

SAGA - SURFACE SWITCHES AND PUSH BUTTONS FOR SURFACE PRODUCTS

PEP ecopassport®
Product Environmental Profile



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

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ABB Purpose & Embedding Sustainability

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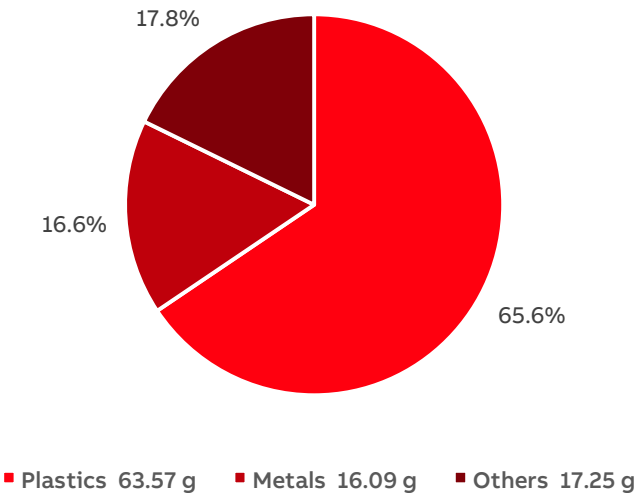
General Information

Reference product	2TKA00005104 SAGA-Surface Switches and Push Button 1-gang, 2-way, for surface products The content of this PEP cannot be compare with content from another program.
Description of the product	The family "SAGA - Surface Switches and Push Buttons for Surface Products" is composed of switches, whose main function is to establish and cut off the supply of an electrical circuit. The products of the family Saga Surface mounting switches have screwless terminals avail-able in 1-gang, 2-gang or 3-gang versions. The terminals are for max 2 solid or rigid wires
Functional unit	Establish, support and interrupt the rated current 16A and rated voltage 250V in all application areas for the reference service life of 20 years of the product, with a protection class IP21.
Other products covered	The other products covered by the PEP are listed on page 9.

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Constituent Materials



Total weight of Reference product	96.9	g
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Plastics as % of weight		Metals as % of weight		Others as % of weight	
Name and CAS number	Weight%	Name and CAS number	Weight%	Name and CAS number	Weight%
Bio-circular Polycarbonate	32.5	Stainless Steel	7.9	Cardboards	13.7
Polycarbonate	18.4	Bronze	3.3	Plastic bag	4.1
Polycarbonate with Glass Fiber	4.8	Silver-Zinc Alloy	0.2	–	–
Polyamide 6 with Glass Fiber	9.7	Brass	5.2	–	–
Polyamide 66 with Glass Fiber	0.2	–	–	–	–

The analysed product is in conformity with the provisions of Low Voltage Directive 2014/35/EU, RoHS directive 2011/65/EU, covering 2015/863(EU), REACH regulation No 1907/2006, and national legislation. Plastics used for the reference product are halogen-free materials (IEC/61249-2-21) and they are also recyclable.

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Additional Environmental Information

Manufacturing	Includes the environmental impacts associated with extraction and processing of the raw materials used to produce the product and its packaging, transport to the manufacturing site and assembly; as well as the generated wastes during the manufacturing process.
Distribution	Includes the transportation of the packaged product from the manufacturer's last logistic platform to the distributor and then to end users.
Installation	Includes the manual installation of the products and the end-of-life of packaging.
Use	Energy consumption is calculated by following the use scenario of the corresponding PSR: the loss of energy at a 10% of the load rate with a use time rate of 30% during 20 years
End of life	Includes the transportation of the product to the final end-of-life treatment site and treatment processes. A value of 100 km transport by lorry is used for the transportation.
Benefits and loads beyond the system boundaries	Prevented impacts of recycling materials.

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Environmental Impacts

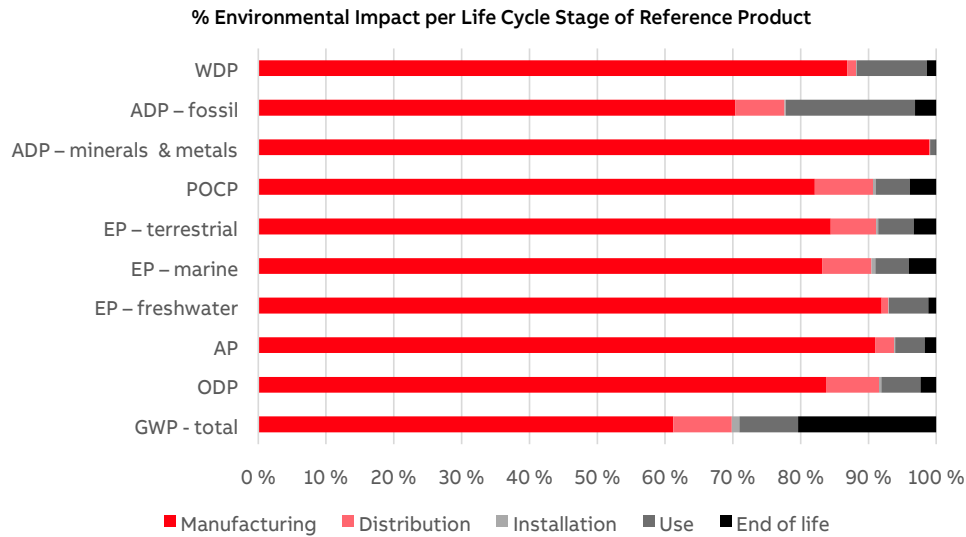
Reference lifetime	20 years
Product category	Switch-Wall-mounted-all application areas
Installation elements	Installation carried out manually. End of life of packaging.
Use scenario	Finland, Sweden and Iceland
Geographical representativeness	Europe
Technological representativeness	Materials and processes data are specific for the production of SAGA-Surface Switches and Push Button 2TKA00005104 product and its family covered in this PEP.
Software and database used	Simapro 9.5.0.1 and Ecoinvent 3.9

Energy model used

Manufacturing	Finnish Energy Mix at low voltage obtained from IEA data
Installation	Manually done.
Use	Customers' electricity mix at low voltage (Finland, Sweden and Iceland).
End of life	Recycling of product and packaging (Europe).

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Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
GWP-total	kg CO₂ eq.	6.66E-01	4.07E-01	5.74E-02	7.47E-03	5.76E-02	1.36E-01	-3.06E-01
GWP-fossil	kg CO₂ eq.	6.43E-01	4.71E-01	5.73E-02	5.38E-03	5.63E-02	5.23E-02	-3.04E-01
GWP-biogenic	kg CO₂ eq.	2.12E-02	-6.44E-02	1.82E-05	2.10E-03	2.66E-04	8.33E-02	-1.18E-03
GWP-luluc	kg CO₂ eq.	1.69E-03	6.04E-04	2.78E-05	1.04E-06	1.03E-03	2.51E-05	-3.08E-04
GWP-fossil = Global Warming Potential fossil fuels GWP-biogenic = Global Warming Potential biogenic GWP-luluc = Global Warming Potential land use and land use change								
ODP	kg CFC-11 eq.	1.60E-08	1.34E-08	5.73E-02	5.38E-03	5.63E-02	5.23E-02	-3.04E-01
ODP = Depletion potential of the stratospheric ozone layer								
AP	H⁺ eq.	6.64E-03	6.04E-03	1.87E-04	8.58E-06	2.90E-04	1.13E-04	-1.38E-03
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	kg P eq.	4.47E-05	4.11E-05	4.59E-07	2.87E-08	2.60E-06	5.25E-07	-9.95E-06
EP-marine	kg N eq.	8.75E-04	7.28E-04	6.37E-05	5.22E-06	4.30E-05	3.55E-05	-2.76E-04
EP-terrestrial	mol N eq.	1.02E-02	8.58E-03	6.80E-04	3.29E-05	5.33E-04	3.37E-04	-2.76E-03
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment EP-terrestrial = Eutrophication potential, Accumulated Exceedance								
POCP	kg NMVOC eq.	3.26E-03	2.67E-03	2.80E-04	1.26E-05	1.64E-04	1.27E-04	-1.21E-03
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	kg Sb eq.	1.41E-04	1.40E-04	1.84E-07	7.64E-09	1.14E-06	1.30E-07	-3.49E-06
ADP-fossil	MJ	1.12E+01	7.91E+00	8.13E-01	2.39E-02	2.14E+00	3.51E-01	-5.77E+00
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	m³ eq. depr.	2.49E-01	2.16E-01	3.31E-03	2.05E-04	2.58E-02	3.46E-03	-1.58E-01
WDP = Water Deprivation potential								

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Common base of mandatory indicators

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
PERE	MJ	6.85E-01	0.00E+00	1.26E-02	8.79E-04	6.54E-01	1.70E-02	-3.20E-01
PERM	MJ	8.71E-01	8.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.56E+00	8.71E-01	1.26E-02	8.79E-04	6.54E-01	1.70E-02	-3.20E-01
PENRE	MJ	8.90E+00	5.59E+00	8.13E-01	2.39E-02	2.12E+00	3.51E-01	-5.77E+00
PENRM	MJ	1.31E+00	1.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.02E+01	6.91E+00	8.13E-01	2.39E-02	2.12E+00	3.51E-01	-5.77E+00
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials								
PERM = Use of renewable primary energy resources used as raw materials								
PERT = Total Use of renewable primary energy resources								
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials								
PENRM = Use of non-renewable primary energy resources used as raw materials								
PENRT = Total Use of non-renewable primary energy resources								

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

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	8.12E-03	5.80E-03	1.16E-04	8.44E-06	2.08E-03	1.14E-04	-4.15E-03
SM = Use of secondary material								
RSF = Use of renewable secondary fuels								
NRSF = Use of non-renewable secondary fuels								
FW = Use of net fresh water								

Inventory flows indicator – Waste category indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
Hazardous waste disposed	kg	5.56E-05	4.71E-05	5.17E-06	1.32E-07	1.79E-06	1.48E-06	-9.87E-06
Non- hazardous waste disposed	kg	1.87E-01	9.01E-02	3.97E-02	3.16E-03	7.82E-03	4.60E-02	-3.46E-02
Radioactive waste disposed	kg	3.96E-05	1.45E-05	2.64E-07	1.86E-08	2.46E-05	2.69E-07	-5.81E-06

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Common base of mandatory indicators

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	7.85E-02	9.17E-04	0.00E+00	1.26E-02	0.00E+00	6.50E-02	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Inventory flow indicator – other indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Installation	Use	End of life	Bene- fits
Biogenic carbon content of the product	kg of C	2.23E-02	2.23E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	kg of C	6.61E-03	6.61E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Extrapolation Factors

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of the Reference product by the following coefficients:

* if the coefficient is "1", the impacts of the phase of the life cycle are assimilated to the Reference product, meaning that the impacts are unchanged in comparison to the Reference product

Product name	Manu- facturing	Distri- bution	Installation	Use	End of life	Benefits
2TKA00005104	1.00	1.00	1.00	1.00	1.00	1.00
2TKA00005359	0.97	0.97	1.00	0.82	0.97	0.97
2TKA00005360	1.64	1.64	1.00	2.05	1.64	1.64
2TKA00005381	1.04	1.04	1.00	2.05	1.04	1.04
2TKA00005382	1.10	1.10	1.00	1.02	1.10	1.10
2TKA00005383	1.10	1.10	1.00	1.07	1.10	1.10
2TKA00005384	1.03	1.03	1.00	0.89	1.03	1.03
2TKA00005385	1.06	1.06	1.00	0.95	1.06	1.06
2TKA00005386	1.02	1.02	1.00	1.00	1.02	1.02
2TKA00005387	1.03	1.03	1.00	0.87	1.03	1.03

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Environmental Impact Indicator Glossary


Impact indicators

Indicator	Description	Distribution
Global warming potential (GWP) - total	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. The total global warming potential (GWP-total) is the sum of three sub-categories of climate change. GWP-total = GWP-fossil + GWP-biogenic + GWP- land use and land use change	kg CO ₂ eq.
Ozone depletion (ODP)	Emissions to air that contribute to the destruction of the stratospheric ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Acidification of soils and water caused by the release of certain gases to the atmosphere, such as nitrogen oxides and sulphur oxides	H+ eq.
Eutrophication (E)	Indicator of the contribution to eutrophication of water by the enrichment of the aquatic ecosystem with nutritional elements, e.g. industrial or domestic effluents, agriculture, etc. This indicator is divided to three: freshwater, marine and terrestrial.	kg P eq., kg N eq., mole N eq.
Photochemical ozone creation (POCP)	Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmosphere (smog) because of the rays of the sun.	kg NMVOC eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.
Depletion of abiotic resources – fossil fuels (ADPf)	The use of non-renewable fossil resources in an unsustainable way (e.g. from material to waste)	MJ (lower heating value)
Water Deprivation potential (WDP)	Deprivation-weighted water consumption. Assesses the potential of water deprivation, to either humans or ecosystems, building on the assumption that the less water remaining available per area, the more likely another user will be deprived.	m ³ eq. depr.

Resource use indicators

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

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		Supplemented by: PSR-0005-ed3-EN-2023 06 06	
Verifier accreditation number: VH08		Information and reference documents: www.pep-ecopassport.org	
Date of issue: February-2024		Validity period: 5 years	
Independent verification of the declaration and data, in compliance with ISO 14025: 2006			
Internal: <input type="radio"/>		External: <input checked="" type="radio"/>	
The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)			
PEP are compliant with XP C08-100-1 :2016 or EN 50693:2019 The elements of the present PEP cannot be compared with elements from any other program.			
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"			

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