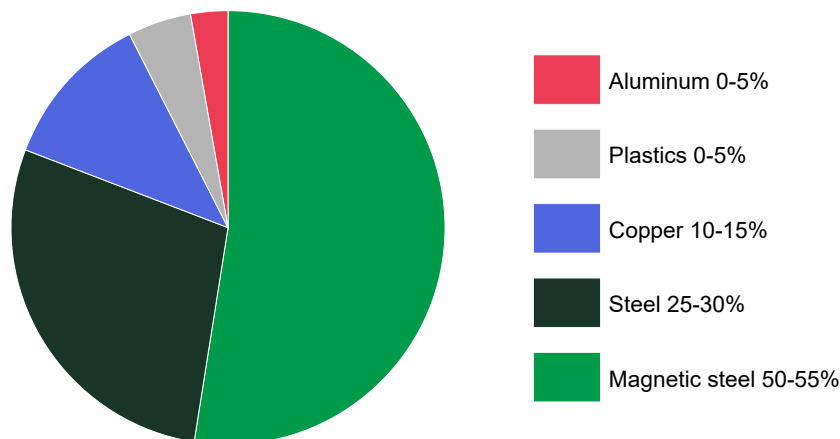
Ensure the production of 1 kVA using an auxiliary energy source 200 hours per year for a reference lifetime of 40 years.

Reference flows

Ratings 50Hz – 1 500 rpm		
	On the scale of the product over its reference lifetime (40 years)	At the level of the functional unit over its reference lifetime (40 years)
Equipment	1p 50.2VL10 or 3 300 kg	1/14 400 000 of 50.2VL10 or 2.29E-04 kg of product
Packaging	1 PACKAGING or 75 kg	1/14 400 000 PACKAGING, or 5.21E-06 kg of packaging
Maintenance	2 BEARINGS or 19.2 kg	1/14 400 000 BEARING or 1.33E-06 kg of bearing
Ratings 60Hz – 1 800 rpm		
	At the product level over its reference lifetime (40 years)	On the scale of the functional unit over its reference lifetime (40 years)
Equipment	1p 50.2VL10 or 3 300 kg	1/17 600 000 of 50.2VL10 or 1.88E-04 kg of product
Packaging	1 PACKAGING or 75 kg	1/17 600 000 BEARING, or 4.26E-06 kg of packaging
Maintenance	2 BEARINGS or 19.2 kg	1/17 600 000 BEARING or 1.09E-06 kg of bearing

PRODUCT (WITHOUT PACKAGING) MASS BALANCE

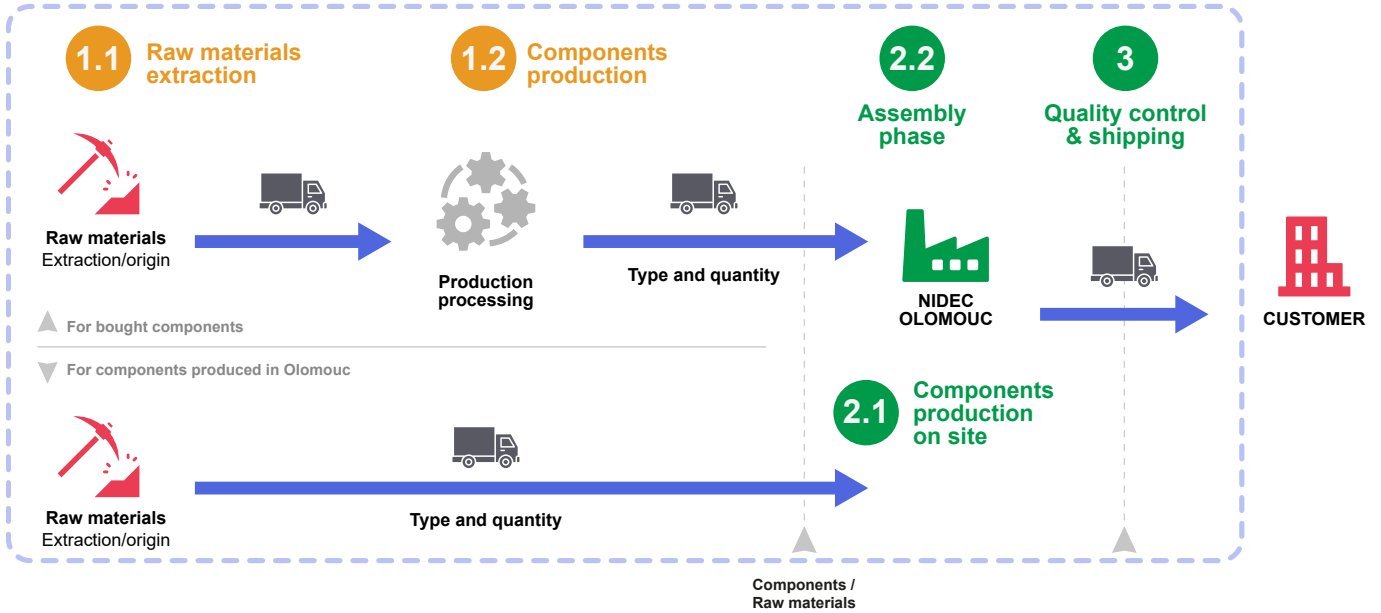
METALS	Quantity	Plastics	Quantity	Others	Quantity
Magnetic steel	50-55%	PA	0-5%	Others	<0.1%
Steel	25-30%	PC	0-5%		
Copper	10-15%	PET	<0.1%		
Aluminum	0-5%				
Total	95-100%	Total	0-5%	Total	<0.1%



SCOPE OF THE DECLARATION:

Used in Europe

Manufactured and assembled in Europe



Manufacture			Distribution	Installation	Use							End of life				Total	Advantages and load
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	Total (hors module D)	Module D
X	X	X	X	X	MNC	X	MNC	MNC	MNC	MNC	MND	MND	MND	MND	MND	X	X

X: Declared module
MNC: Module not concerned
MND: Non-declared module

This declaration is representative of the A1-A5+B2 breakdown (cradle to delivery + maintenance).

MANUFACTURING

The components purchased come from Europe and the product is manufactured and assembled in Europe, at our site in Olomouc (Czech Republic).

The manufacturing processes have been taken into account based on on-site measurements of the power absorbed by the various production equipment.

- ✓ Manufacturing processes external to Nidec Power
- ✓ The energy model used is the production one in the Czech Republic: Electricity, low voltage {CZ} | Market for | Cut Off

Inbound transport of materials and components from suppliers' sites to Olomouc plant has been taken into account. Scrap metal generated during production is recycled.

Downstream logistic

This product travels 1 980 km by road to get from our manufacturing site to the installation site of our main customer.

This transport scenario is therefore representative of a product delivery and use in Europe.

The transport model is: Transport, freight, lorry >32 metric ton, EURO6 {RER} | transport, freight, lorry >32 metric ton, EURO6 | Cut-off, U.

INSTALLATION

This phase includes the disposal of the product packaging.

The environmental impact of the handling equipment used to install the product has not been taken into account (negligible impact).


USE

Energy consumption

The energy consumed in using the product is not taken into account in this declaration.

Maintenance

Alternator maintenance is covered by the scheme proposed by Nidec Power:

Standard: Permanently greased bearings	Bearings life (depending on use): 20 000 hours or 3 years (grease life)
Option: Regreased bearings	Regreasing interval: 3 600 hours in operation or every 6 months Amount of grease of DE and NDE bearings: 60 gr
Replacement of regreasable bearings	Amount of grease: - DE bearing: 450 gr - NDE bearing: 330 gr
Standard grease	LITHIUM - standard - NLGI 3
Grease used in the factory	ESSO - Unirex N3
	It is imperative to lubricate the alternator during operation and on first use. Front and rear bearing should be greased at the same time. In case of dusty environment or high ambient temperature (> 40°C), relubrication interval must be divided by two. Before using another grease, check for compatibility with the original one.

The nature and frequency of intervention over the typical life of the product are:

Maintenance equipment	Number of RFL interventions	Replacement frequency
Bearing	2	2 bearings, replaced once every 20 000 hours

By industry convention, the transport phase is taken into account on the basis of a 100 km return journey by commercial vehicle.

END OF LIFE

The end-of-life of the generator is not taken into account in this declaration.

ENVIRONMENTAL IMPACT ASSESSMENT

The Life Cycle Assessment on which this Environmental Product Declaration (EPD) is based complies with the criteria of PCR-ed4-FR-2021_09_14 of the PEP Ecopassport® Program.

The results were obtained using SimaPro 9.5 software and the ecoinvent 3.9 database. The characterisation method is EF3.1.

IMPACT INDICATORS PER kVA CORRESPONDING TO THE FUNCTIONAL UNIT

The “PEP” is based on the **production of 1 kVA per hour of operation**. The real impact of the life cycle stages of the product installed in a real situation must be calculated by the user of the “PEP” by multiplying the impact considered by the rated power according to the configuration chosen.

1500 rpm

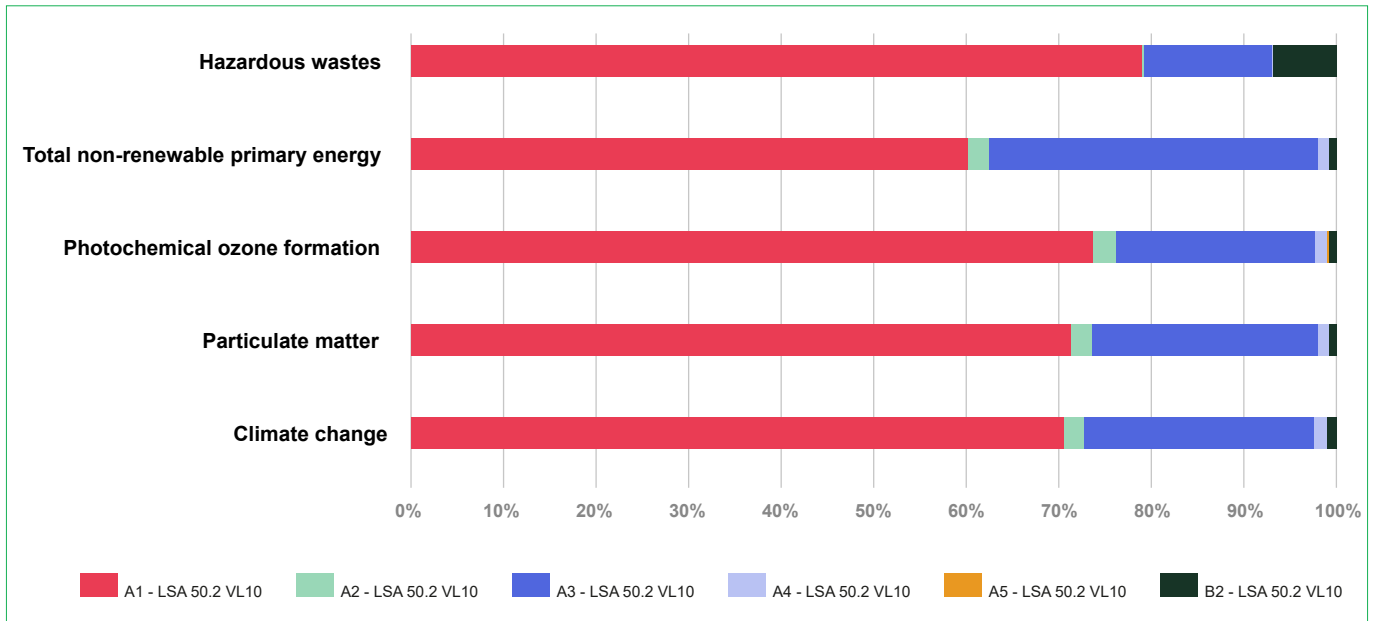
Impact category	Unit	Total	A1	A2	A3	A4	A5	B2	Module D
PCR ed4 categories indicators									
Climate change	kg CO ₂ eq	3,71E-03	2,31E-03	5,35E-05	1,29E-03	4,55E-05	1,27E-06	9,38E-06	-1,21E-04
Climate change - Biogenic	kg CO ₂ eq	1,61E-05	2,44E-06	1,44E-08	1,33E-05	1,38E-08	4,36E-08	4,51E-07	-4,65E-08
Climate change - Fossil	kg CO ₂ eq	3,69E-03	2,31E-03	5,35E-05	1,28E-03	4,54E-05	1,23E-06	8,92E-06	-1,21E-04
Climate change - Land use and LU change	kg CO ₂ eq	2,08E-06	1,44E-06	3,03E-08	5,83E-07	2,22E-08	7,41E-11	9,07E-09	-3,87E-08
Ozone depletion	kg CFC-11 eq	3,75E-11	2,06E-11	1,10E-12	1,42E-11	1,03E-12	1,48E-14	1,21E-13	-2,64E-12
Acidification	mol H+ eq	3,26E-05	2,52E-05	5,39E-07	6,71E-06	1,12E-07	3,91E-09	6,51E-08	-4,42E-07
Eutrophication, freshwater	kg P eq	1,99E-06	1,59E-06	3,34E-09	3,95E-07	3,35E-09	1,66E-11	4,89E-09	-6,06E-08
Eutrophication, marine	kg P eq	3,90E-06	2,59E-06	1,37E-07	1,13E-06	3,06E-08	2,06E-09	1,06E-08	-1,07E-07
Eutrophication, terrestrial	mol N eq	4,20E-05	2,88E-05	1,49E-06	1,13E-05	3,15E-07	2,01E-08	9,88E-08	-1,14E-06
Photochemical ozone formation	kg NMVOC eq	1,46E-05	9,61E-06	4,87E-07	4,30E-06	1,84E-07	8,65E-09	3,39E-08	-6,05E-07
Resource use, fossils	MJ	2,35E-07	2,12E-07	1,22E-10	2,27E-08	1,27E-10	4,76E-13	4,47E-10	-1,10E-10
Resource use, minerals and metals	kg Sb eq	5,18E-02	3,22E-02	7,68E-04	1,80E-02	6,90E-04	9,71E-06	1,06E-04	-1,24E-03
Water use	m ³ depriv.	6,45E-04	5,22E-04	3,21E-06	1,14E-04	3,29E-06	1,21E-08	1,75E-06	-2,50E-05
Renewable primary energy w/t RM	MJ, net CV	4,92E-03	3,30E-03	9,86E-06	1,60E-03	1,01E-05	5,80E-08	2,27E-05	-4,45E-05
Renewable primary energy as RM	MJ, net CV	6,98E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total renewable primary energy	MJ, net CV	4,92E-03	3,30E-03	9,86E-06	1,60E-03	1,01E-05	5,80E-08	2,27E-05	-4,45E-05
Non-renewable primary energy w/t RM	MJ, net CV	5,18E-02	3,22E-02	7,68E-04	1,80E-02	6,90E-04	9,71E-06	1,06E-04	-1,24E-03
Non-renewable primary energy as RM	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total non-renewable primary energy	MJ, net CV	5,17E-02	3,21E-02	7,68E-04	1,80E-02	6,90E-04	9,71E-06	1,06E-04	-1,24E-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	0,00E+00
Renewable secondary fuels	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of freshwater	m ³	-9,68E-05	-5,11E-05	-2,05E-07	-4,00E-05	-2,16E-07	-3,78E-10	-4,19E-07	7,87E-07
Hazardous wastes	kg	4,23E-04	3,30E-04	7,52E-07	8,45E-05	6,67E-07	1,31E-08	6,90E-06	-1,50E-05
Non-hazardous wastes	kg	8,13E-03	6,65E-03	5,71E-05	1,35E-03	6,58E-05	2,86E-07	1,55E-05	-9,49E-05
Radioactives wastes	kg	2,76E-07	1,75E-07	1,98E-10	1,00E-07	2,10E-10	1,06E-12	2,52E-10	-9,74E-10
Components for reuse	kg	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	6,81E-05	0,00E+00	0,00E+00	6,81E-05	0,00E+00	0,00E+00	0,00E+00	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	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	0,00E+00
Total primary energy use	MJ, net CV	5,66E-02	3,54E-02	7,78E-04	1,96E-02	7,00E-04	9,77E-06	1,28E-04	-1,28E-03
PCR ed3 categories indicators									
PCR ed3-Global Warming	kg CO ₂ eq	3,63E-03	2,27E-03	5,27E-05	1,26E-03	4,48E-05	1,21E-06	8,81E-06	-1,19E-04
PCR ed3-Acidification soil & water	kg SO ₂ eq	2,79E-05	2,17E-05	4,30E-07	5,63E-06	8,94E-08	2,74E-09	5,50E-08	-3,53E-07
PCR ed3-Eutrophication	kg PO ₄ --- eq	7,72E-06	5,91E-06	5,87E-08	1,72E-06	2,25E-08	1,70E-09	2,16E-08	-2,26E-07
PCR ed3-Photochemical ozone creation	kg C ₂ H ₄ eq	3,07E-06	2,02E-06	6,92E-08	9,49E-07	4,67E-08	1,69E-09	6,54E-09	-1,66E-07
PCR ed3-Ozone Depletion	kg CFC-11 eq	3,90E-11	2,13E-11	9,01E-13	1,54E-11	8,44E-13	1,19E-14	1,20E-13	-3,59E-12
PCR ed3-Resource use, fossils	MJ	5,18E-02	3,22E-02	7,68E-04	1,80E-02	6,90E-04	9,71E-06	1,06E-04	-1,24E-03
PCR ed3-Resource use, min. and met.	kg Sb eq	2,35E-07	2,12E-07	1,22E-10	2,27E-08	1,27E-10	4,76E-13	4,47E-10	-1,10E-10
Optional categories indicators									
Optionnal-Particulate matter	disease inc.	3,74E-10	2,45E-10	4,26E-12	1,20E-10	4,50E-12	9,86E-14	6,49E-13	-8,51E-12
Optionnal-Ionising radiation	kBq U-235 eq	9,81E-04	6,21E-04	8,26E-07	3,58E-04	8,70E-07	4,76E-09	9,92E-07	-3,86E-06
Optionnal-Ecotoxicity, freshwater	CTUe	2,23E-02	1,61E-02	4,02E-04	5,40E-03	3,61E-04	4,61E-06	6,10E-05	-2,59E-04
Optionnal-Human toxicity, cancer	CTUh	1,01E-11	7,27E-12	2,36E-14	2,74E-12	2,02E-14	1,67E-16	5,11E-14	-7,70E-13
Optionnal-Human toxicity, non-cancer	CTUh	2,44E-10	2,18E-10	4,71E-13	2,49E-11	4,93E-13	3,40E-15	4,60E-13	-6,60E-13
Optionnal-Land use	Pt	1,60E-02	9,55E-03	6,08E-04	5,10E-03	7,00E-04	1,15E-06	5,49E-05	-2,79E-04

LSA 50.2 - Environmental Product Declaration

1800 rpm

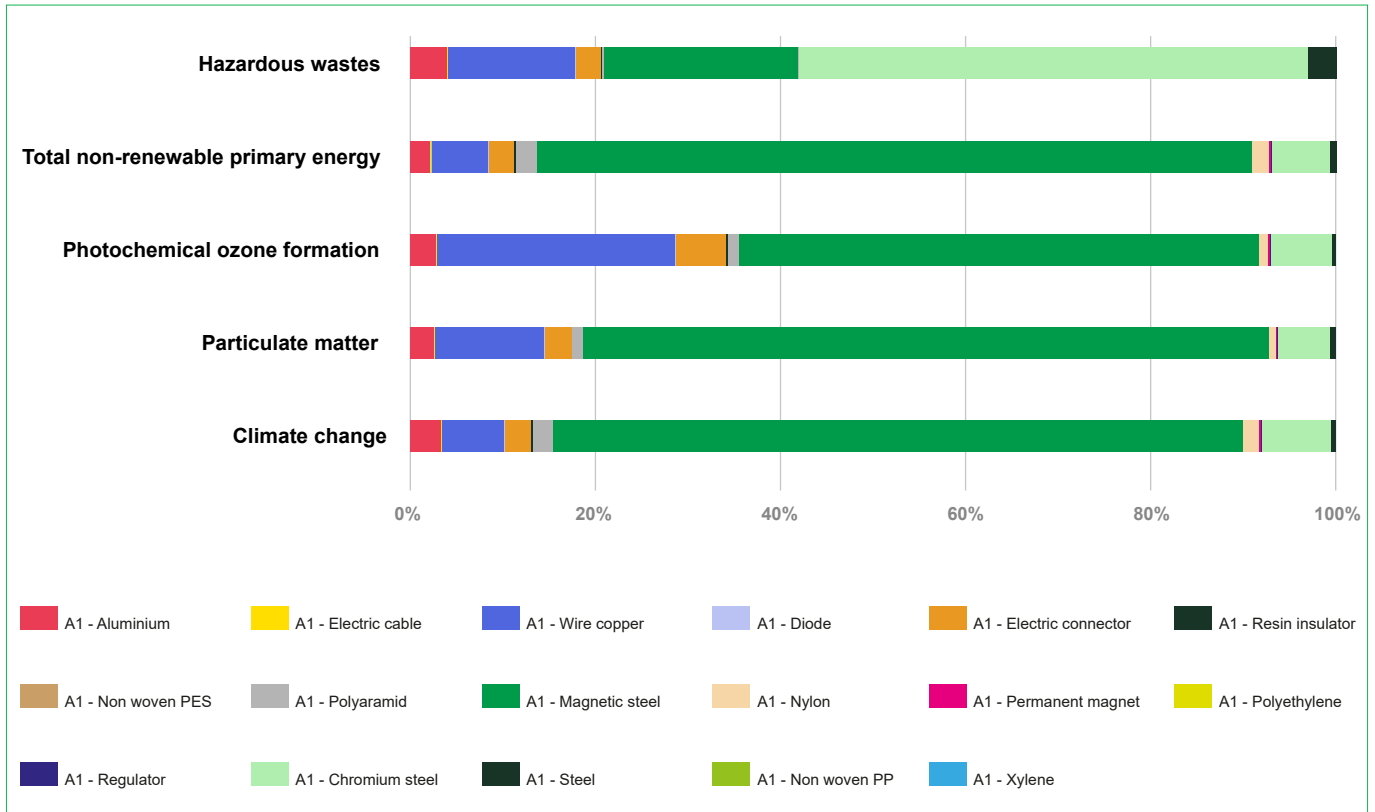
Impact category	Unit	Total	A1	A2	A3	A4	A5	B2	Module D
PCR ed4 categories indicators									
Climate change	kg CO ₂ eq	3,03E-03	1,89E-03	4,38E-05	1,05E-03	3,72E-05	1,04E-06	7,68E-06	-9,88E-05
Climate change - Biogenic	kg CO ₂ eq	1,32E-05	2,00E-06	1,18E-08	1,09E-05	1,13E-08	3,57E-08	3,69E-07	-3,81E-08
Climate change - Fossil	kg CO ₂ eq	3,02E-03	1,89E-03	4,37E-05	1,04E-03	3,72E-05	1,01E-06	7,30E-06	-9,88E-05
Climate change - Land use and LU change	kg CO ₂ eq	1,70E-06	1,18E-06	2,48E-08	4,77E-07	1,81E-08	6,06E-11	7,42E-09	-3,17E-08
Ozone depletion	kg CFC-11 eq	3,07E-11	1,69E-11	9,01E-13	1,16E-11	8,44E-13	1,21E-14	9,90E-14	-2,16E-12
Acidification	mol H+ eq	2,66E-05	2,06E-05	4,41E-07	5,49E-06	9,20E-08	3,20E-09	5,33E-08	-3,61E-07
Eutrophication, freshwater	kg P eq	1,63E-06	1,30E-06	2,73E-09	3,23E-07	2,74E-09	1,36E-11	4,00E-09	-4,96E-08
Eutrophication, marine	kg P eq	3,19E-06	2,12E-06	1,12E-07	9,26E-07	2,51E-08	1,68E-09	8,66E-09	-8,77E-08
Eutrophication, terrestrial	mol N eq	3,44E-05	2,36E-05	1,22E-06	9,24E-06	2,57E-07	1,64E-08	8,08E-08	-9,29E-07
Photochemical ozone formation	kg NMVOC eq	1,19E-05	7,86E-06	3,98E-07	3,52E-06	1,50E-07	7,08E-09	2,77E-08	-4,95E-07
Resource use, fossils	MJ	1,92E-07	1,73E-07	1,00E-10	1,86E-08	1,04E-10	3,89E-13	3,66E-10	-8,99E-11
Resource use, minerals and metals	kg Sb eq	4,23E-02	2,63E-02	6,28E-04	1,47E-02	5,64E-04	7,95E-06	8,64E-05	-1,02E-03
Water use	m ³ depriv.	5,28E-04	4,27E-04	2,62E-06	9,36E-05	2,69E-06	9,90E-09	1,43E-06	-2,05E-05
Renewable primary energy w/t RM	MJ, net CV	4,02E-03	2,70E-03	8,06E-06	1,31E-03	8,25E-06	4,74E-08	1,85E-05	-3,64E-05
Renewable primary energy as RM	MJ, net CV	5,71E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total renewable primary energy	MJ, net CV	4,03E-03	2,70E-03	8,06E-06	1,31E-03	8,25E-06	4,74E-08	1,85E-05	-3,64E-05
Non-renewable primary energy w/t RM	MJ, net CV	4,23E-02	2,63E-02	6,28E-04	1,47E-02	5,64E-04	7,95E-06	8,64E-05	-1,02E-03
Non-renewable primary energy as RM	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total non-renewable primary energy	MJ, net CV	4,23E-02	2,63E-02	6,28E-04	1,47E-02	5,64E-04	7,95E-06	8,63E-05	-1,02E-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	0,00E+00
Renewable secondary fuels	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of freshwater	m ³	-7,92E-05	-4,18E-05	-1,68E-07	-3,28E-05	-1,77E-07	-3,09E-10	-3,43E-07	6,44E-07
Hazardous wastes	kg	3,46E-04	2,70E-04	6,15E-07	6,92E-05	5,45E-07	1,07E-08	5,64E-06	-1,23E-05
Non-hazardous wastes	kg	6,65E-03	5,44E-03	4,67E-05	1,10E-03	5,38E-05	2,34E-07	1,27E-05	-7,77E-05
Radioactives wastes	kg	2,26E-07	1,43E-07	1,62E-10	8,22E-08	1,72E-10	8,66E-13	2,06E-10	-7,97E-10
Components for reuse	kg	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	5,57E-05	0,00E+00	0,00E+00	5,57E-05	0,00E+00	0,00E+00	0,00E+00	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	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	0,00E+00
Total primary energy use	MJ, net CV	4,63E-02	2,90E-02	6,36E-04	1,60E-02	5,72E-04	7,99E-06	1,05E-04	-1,05E-03
PCR ed3 categories indicators									
PCR ed3-Global Warming	kg CO ₂ eq	2,97E-03	1,86E-03	4,31E-05	1,03E-03	3,66E-05	9,89E-07	7,21E-06	-9,72E-05
PCR ed3-Acidification soil & water	kg SO ₂ eq	2,28E-05	1,78E-05	3,52E-07	4,61E-06	7,32E-08	2,24E-09	4,50E-08	-2,89E-07
PCR ed3-Eutrophication	kg PO ₄ --- eq	6,31E-06	4,83E-06	4,80E-08	1,41E-06	1,84E-08	1,39E-09	1,77E-08	-1,85E-07
PCR ed3-Photochemical ozone creation	kg C ₂ H ₄ eq	2,51E-06	1,65E-06	5,66E-08	7,77E-07	3,82E-08	1,38E-09	5,35E-09	-1,36E-07
PCR ed3-Ozone Depletion	kg CFC-11 eq	3,19E-11	1,75E-11	7,37E-13	1,26E-11	6,91E-13	9,72E-15	9,80E-14	-2,94E-12
PCR ed3-Resource use, fossils	MJ	4,23E-02	2,63E-02	6,28E-04	1,47E-02	5,64E-04	7,95E-06	8,64E-05	-1,02E-03
PCR ed3-Resource use, min. and met.	kg Sb eq	1,92E-07	1,73E-07	1,00E-10	1,86E-08	1,04E-10	3,89E-13	3,66E-10	-8,99E-11
Optional categories indicators									
Optionnal-Particulate matter	disease inc.	3,06E-10	2,01E-10	3,48E-12	9,81E-11	3,68E-12	8,07E-14	5,31E-13	-6,96E-12
Optionnal-Ionising radiation	kBq U-235 eq	8,03E-04	5,08E-04	6,76E-07	2,93E-04	7,12E-07	3,90E-09	8,12E-07	-3,16E-06
Optionnal-Ecotoxicity, freshwater	CTUe	1,83E-02	1,32E-02	3,29E-04	4,42E-03	2,95E-04	3,78E-06	4,99E-05	-2,12E-04
Optionnal-Human toxicity, cancer	CTUh	8,26E-12	5,95E-12	1,93E-14	2,24E-12	1,65E-14	1,37E-16	4,18E-14	-6,30E-13
Optionnal-Human toxicity, non-cancer	CTUh	2,00E-10	1,78E-10	3,85E-13	2,03E-11	4,03E-13	2,78E-15	3,76E-13	-5,40E-13
Optionnal-Land use	Pt	1,31E-02	7,82E-03	4,97E-04	4,17E-03	5,73E-04	9,42E-07	4,49E-05	-2,28E-04
Product biogenic carbon content	0,00E+00	kg of C							
Packaging biogenic carbon content	2,74E-06	kg of C							

DISTRIBUTION OF ENVIRONMENTAL IMPACTS



The raw materials extraction phase has the greatest impact on the indicators considered.

BREAKDOWN OF ENVIRONMENTAL IMPACTS OUTSIDE A1 (extraction of raw materials)



If we look in detail at the extraction phase for A1 raw materials, we can see that it is the magnetic steel and copper extraction stages that have the greatest impact on the environment.

ENVIRONMENTAL IMPACT OF EQUIPMENT (additional information)

In the context of "LCA" at product level, the environmental impacts to be considered are those of the equipment expressed at product level over its reference lifetime.

Impact category	Unit	Total	A1	A2	A3	A4	A5	B2	Module D
PCR ed4 categories indicators									
Climate change	kg CO ₂ eq	5,34E+04	3,33E+04	7,70E+02	1,86E+04	6,55E+02	1,83E+01	1,35E+02	-1,74E+03
Climate change - Biogenic	kg CO ₂ eq	2,32E+02	3,52E+01	2,07E-01	1,91E+02	1,99E-01	6,27E-01	6,49E+00	-6,70E-01
Climate change - Fossil	kg CO ₂ eq	5,31E+04	3,32E+04	7,70E+02	1,84E+04	6,54E+02	1,77E+01	1,29E+02	-1,74E+03
Climate change - Land use and LU change	kg CO ₂ eq	3,00E+01	2,07E+01	4,36E-01	8,40E+00	3,19E-01	1,07E-03	1,31E-01	-5,57E-01
Ozone depletion	kg CFC-11 eq	5,40E-04	2,97E-04	1,59E-05	2,05E-04	1,49E-05	2,13E-07	1,74E-06	-3,81E-05
Acidification	mol H+ eq	4,69E+02	3,63E+02	7,76E+00	9,66E+01	1,62E+00	5,63E-02	9,37E-01	-6,36E+00
Eutrophication, freshwater	kg P eq	2,87E+01	2,29E+01	4,81E-02	5,69E+00	4,83E-02	2,39E-04	7,04E-02	-8,72E-01
Eutrophication, marine	kg P eq	5,62E+01	3,74E+01	1,97E+00	1,63E+01	4,41E-01	2,96E-02	1,52E-01	-1,54E+00
Eutrophication, terrestrial	mol N eq	6,05E+02	4,15E+02	2,15E+01	1,63E+02	4,53E+00	2,89E-01	1,42E+00	-1,64E+01
Photochemical ozone formation	kg NMVOC eq	2,10E+02	1,38E+02	7,01E+00	6,19E+01	2,64E+00	1,25E-01	4,88E-01	-8,72E+00
Resource use, fossils	MJ	3,39E+00	3,05E+00	1,76E-03	3,27E-01	1,83E-03	6,86E-06	6,44E-03	-1,58E-03
Resource use, minerals and metals	kg Sb eq	7,45E+05	4,63E+05	1,11E+04	2,59E+05	9,93E+03	1,40E+02	1,52E+03	-1,79E+04
Water use	m ³ depriv.	9,29E+03	7,52E+03	4,62E+01	1,65E+03	4,74E+01	1,74E-01	2,52E+01	-3,61E+02
Renewable primary energy w/t RM	MJ, net CV	7,08E+04	4,75E+04	1,42E+02	2,30E+04	1,45E+02	8,35E-01	3,26E+02	-6,41E+02
Renewable primary energy as RM	MJ, net CV	1,01E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total renewable primary energy	MJ, net CV	7,09E+04	4,75E+04	1,42E+02	2,30E+04	1,45E+02	8,35E-01	3,26E+02	-6,41E+02
Non-renewable primary energy w/t RM	MJ, net CV	7,45E+05	4,63E+05	1,11E+04	2,59E+05	9,93E+03	1,40E+02	1,52E+03	-1,79E+04
Non-renewable primary energy as RM	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total non-renewable primary energy	MJ, net CV	7,45E+05	4,63E+05	1,11E+04	2,59E+05	9,93E+03	1,40E+02	1,52E+03	-1,79E+04
Secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ, net CV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of freshwater	m ³	-1,39E+03	-7,36E+02	-2,95E+00	-5,77E+02	-3,11E+00	-5,44E-03	-6,04E+00	1,13E+01
Hazardous wastes	kg	6,09E+03	4,75E+03	1,08E+01	1,22E+03	9,60E+00	1,88E-01	9,93E+01	-2,16E+02
Non-hazardous wastes	kg	1,17E+05	9,57E+04	8,22E+02	1,94E+04	9,47E+02	4,12E+00	2,23E+02	-1,37E+03
Radioactives wastes	kg	3,98E+00	2,52E+00	2,86E-03	1,45E+00	3,03E-03	1,52E-05	3,63E-03	-1,40E-02
Components for reuse	kg	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	9,81E+02	0,00E+00	0,00E+00	9,81E+02	0,00E+00	0,00E+00	0,00E+00	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	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	0,00E+00
Total primary energy use	MJ, net CV	8,15E+05	5,10E+05	1,12E+04	2,82E+05	1,01E+04	1,41E+02	1,85E+03	-1,85E+04
PCR ed3 categories indicators									
PCR ed3-Global Warming	kg CO ₂ eq	5,23E+04	3,27E+04	7,59E+02	1,81E+04	6,45E+02	1,74E+01	1,27E+02	-1,71E+03
PCR ed3-Acidification soil & water	kg SO ₂ eq	4,01E+02	3,13E+02	6,19E+00	8,11E+01	1,29E+00	3,94E-02	7,92E-01	-5,08E+00
PCR ed3-Eutrophication	kg PO ₄ --- eq	1,11E+02	8,51E+01	8,45E-01	2,48E+01	3,24E-01	2,44E-02	3,12E-01	-3,25E+00
PCR ed3-Photochemical ozone creation	kg C ₂ H ₄ eq	4,42E+01	2,91E+01	9,96E-01	1,37E+01	6,72E-01	2,43E-02	9,42E-02	-2,40E+00
PCR ed3-Ozone Depletion	kg CFC-11 eq	5,61E-04	3,07E-04	1,30E-05	2,22E-04	1,22E-05	1,71E-07	1,72E-06	-5,17E-05
PCR ed3-Resource use, fossils	MJ	7,45E+05	4,63E+05	1,11E+04	2,59E+05	9,93E+03	1,40E+02	1,52E+03	-1,79E+04
PCR ed3-Resource use, min. and met.	kg Sb eq	3,39E+00	3,05E+00	1,76E-03	3,27E-01	1,83E-03	6,86E-06	6,44E-03	-1,58E-03
Optional categories indicators									
Optionnal-Particulate matter	disease inc.	5,38E-03	3,53E-03	6,13E-05	1,73E-03	6,48E-05	1,42E-06	9,34E-06	-1,23E-04
Optionnal-Ionising radiation	kBq U-235 eq	1,41E+04	8,94E+03	1,19E+01	5,16E+03	1,25E+01	6,86E-02	1,43E+01	-5,55E+01
Optionnal-Ecotoxicity, freshwater	CTUe	3,22E+05	2,32E+05	5,79E+03	7,78E+04	5,20E+03	6,64E+01	8,78E+02	-3,73E+03
Optionnal-Human toxicity, cancer	CTUh	1,45E-04	1,05E-04	3,40E-07	3,94E-05	2,91E-07	2,41E-09	7,36E-07	-1,11E-05
Optionnal-Human toxicity, non-cancer	CTUh	3,52E-03	3,14E-03	6,78E-06	3,58E-04	7,10E-06	4,89E-08	6,62E-06	-9,50E-06
Optionnal-Land use	Pt	2,30E+05	1,38E+05	8,75E+03	7,34E+04	1,01E+04	1,66E+01	7,90E+02	-4,02E+03

APPENDIX: extrapolation coefficients

The extrapolation coefficients can be applied to a homogeneous product family in accordance with the requirements of PCR-ed4-FR-2021_09_06.

The environmental impact of a product in the 50.2 range can be obtained using the following formula:

$$\text{Considered_product_impact} = \text{Reference_product_impact} \times \text{extrapolation_coefficient.}$$

For the manufacturing, distribution, installation and maintenance stages, the extrapolation coefficients are applied according to the following rule:

Coefficient on the scale of the declared product (additional information)	$\left(\frac{\text{total mass of the product considered with packaging (kg)}}{\text{total mass of the reference product of the range with packaging (kg)}} \right)$
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Product	Extrapolation coefficient
Two-deck dimensions	
50.2 S4	0.72
50.2 M6	0.78
50.2 L7	0.85
50.2 L8	0.92
Single-deck dimensions	
50.2 S4	0.71
50.2 M6	0.76
50.2 L7	0.84
50.2 L8	0.91
50.2 VL10	0.99

GLOSSARY

Life cycle approach

Methodology for taking into account all the stages in the life of a product (manufacturing, installation, use and end of life) in order to determine the consequences for the environment.

Environmental aspect

Element of an organization's activities, products or services that may interact with the environment [ISO 14050].

Typical life cycle (TLC)

Theoretical life of the product retained for the functional unit.

Note: Typical life is a theoretical life used for calculation purposes. It can in no way be equated with the minimum, average or real life of products.

Homogeneous environmental family

Group of products corresponding to the same functional unit (identical function of use, product standard, identical technology (type of materials and manufacturing process) whose environmental impacts are identical to the reference product or can be extrapolated by applying a defined calculation rule.

Environmental impact

Any change to the environment, whether negative or beneficial, resulting in whole or in part from the activities, products or services of an organization [ISO 14050].

PCR (Product Category Rules)

A set of specific rules, requirements and guidelines for the development of Type III environmental declarations for one or more product categories [ISO 14025].

Reference product

Product or system of products modelled in the LCA and representative of a homogeneous environmental family.

Functional unit

Quantified performance of a product system intended to be used as a reference unit in a life cycle assessment [ISO 14040].



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