SAGA - SWITCHES AND PUSH BUTTONS FOR FLUSH PRODUCTS

PEP ecopassport®

Product Environmental Profile

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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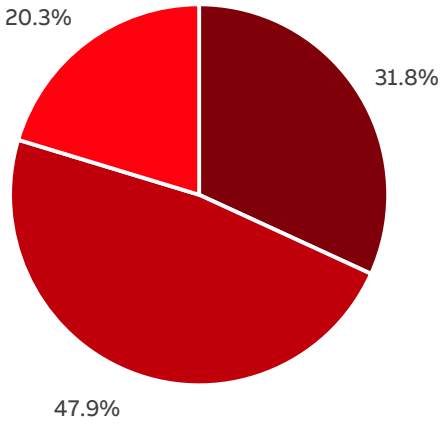
General Information

Reference product	2TKA00005000 The content of this PEP cannot be compared with content based on another program.
Description of the product	The family “Switches and push buttons for Flush product” is composed of switches with screwless terminals and 2 X-terminals. The terminals are for max 2 rigid wires. All the switches of the family include a switch insert and a rocker.
Functional unit	Establish, support and interrupt for 20 years rated currents in normal conditions of circuit characterized by the current 16 A, for the operating voltage 250 V.
Other products covered	The other products covered byt this PEP are listed on page 9

Constituent Materials



Total weight of Reference product	92.5	g

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%
Polycarbonate	23.7	**Steels**	33.5	**Cardboard box (unit)**	12.4
Polyamide 6	8.0	**Stainless steel**	5.4	**Cardboard box (macro)**	5.2
Polyamide 6-6	0.1	**Bronze**	5.4	**Glass fiber**	2.8
–	x	**Brass**	3.5	–	x
–	–	**Silver alloys**	0.1	–	–

The products that make up the homogenous family are 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. Regarding relevant standards from the PSR, the switches meet the technical standard EN 60669-1:2018 Switches for household and similar fixed-electrical installations. Finally, Plastics used for the reference product are halogen-free materials (IEC/61249-2-21) and they are also recyclable.

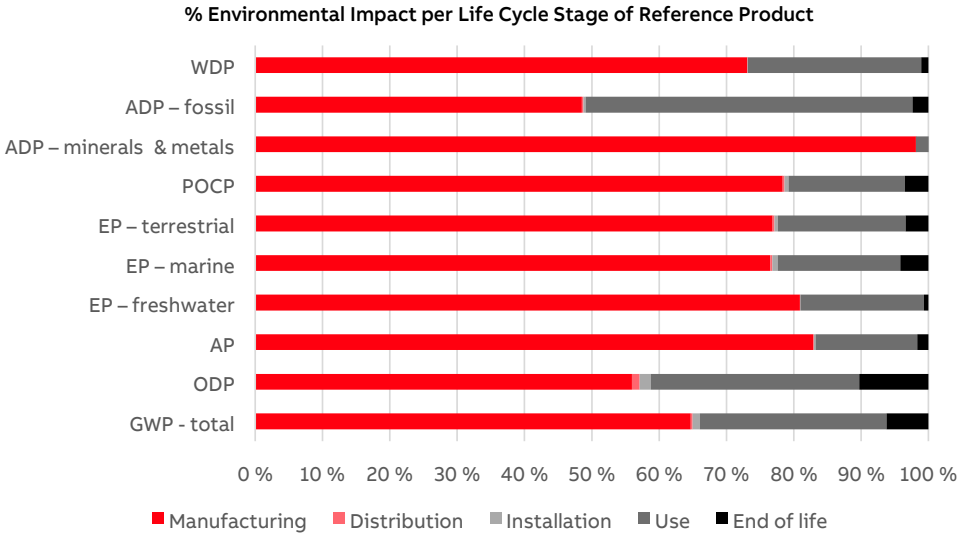
Additional Environmental Information

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.
Distribution	Includes the transportation of the packaged product from the manufacturer's last logistic platform to the distributor.
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: a use time rate of 30% of the reference lifetime and a load rate of 50% of the maximum intensity.
End of life	Includes the transportation of the product to the final end-of-life treatment site and treatment processes. A value of 1000 km transport by lorry is used for the transportation.
Benefits and loads beyond the system boundaries	Prevented impacts of recycling materials.

Environmental Impacts

Reference lifetime	20 years
Product category	Switches
Installation elements	End-of-life of the packaging components
Use scenario	Europe
Geographical representativeness	Global
Technological representativeness	Materials and processes data are specific for the production of one Saga - Switch and push button for a Flush product
Software and database used	Simapro 9.3 and Ecoinvent 3.8
Energy model used	
Manufacturing	Finland energy mix at low voltage obtained from IEA data
Installation	Non-applicable
Use	Europe
End of life	Recycling of product and packaging

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 CO_2 eq.**	9.19E-01	5.95E-01	2.22E-03	9.92E-03	2.55E-01	5.74E-02	-2.97E-01
GWP-fossil	**kg CO_2 eq.**	8.96E-01	5.88E-01	2.22E-03	3.56E-03	2.49E-01	5.32E-02	-2.99E-01
GWP-biogenic	**kg CO_2 eq.**	2.01E-02	6.34E-03	1.99E-06	6.36E-03	3.34E-03	4.09E-03	2.45E-03
GWP-luluc	**kg CO_2 eq.**	2.77E-03	4.54E-04	8.72E-07	1.65E-06	2.30E-03	2.13E-05	-8.14E-05
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.**	4.54E-08	2.54E-08	5.13E-10	7.56E-10	1.41E-08	4.67E-09	-4.45E-09
ODP = Depletion potential of the stratospheric ozone layer								
AP	**H+ eq.**	7.22E-03	5.99E-03	9.14E-06	1.64E-05	1.09E-03	1.20E-04	-1.16E-03
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	**kg P eq.**	5.31E-05	4.30E-05	1.55E-08	3.12E-08	9.74E-06	3.62E-07	-6.59E-06
EP-marine	**kg N eq.**	9.36E-04	7.16E-04	2.72E-06	7.67E-06	1.70E-04	3.93E-05	-2.35E-04
EP-terrestrial	**mol N eq.**	1.09E-02	8.39E-03	3.00E-05	5.67E-05	2.07E-03	3.71E-04	-2.32E-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.**	3.20E-03	2.51E-03	9.16E-06	1.86E-05	5.53E-04	1.13E-04	-8.85E-04
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	**kg Sb eq.**	1.76E-04	1.73E-04	7.70E-09	1.51E-08	3.18E-06	1.10E-07	-1.38E-06
ADP-fossil	**MJ**	1.57E+01	7.61E+00	3.35E-02	5.07E-02	7.61E+00	3.72E-01	-3.42E+00
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	**m^3 eq. depr.**	3.42E-01	2.50E-01	1.00E-04	1.97E-04	8.79E-02	3.64E-03	-9.85E-02
WDP = Water Deprivation potential								

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**	2.40E+00	5.00E-01	4.72E-04	9.76E-04	1.89E+00	1.41E-02	-1.78E-01
PERM	**MJ**	1.80E-01	1.80E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	**MJ**	2.58E+00	6.80E-01	4.72E-04	9.76E-04	1.89E+00	1.41E-02	-1.78E-01
PENRE	**MJ**	1.46E+01	6.58E+00	3.35E-02	5.07E-02	7.52E+00	3.72E-01	-3.42E+00
PENRM	**MJ**	1.02E+00	1.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	**MJ**	1.56E+01	7.60E+00	3.35E-02	5.07E-02	7.52E+00	3.72E-01	-3.42E+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**	1.40E-02	7.14E-03	3.73E-06	8.24E-06	6.76E-03	1.24E-04	-2.40E-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**	6.09E-05	5.67E-05	8.74E-08	1.33E-07	3.16E-06	8.07E-07	-6.11E-06
Non- hazardous waste disposed	**kg**	1.86E-01	1.13E-01	1.72E-03	3.84E-03	2.16E-02	4.58E-02	-3.67E-02
Radioactive waste disposed	**kg**	1.03E-04	2.00E-05	2.27E-07	3.35E-07	8.04E-05	2.16E-06	-1.86E-06

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	2.31E-04	2.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	7.65E-02	9.55E-04	0.00E+00	1.33E-02	0.00E+00	6.22E-02	0.00E+00
Materials for energy recovery	kg	1.11E-02	3.52E-03	0.00E+00	1.49E-03	0.00E+00	6.14E-03	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	0.00E+00	0.00E+00	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	8.13E-03	8.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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
2TKA00004951	1.08	1.08	1.00	3.04	1.09	1.08
2TKA00004988	1.09	1.09	1.09	3.04	1.09	1.09
2TKA00004989	1.01	1.01	1.00	3.04	1.01	1.01
2TKA00004990	1.21	1.21	1.09	3.04	1.23	1.21
2TKA00004991	0.98	0.98	1.00	5.80	0.98	0.98
2TKA00004992	1.18	1.18	1.09	5.80	1.20	1.18
2TKA00004993	1.03	1.03	1.00	1.00	1.03	1.03
2TKA00004994	1.23	1.23	1.15	1.00	1.25	1.23
2TKA00004995	1.29	1.29	1.00	1.00	1.35	1.29
2TKA00005000	1.00	1.00	1.00	1.00	1.00	1.00
2TKA00005001	1.19	1.19	1.09	1.00	1.22	1.19
2TKA00005002	1.27	1.27	1.09	1.00	1.31	1.27
2TKA00005003	0.96	0.96	1.00	3.76	0.95	0.96
2TKA00005004	1.16	1.16	1.09	3.76	1.17	1.16
2TKA00005005	1.05	1.05	1.00	1.00	1.07	1.05
2TKA00005006	1.26	1.26	1.15	1.00	1.28	1.26
2TKA00005007	1.04	1.04	1.00	1.00	1.05	1.04
2TKA00005008	1.24	1.24	1.09	1.00	1.27	1.24
2TKA00005009	1.07	1.07	0.90	3.04	1.10	1.07
2TKA00005010	1.23	1.23	0.81	3.04	1.31	1.23
2TKA00005011	1.24	1.24	1.09	3.04	1.27	1.24
2TKA00005012	0.98	0.98	1.00	1.00	0.97	0.98
2TKA00005013	1.18	1.18	1.15	1.00	1.19	1.18
2TKA00005014	0.97	0.97	1.00	1.00	0.96	0.97
2TKA00005015	1.16	1.16	1.09	1.00	1.18	1.16
2TKA00005201	48.39	48.39	16.33	3.04	55.23	48.39
2TKA00005202	45.34	45.34	16.33	1.00	51.54	45.34
2TKA00005203	44.08	44.08	16.33	1.00	50.00	44.08

Environmental Impact Indicator Glossary

Impact indicators

Indicator	Description	Distri-bution
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	Distri-bution
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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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.	
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