



ENVIRONMENTAL PRODUCT DECLARATION IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD HUB, HUB-4143

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KSM 316 M1

Katko Oy



MANUFACTURER AND SITE

Manufacturer	Katko Oy
Address	Ruusilantie 2, 00390, Helsinki, Finland
Contact details	customerservice@katko.com
Website	www.katko.com
Place of production	Finland; Poland
Place(s) of raw material origin	EU, USA, Asia
Place(s) of installation and use	-
Period for data	Calendar year 2024

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR version 1.2, 24 Mar 2025
Sector	Electrical product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Anssi Lehtimäki, Noel Bothas, Katko Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Abderazak Guiz, , as an authorised verifier acting for EPD Hub Limited

PRODUCT SPECIFICATION

Product name	KSM enclosed side operated switch
Product reference / number	KSM 316 M1
Product description	KSM side operated polycarbonate switches 16A & 25A. 2-4 poles and 3P with auxiliary contact (S).
GTIN (Global Trade Item Number)	6419410372043
A1-A3 Specific data (%)	25,4

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass, kg	0,296
Mass of packaging, kg	0,0185
Functional unit	-
GWP-total, A1-A3 (kg CO ₂ e)	2,08E+00
GWP-fossil, A1-A3 (kg CO ₂ e)	2,11E+00
Secondary material, inputs (%)	9,55
Secondary material, outputs (%)	20,7
Total energy use, A1-A3 (kWh)	9,41
Net freshwater use, A1-A3 (m ³)	3,99E-02

This EPD is intended for business-to-business and/or business-to-consumer communication. Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

LIFE CYCLE ASSESSMENT

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Beyond the system boundaries		D	X	Reuse, Recovery, Recycling
End of life stage	C4	X	Disposal	
	C3	X	Waste processing	
	C2	X	Transport	
	C1	X	Deconstr./demo.	
Use stage	B7	ND	Operational water use	
	B6	ND	Operational energy use	
	B5	ND	Refurbishment	
	B4	ND	Replacement	
	B3	ND	Repair	
	B2	ND	Maintenance	
	B1	ND	Use	
Assembly stage	A5	X	Assembly	
	A4	X	Transport	
	A3	X	Manufacturing	
	A2	X	Transport	
Product stage	A1	X	Raw materials	

Not declared = ND.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. There is no neglected unit process more than 1% of total mass or energy flows. The module-specific total neglected input and output flows also do not exceed 5% of energy usage or mass. Applied allocation method for post-consumer waste is cut-off.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass
Manufacturing energy and waste	Allocated by mass

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Representative product
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-16 / +29 %

The EPD includes multiple versions of the same product which are manufactured the same way. The products serve the same purpose. The difference comes from the number of poles and maximum amperes.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	31	EU, Asia
Minerals	0	-
Fossil materials	69	EU, USA
Bio-based materials	0	-
Electronic parts	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kgC	0
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Biogenic carbon content in packaging, kgC 0,0045

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

LCA SOFTWARE AND BIBLIOGRAPHY

The LCA and EPD have been prepared according to the reference standards, EN 50693, and ISO 14040/14044. Ecoinvent v3.10.1/3.11 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, cut-off, EN 15804+A2'.

PRODUCT LIFE CYCLE

MANUFACTURING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production. The material losses occurring during the manufacturing processes are treated as per the waste handling practices in the factory, while scenario assumptions are made in the absence of exact data. The study also considers the fuels used by machines as well as losses during electricity transmission.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

The product is made of metals, plastics, and electronic components. All components are transported to the production facility, where the main manufacturing processes are associated with assembly of different parts and components. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation distances from manufacturing sites to customer locations are based on sales volume-based weighted averages. In the absence of exact data, conservative assumptions are made (A4). Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

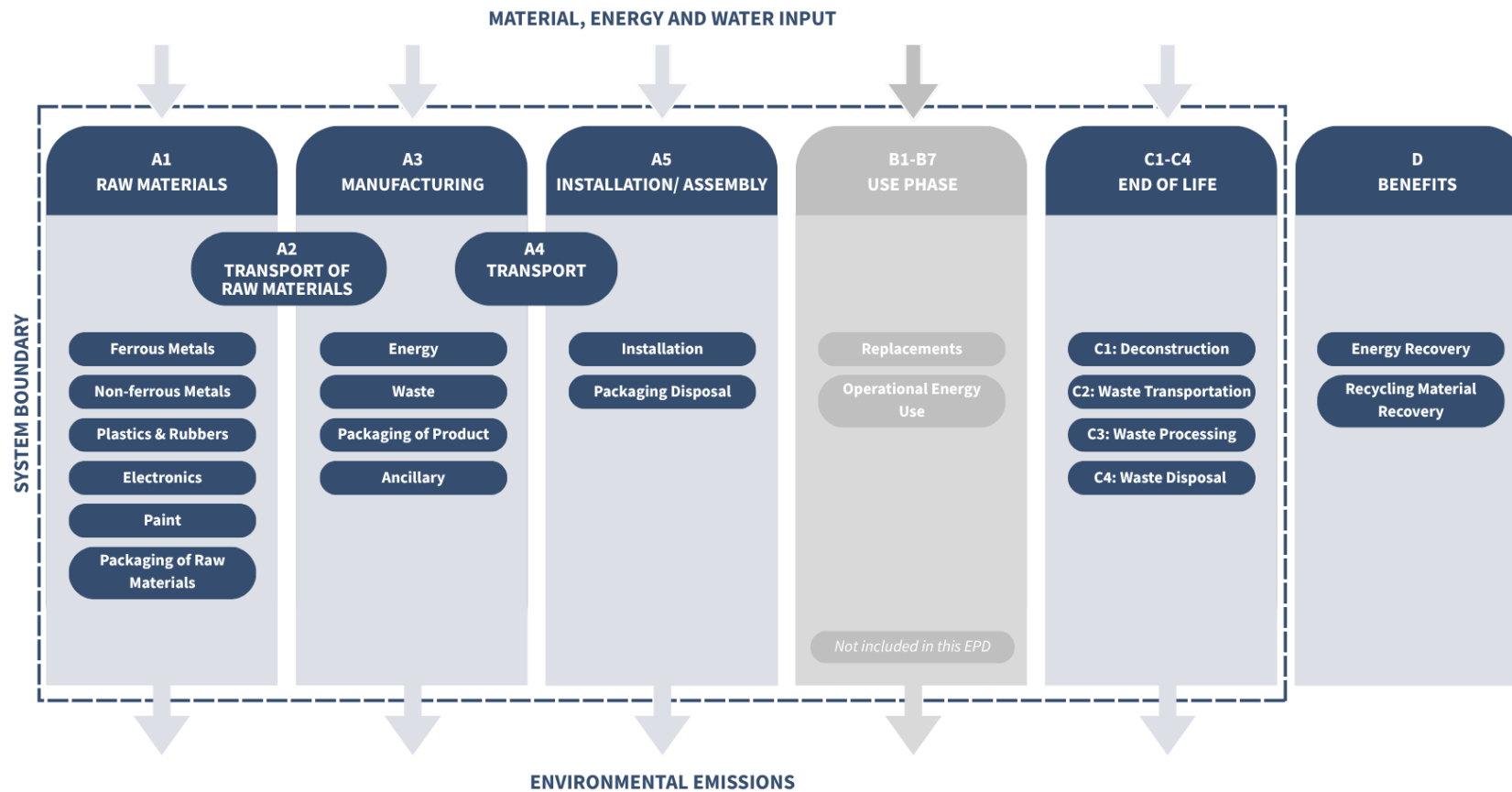
PRODUCT USE AND MAINTENANCE (B1-B7)

Module not declared due to relevance. The product is designed for long-term use without maintenance or refurbishment under normal operating conditions.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. The transport distance is 150 km while the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

LIFE CYCLE FLOW DIAGRAM



ENVIRONMENTAL IMPACT DATA, RESULTS PER DECLARED UNIT

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	1,86E+00	8,84E-02	1,35E-01	2,08E+00	6,67E-02	2,65E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	8,61E-03	2,54E-01	1,31E-01	-4,65E-01
GWP – fossil	kg CO ₂ e	1,86E+00	8,83E-02	1,60E-01	2,11E+00	6,66E-02	1,02E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	8,60E-03	2,54E-01	1,31E-01	-4,67E-01
GWP – biogenic	kg CO ₂ e	2,16E-03	1,75E-05	-2,74E-02	-2,53E-02	1,32E-05	2,55E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,88E-06	-1,99E-05	-1,12E-05	2,96E-03
GWP – LULUC	kg CO ₂ e	1,52E-03	3,13E-05	2,46E-03	4,01E-03	2,36E-05	5,37E-07	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	3,81E-06	3,91E-06	1,96E-06	-8,09E-04
Ozone depletion pot.	kg CFC ₁₁ e	3,01E-08	1,75E-09	2,21E-09	3,40E-08	1,32E-09	1,09E-11	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,20E-10	1,11E-10	6,89E-11	-2,76E-09
Acidification potential	mol H ⁺ e	2,57E-02	2,83E-04	4,24E-04	2,64E-02	2,16E-04	3,94E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	2,87E-05	7,52E-05	3,57E-05	-4,79E-03
EP-freshwater ²⁾	kg Pe	1,52E-03	5,86E-06	3,33E-05	1,56E-03	4,41E-06	1,52E-07	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	6,69E-07	1,69E-06	6,60E-07	-3,17E-04
EP-marine	kg Ne	2,19E-03	9,47E-05	1,43E-04	2,42E-03	7,21E-05	3,62E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	9,29E-06	3,66E-05	1,29E-04	-5,35E-04
EP-terrestrial	mol Ne	4,81E-02	1,03E-03	1,15E-03	5,03E-02	7,84E-04	1,25E-05	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,01E-04	3,23E-04	1,67E-04	-5,93E-03
POCP (“smog”) ³⁾	kg NMVOce	8,67E-03	4,37E-04	3,37E-04	9,45E-03	3,32E-04	5,02E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	3,99E-05	8,31E-05	4,53E-05	-1,75E-03
ADP-minerals & metals ⁴⁾	kg Sbe	2,24E-04	2,88E-07	5,77E-07	2,25E-04	2,17E-07	5,49E-09	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	2,82E-08	1,16E-07	1,26E-08	-4,46E-05
ADP-fossil resources	MJ	2,53E+01	1,24E+00	4,15E+00	3,07E+01	9,35E-01	1,11E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,21E-01	6,87E-02	4,44E-02	-5,63E+00
Water use ⁵⁾	m ³ e depr.	1,45E+00	6,09E-03	1,18E-01	1,57E+00	4,59E-03	2,46E-04	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	5,60E-04	1,69E-02	8,45E-03	-1,13E-01

1) GWP = Global Warming Potential. 2) EP = Eutrophication potential. Required characterisation 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) EN 15804+A2 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.

MNR – Module not relevant

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,77E-07	6,95E-09	3,92E-09	1,87E-07	5,22E-09	6,49E-11	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	6,82E-10	5,45E-10	3,01E-10	-3,21E-08
Ionizing radiation ⁶⁾	kBq U235e	1,17E-01	1,58E-03	2,21E-01	3,40E-01	1,19E-03	4,26E-05	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	9,76E-05	1,59E-04	6,66E-05	-5,20E-02
Ecotoxicity (freshwater)	CTUe	6,43E+01	1,63E-01	5,62E-01	6,50E+01	1,23E-01	7,81E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,91E-02	5,07E-01	4,35E-01	-4,57E+00
Human toxicity, cancer	CTUh	2,94E-09	1,51E-11	3,59E-11	2,99E-09	1,14E-11	5,16E-13	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,46E-12	2,28E-11	1,31E-11	-4,13E-10
Human tox. non-cancer	CTUh	1,59E-07	7,78E-10	1,33E-09	1,61E-07	5,86E-10	2,80E-11	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	7,55E-11	8,39E-10	5,79E-10	-3,52E-08
SQP ⁷⁾	-	7,99E+00	7,41E-01	2,01E+00	1,07E+01	5,55E-01	7,46E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	7,20E-02	5,10E-02	4,78E-02	-2,18E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	2,05E+00	2,14E-02	1,26E+00	3,33E+00	1,61E-02	-3,00E-01	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,65E-03	5,07E-03	1,39E-03	-7,79E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,37E-01	2,37E-01	0,00E+00	-2,37E-01	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,05E+00	2,14E-02	1,50E+00	3,57E+00	1,61E-02	-5,37E-01	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,65E-03	5,07E-03	1,39E-03	-7,79E-01
Non-re. PER as energy	MJ	2,62E+01	1,24E+00	3,07E+00	3,06E+01	9,35E-01	1,11E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,21E-01	-3,78E+00	-3,80E+00	-5,63E+00
Non-re. PER as material	MJ	8,92E-01	0,00E+00	-8,91E-01	7,75E-04	0,00E+00	-7,75E-04	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	2,71E+01	1,24E+00	2,18E+00	3,06E+01	9,35E-01	1,03E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,21E-01	-3,78E+00	-3,80E+00	-5,63E+00
Secondary materials	kg	2,83E-02	0,00E+00	0,00E+00	2,83E-02	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	1,06E-04	7,16E-06	1,72E-03	1,83E-03	5,39E-06	9,03E-08	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	6,90E-07	2,50E-06	9,20E-07	-6,66E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	3,61E-02	1,67E-04	3,59E-03	3,99E-02	1,26E-04	-1,64E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,60E-05	2,93E-04	-4,76E-05	-4,59E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,08E-01	1,78E-03	1,18E-02	2,22E-01	1,34E-03	8,44E-05	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	2,10E-04	4,49E-03	7,86E-03	-5,98E-02
Non-hazardous waste	kg	6,85E+00	3,75E-02	2,20E-01	7,11E+00	2,83E-02	1,19E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	3,94E-03	1,22E-01	3,41E-01	-1,27E+00
Radioactive waste	kg	3,02E-05	3,91E-07	4,75E-05	7,81E-05	2,96E-07	1,08E-08	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	2,39E-08	3,99E-08	1,68E-08	-1,28E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,89E-02	1,89E-02	0,00E+00	1,52E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	6,13E-02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	1,69E-01	1,69E-01	0,00E+00	8,53E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	1,21E+00	0,00E+00	0,00E+00
Exported energy: Electricity	MJ	0,00E+00	0,00E+00	7,12E-02	7,12E-02	0,00E+00	3,59E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	5,08E-01	0,00E+00	0,00E+00
Exported energy: Heat	MJ	0,00E+00	0,00E+00	9,79E-02	9,79E-02	0,00E+00	4,49E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	0,00E+00	6,99E-01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1,85E+00	8,78E-02	1,63E-01	2,10E+00	6,62E-02	3,38E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	8,55E-03	2,54E-01	1,31E-01	-4,65E-01
Ozone depletion Pot.	kg CFC ₁₁ e	9,69E-08	1,39E-09	1,90E-09	1,00E-07	1,05E-09	8,85E-12	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	9,61E-11	9,76E-11	5,93E-11	-2,35E-09
Acidification	kg SO ₂ e	2,12E-02	2,15E-04	3,30E-04	2,17E-02	1,64E-04	3,04E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	2,20E-05	5,51E-05	2,56E-05	-4,12E-03
Eutrophication	kg PO ₄ ³ e	5,73E-03	5,39E-05	8,38E-05	5,86E-03	4,08E-05	2,76E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	5,34E-06	1,66E-05	1,35E-05	-3,01E-04
POCP ("smog")	kg C ₂ H ₄ e	1,18E-03	2,02E-05	2,46E-05	1,23E-03	1,54E-05	8,00E-07	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,97E-06	3,54E-06	2,48E-06	-2,12E-04
ADP-elements	kg Sbe	2,23E-04	2,81E-07	5,79E-07	2,24E-04	2,12E-07	5,36E-09	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	2,76E-08	1,10E-07	9,24E-09	-4,45E-05
ADP-fossil	MJ	2,32E+01	1,21E+00	1,02E+00	2,55E+01	9,16E-01	1,04E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	1,19E-01	6,62E-02	4,34E-02	-4,80E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	1,86E+00	8,84E-02	1,63E-01	2,11E+00	6,67E-02	1,02E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0,00E+00	8,60E-03	2,54E-01	1,31E-01	-4,68E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows - CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide - were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO₂ is set to zero.

REFERENCE TABLE

Product name	Description	GWP-total per life cycle (kg CO2e)			
		Manufacturing	Distribution	Installation	End of Life
		A1-A3 Cradle-to-gate	A4	A5	C1-C4
KSM 216 M1 / KSM 225 M1	Side operated switch 2-pole 16/25 A	1,75E+00	5,61E-02	2,65E-02	3,55E-01
KSM 316 M1 / KSM 325 M1	Side operated switch 3-pole 16/25 A	2,08E+00	6,67E-02	2,65E-02	3,94E-01
KSM 416 M1 / KSM 425 M1	Side operated switch 4-pole 16/25 A	2,21E+00	7,09E-02	2,65E-02	4,25E-01
KSM 316S M1 / KSM 325S M1	Side operated switch 3-pole with auxiliary contact 16/25 A	2,28E+00	7,37E-02	2,65E-02	4,26E-01
KSM 216 M1 2XM20P / KSM 225 M1 2XM20P	Side operated switch 2-pole 16/25 A with 2pcs of M20 cable glands	2,02E+00	6,18E-02	2,65E-02	4,03E-01
KSM 316 M1 2XM20P / KSM 325 M1 2XM20P	Side operated switch 3-pole 16/25 A with 2pcs of M20 cable glands	2,36E+00	7,24E-02	2,65E-02	4,42E-01
KSM 416 M1 2XM20P / KSM 425 M1 2XM20P	Side operated switch 4-pole 16/25 A with 2pcs of M20 cable glands	2,48E+00	7,64E-02	2,65E-02	4,74E-01
KSM 316NO M1 2XM20P / KSM 325NO M1 2XM20P	Side operated switch 3-pole with auxiliary contact 16/25 A with 2pcs of M20 cable glands	2,55E+00	7,92E-02	2,65E-02	4,75E-01
KSM 316NO M1 3XM20P / KSM 325NO M1 3XM20P	Side operated switch 3-pole with auxiliary contact 16/25 A with 3pcs of M20 cable glands	2,69E+00	8,19E-02	2,65E-02	4,99E-01
Applicable to all colours and markings including YR, BB, AE, AEBC, FI					

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation – A3 (Energy data source)

1. Energy supply, electricity transformation and distribution, distribution of medium, Market for electricity, medium voltage, Finland, ecoinvent 3.10.1, 0.15 kgCO₂e/kWh

Transport scenario documentation - A4

1. Market for transport, freight, sea, container ship, 89,86 km
2. Market for transport, freight, lorry 16-32 metric ton, EURO5, 1090,89 km

Installation scenario documentation - A5 (Energy data source)

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Installation scenario documentation - A5 (Waste materials data source)

1. Corrugated board box production, 0.0122, kg
2. Corrugated board box production, 0.0063, kg

Use stages scenario documentation - B4 (Installation data source)

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Use stages scenario documentation - B6-B7 (Energy data source)

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TRANSPORT SCENARIO DOCUMENTATION - A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50 %
Bulk density of transported products / kg/m ³	0,00E+00
Volume capacity utilization factor (factor: =1 or <1 or ≥1 for compressed or nested packaged products)	1

INSTALLATION SCENARIO DOCUMENTATION - A5

Scenario parameter	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m ³	0
Other resource use / kg	0
Direct emissions to ambient air, soil and water / kg	0

USE STAGES SCENARIO DOCUMENTATION - B4 REPLACEMENT

Scenario information	Value
Replacement cycle / Number per RSL or year	-

USE STAGES SCENARIO DOCUMENTATION - B6-B7 USE OF ENERGY AND WATER

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	Not applicable
Net fresh water consumption / m ³	0
Power output of equipment / kW	-
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc. / Units as appropriate	-
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants / Units as appropriate	-

END OF LIFE SCENARIO DOCUMENTATION

Scenario information	Value
Collection process – kg collected separately	0,296
Collection process – kg collected with mixed construction waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	6,13E-02
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	1,26E-01
Scenario assumptions e.g. transportation	Lorry, 16-32 metric ton, EURO5; 150 km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.



Program assistant: Xinyuan Zhang



The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

[Verified tools](#)

Tool verifier: Hai Ha Nguyen

Tool verification validity: 28 March 2025 - 27 March 2028