Product Environmental Profile

Quadro.4



Company information

Hager
132 Boulevard d'Europe
F 67215 Obernai Cedex
www.hagergroup.com

A question concerning the Product Environmental Profile: infopep@hager.com

References covered

Quadro.4 enclosure configuration include side panels, back plates, doors, top and plinth units, mounting plates, MCCB and MCB kits, brackets, busbar supports, protection shields, and universal cover strips.

Methodology

PEP has been performed according to the PCR version PEP-PCR-ed4-2021 09 06 and PSR version PSR-0005-ed3.1-2023 12 08 issued by the PEP ecopassport program.
For further information, please see the website of the program www.pep-ecopassport.org

Reference product

Reference product identification

Quadro.4 representative assembly (enclosure dimension 1975x990x260 mm): 2xFC013, 1xFC119, 2xFC123, 1xFC219, 1xFC319, 1xFC339, 1xFC446, 1xFC456, 1xUC162P, 3xUC226, 1xUC233, 2xUC262PR, 1xUC466PR, 3xUC812, 3xUC820, 1xUC827, 2xUC205, 3xJP024.

Use scenario based on :
PSR product Category : PSR-0005-ed3.1-2023 12 08
3.12 Unequipped enclosures and cabinets

Functional unit

Protect people from direct contact with live parts and ensure grouping of control, command and protection devices in a cabinet, having the following dimensions 1975x990x260, with rated current 630A, while protecting against mechanical impacts (IK08) and the penetration of solid objects and liquids (IP40/43), according to the appropriate use scenario, and for the reference service life of the product of 20 years.

The functional unit is based on the use scenario recommended by the PCR for the category of the reference product.

Materials and substances

All useful measures have been adopted to ensure that the materials used in the composition of the product do not contain any substances banned by the legislation in force at the time of marketing.

Plastics			Metals			Others		
	g	%		g	%		g	%
PVC	3296.70	2.3%	Steel	93301.60	66.2%	Cardboard	17479.41	12.4%
PA66	1696.61	1.2%	Zamak	8199.74	5.8%	Wood	3353.18	2.4%
Epoxy resin	1075.00	0.8%	Steel	5240.28	3.7%	Calcium Carbonate	1094.06	0.8%
PC	1038.78	0.7%	Stainless steel	1303.68	0.9%	Glass	849.69	0.6%
PE-LD	732.05	0.5%	Zinc	58.65	<0.1%	Paper	527.03	0.4%
Other	1489.07	1.1%	Other	92.02	<0.1%	Other	45.83	<0.1%
Total mass of reference product with raw material packaging :			**140873.39 g**					

Total mass of reference product (Product + packaging)	**134127.046 g**

System Boundaries

The environmental information included in the PEP covers all the stages of the life cycle, from "cradle to grave".

Manufacturing			Distribution	Installation	Use							End of life				Module D
Raw material extraction and processing	Transport to the manufacturer	Manufacturing	Distribution to the place of operation	Installation on the place of operation	Use or application of the product installed	Maintenance	Repair	Replacement	Restoration	Energy requirements during the use stage	Water requirements during the use stage	Deinstallation	Transport to the waste treatment site	Treatment of waste in view of its reuse, recovery and/or recycling	Disposal	Benefits and loads beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Life cycle stages																

Manufacturing

These products are manufactured by a site that has received an environmental certification ISO 14001.

This phase takes into account raw materials, manufacturing processes, production offcuts and their end-of-life treatment, upstream transport of materials and sub-assemblies to the manufacturing site, and transport from the manufacturing site to the final logistics platform.

Distribution

The packaging has been designed in accordance with current regulations. In particular, the European directive 94/62/CE relative to packaging and packaging waste.

The used packaging is 100% recyclable or recoverable.
Packaging and logistic flows are continuously improved in order to reduce their impact.

This phase taken into account the transport of the finished product, including packaging, to its place of use.

Installation

Installation processes

The processes to install the product are not considered in this study because of their weak impact compared to the other life cycles steps.

This phase only take into account the impact of the the packaging waste treatment is taken into account.

Installation elements (non delivered with the product)

Elements non delivered with the product and needed to install the product are not considered.

Use

Power loss / load dependent			
Active mode		Inactive mode	
Watt	% of time	Watt	% of time
0	0%	0	0%

Power consumption / not load dependent					
Active Sleep phase		Passive Sleep phase		Turn off phase	
Watt	% of time	Watt	% of time	Watt	% of time
0	0%	0	0%	0	0%

For the considered scenario, the product has no energy consumption.

Energy model of the use phase :
Europe

Consumables and maintenance :
None

End of life

Considering the complexity of the recycling channels for electric and electronic equipment impacts, we rely mainly on ESR modules (datasets for WEEE product end of life).

The recycling potential of the product is: 80%. The calculation of this rate is based on the method of the IEC/TR 62635.

Environmental impacts

Evaluation of the environmental impact covers the following life cycle stages: raw materials + manufacturing (RMM), distribution (D), installation (I), use (U) and end of life (EoL).

All calculations are done with EIME software version 6.2.3 with the database version CODDE® 2024-04 .

Indicators set : Indicators for PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0

PEP representative of the covered products marketed in: Europe

Energy models considered for each phase

Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4
Europe	-	Europe	Europe	Europe

Environmental impact indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Acidification (PEF-AP)	mole H+ eq	2.11E+00	1.47E-01	4.70E-02	0.00E+00	5.50E-01	2.85E+00	1.70E-01
Climate change - Total (PEF-GWP)	kg CO2 eq.	6.11E+02	2.32E+01	2.08E+01	0.00E+00	1.20E+02	7.74E+02	4.97E+01
Climate change-Biogenic (PEF-GWPb)	kg CO2 eq.	-2.42E+01	0.00E+00	3.89E+00	0.00E+00	9.00E+00	-1.13E+01	3.01E+00
Climate change-Fossil (PEF-GWPf)	kg CO2 eq.	6.35E+02	2.32E+01	1.69E+01	0.00E+00	1.11E+02	7.86E+02	4.67E+01
Climate change-Land use and land use change (PEF-GWPlu)	kg CO2 eq.	1.55E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E-03	0.00E+00
Ecotoxicity, freshwater (PEF-CTUe)	CTUe	4.25E+04	1.52E+01	2.42E+02	0.00E+00	1.50E+03	4.43E+04	1.18E+03
EF-particulate Matter (PEF-PM)	Incidence of diseases	1.50E-05	1.20E-06	2.83E-07	0.00E+00	6.13E-06	2.26E-05	1.86E-06
Eutrophication, freshwater (PEF-Epf)	kg P eq.	1.83E-03	8.71E-06	2.31E-04	0.00E+00	3.26E-03	5.33E-03	-1.59E-03
Eutrophication marine (PEF-Epm)	kg N eq.	3.89E-01	6.89E-02	2.23E-02	0.00E+00	1.02E-01	5.83E-01	4.59E-02
Eutrophication, terrestrial (PEF-Ept)	mole of N eq.	4.11E+00	7.56E-01	1.39E-01	0.00E+00	1.11E+00	6.12E+00	4.89E-01
Human toxicity, cancer (PEF-CTUh-c)	CTUh	7.55E-06	4.08E-10	1.85E-06	0.00E+00	3.18E-07	9.71E-06	-3.45E-07
Human toxicity, non-cancer (PEF-CTUh-nc)	CTUh	8.21E-06	7.89E-09	5.45E-08	0.00E+00	3.37E-06	1.16E-05	1.67E-06
Ionising radiation, human health (PEF-IR)	kg Bq U235 eq.	5.31E+02	5.65E-02	2.52E+00	0.00E+00	8.10E+00	5.42E+02	6.15E+00
Land use (PEF-LU)	No dimension	1.06E+01	0.00E+00	1.89E-01	0.00E+00	2.88E+02	2.99E+02	-2.31E+02
Ozone depletion (PEF-ODP)	kg CFC-11 eq.	1.13E-05	3.56E-08	2.26E-07	0.00E+00	1.26E-05	2.42E-05	9.09E-06
Photochemical ozone formation - human health (PEF-POCP)	kg of NMVOC eq.	1.42E+00	1.91E-01	3.26E-02	0.00E+00	3.12E-01	1.96E+00	1.17E-01
Resource use, fossils (PEF-ADPf)	MJ	6.01E+04	3.24E+02	1.61E+02	0.00E+00	1.75E+03	6.24E+04	1.06E+03
Resource use, minerals and metals (PEF-ADPe)	kg Sb eq	1.13E-02	9.14E-07	7.96E-07	0.00E+00	4.65E-04	1.18E-02	-7.19E-04
Water use (PEF-WU)	m3 eq.	3.22E+02	8.82E-02	9.18E+00	0.00E+00	4.73E+04	4.76E+04	-2.05E+03

Resource use indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Net use of fresh water	m^3	7.49E+00	2.05E-03	3.53E-01	0.00E+00	1.27E+03	1.28E+03	1.08E+02
Total use of primary energy	MJ	6.08E+04	3.24E+02	1.82E+02	0.00E+00	1.94E+03	6.32E+04	1.07E+03
Total use of non renewable primary energy resources	MJ	6.01E+04	3.24E+02	1.61E+02	0.00E+00	1.75E+03	6.24E+04	1.06E+03
Total use of renewable primary energy resources	MJ	6.26E+02	4.32E-01	2.13E+01	0.00E+00	1.97E+02	8.44E+02	1.26E+01
Use of non-renewable primary energy, excluding non renewable primary energy resources used as raw materials	MJ	5.99E+04	3.24E+02	1.61E+02	0.00E+00	1.75E+03	6.21E+04	1.06E+03
Use of non-renewable primary energy resources as raw materials	MJ	2.75E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E+02	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	kg	2.42E+02	4.32E-01	2.13E+01	0.00E+00	1.97E+02	4.60E+02	1.26E+01
Use of renewable primary energy resources as raw materials	MJ	3.84E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.84E+02	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	1.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02	0.00E+00

Waste category indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
Hazardous waste disposed	kg	1.49E+02	0.00E+00	4.09E-01	0.00E+00	-4.41E-01	1.48E+02	-1.32E-04
Non-hazardous waste disposed	kg	1.35E+02	8.15E-01	6.91E+00	0.00E+00	5.88E+00	1.48E+02	-6.10E-02
Radioactive waste disposed	kg	2.99E-02	5.80E-04	8.27E-04	0.00E+00	1.58E-04	3.14E-02	-5.03E-05

Output flow indicators

Indicators	Unit	Manufacturing A1-A3	Distribution A4	Installation A5	Use B1-B7	End Of Life C1-C4	GLOBAL	Module D
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
Exported energy	MJ	1.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+00	0.00E+00
Materials for energy recovery	kg	1.53E+00	0.00E+00	1.40E+00	0.00E+00	4.53E-03	2.93E+00	0.00E+00
Materials for recycling	kg	2.58E+01	0.00E+00	2.52E-02	0.00E+00	0.00E+00	2.58E+01	0.00E+00

Biogenic carbon content

Packaging	Unit	Cardboard	Paper	Wood	Sum
Biogenic carbon content (ratio)	%	2.80E+01	3.78E+01	3.95E+01	
Mass	kg	1.75E+01	5.27E-01	3.35E+00	2.14E+01
Biogenic carbon content (declared unit)	kg of C	4.89E+00	1.99E-01	1.33E+00	6.42E+00
Biogenic carbon content (functional unit)	kg of C	4.89E+00	1.99E-01	1.33E+00	6.42E+00
Source		ADEME	APESA/RECORD	EN 16485	

Product	Unit	Cardboard	Paper	Wood	Sum
Mass	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content (declared unit)	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content (functional unit)	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Extrapolation rules

The extrapolation rules are based on the volume of different enclosure sizes, with a depth of 260 mm in each case.

Width	Height	Factor
370	500	0.09
370	650	0.12
370	800	0.15
370	950	0.18
370	110	0.02
370	1250	0.24
370	1525	0.29
370	1675	0.32
370	1825	0.35
370	1975	0.37

Width	Height	Factor
620	500	0.16
620	650	0.21
620	800	0.25
620	950	0.30
620	110	0.03
620	1250	0.40
620	1525	0.48
620	1675	0.53
620	1825	0.58
620	1975	0.63

Width	Height	Factor
990	500	0.25
990	650	0.33
990	800	0.41
990	950	0.48
990	110	0.06
990	1250	0.63
990	1525	0.77
990	1675	0.85
990	1825	0.92
990	**1975**	**1.00**

Width	Height	Factor
1980	500	0.51
1980	650	0.66
1980	800	0.81
1980	950	0.96
1980	110	0.11
1980	1250	1.27
1980	1525	1.54
1980	1675	1.70
1980	1825	1.85
1980	1975	2.00

Verification

Registration N°: HAGE-00930-V01.01-EN	Drafting Rules	PEP-PCR-ed4-2021 09 06
	Supplemented by	PSR-0005-ed3.1-2023 12 08
Verifier accreditation N°: VH37	Information and reference documents: www.pep-ecopassport.org	
Date of issue: 10-2024	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)		
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019 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 »		

Nota :

The picture has no contractual value.

All numerical values indicated in this document may vary and depend of many factors such as the tolerance related to materials, the usage and environment conditions of the products, installation characteristics ... , real values for a product in a concrete application may therefore change.

The usage time mentioned in this document is an average duration chosen for the need of the calculations. This value cannot be assimilated to the minimum, average or real life time.

The responsibility of the company, issuing this document, can never be engaged if differences would be noticed between the values given by this document and real ones, whatever the causes and/or consequences would be.