

PUSH SWITCHES

# PEP ecopassport®

## Environmental Product Declaration



Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"

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# ABB Purpose & Embedding Sustainability

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.

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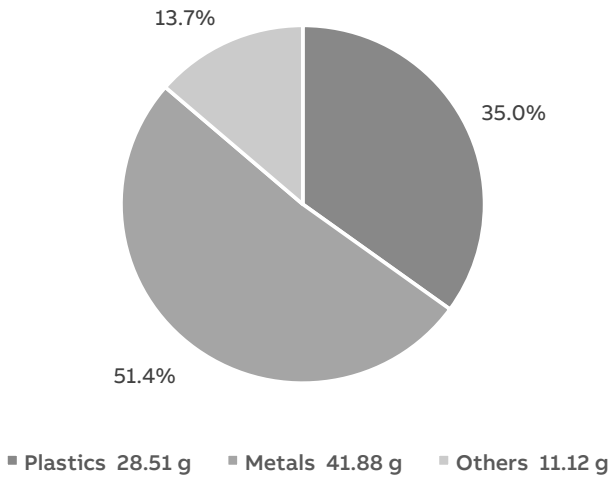
## General Information

Reference product	2TKA000239G1
Description of the product	Push surface switches are described as switch with screwless terminals, including switch insert and rocker. The terminals are for max 2 rigid wires.
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	List of other products covered or a reference to page 9.10.11

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# Constituent Materials



Total weight of Reference product	81.47	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%
PC	23.2	HX340	34.5	Cardboard box (unit)	9.6
PA	11.8	Stainless steel	4.9	Cardboard box (macro)	4.1
–	x	Bronze	4.9	–	–
–	x	Steel	3.5	–	–
–	–	Brass	3.4	–	–

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## Additional Environmental Information

<b>Manufacturing</b>	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.
<b>Distribution</b>	Includes the transportation in its packaging from the manufacturer's last logistic platform to the distributor.
<b>Installation</b>	Installation stage includes the installation of the products made manually and the end of life of packaging.
<b>Use</b>	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.
<b>End of life</b>	Includes its transportation from the installation site to the final end of life treatment site, and end of life treatment processes. A value of 1000 km transport by lorry is used for the transportation.
<b>Benefits and loads beyond the system boundaries</b>	Prevented impacts of recycling materials.

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## Environmental Impacts

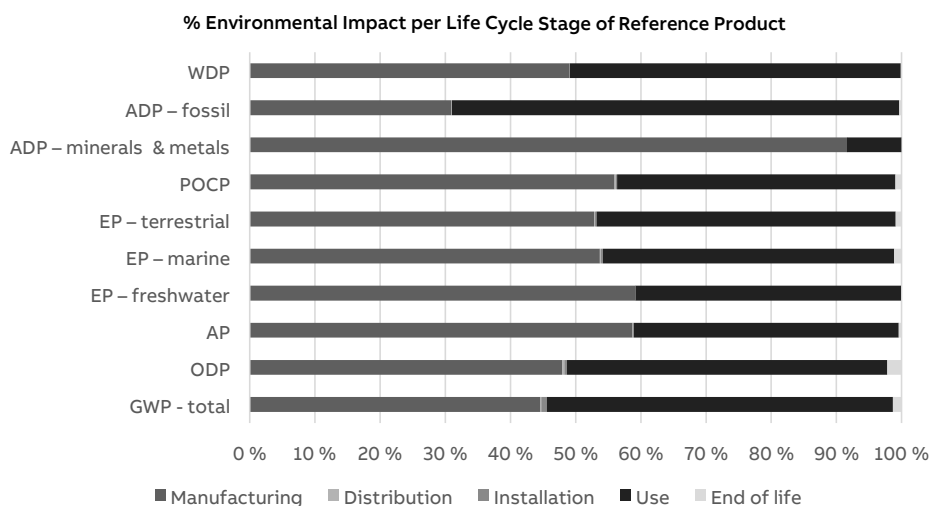
Reference lifetime	20 years
Product category	Switches
Installation elements	End of life of packaging
Use scenario	Europe
Geographical representativeness	Global
Technological representativeness	Materials and processes data are specific for the production of the family of Push Switches
Software and database 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	Electricity, low voltage {FI}  market for   Cut-off, S Electricity, low voltage {SE}  market for   Cut-off, S Electricity, low voltage {US}  market group for   Cut-off, S
End of life	Recycling of product and packaging

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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
<b>GWP-total</b>	<b>kg CO<sub>2</sub> eq.</b>	2.15E+00	9.57E-01	2.02E-03	1.88E-02	1.14E+00	2.88E-02	-2.21E-01
<b>GWP-fossil</b>	<b>kg CO<sub>2</sub> eq.</b>	2.10E+00	9.57E-01	2.02E-03	2.07E-03	1.11E+00	2.76E-02	-2.23E-01
<b>GWP-biogenic</b>	<b>kg CO<sub>2</sub> eq.</b>	3.18E-02	-1.15E-03	1.76E-06	1.67E-02	1.49E-02	1.28E-03	1.59E-03
<b>GWP-luluc</b>	<b>kg CO<sub>2</sub> eq.</b>	1.13E-02	9.35E-04	8.11E-07	9.15E-07	1.04E-02	5.11E-06	-4.27E-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								
<b>ODP</b>	<b>kg CFC-11 eq.</b>	1.28E-07	6.12E-08	4.65E-10	4.95E-10	6.28E-08	2.83E-09	-1.85E-09
ODP = Depletion potential of the stratospheric ozone layer								
<b>AP</b>	<b>H<sup>+</sup> eq.</b>	1.20E-02	0.00E+00	9.73E-06	1.15E-05	4.88E-03	5.41E-05	-8.48E-04
AP = Acidification potential, Accumulated Exceedance								
<b>EP-freshwater</b>	<b>kg P eq.</b>	1.09E-04	9.35E-04	1.40E-08	1.92E-08	4.42E-05	1.04E-07	-3.75E-06
<b>EP-marine</b>	<b>kg N eq.</b>	1.70E-03	9.14E-04	2.81E-06	5.61E-06	7.60E-04	1.93E-05	-1.73E-04
<b>EP-terrestrial</b>	<b>mol N eq.</b>	2.01E-02	1.06E-02	3.10E-05	4.35E-05	9.23E-03	1.85E-04	-1.64E-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								
<b>POCP</b>	<b>kg NMVOCeq.</b>	5.78E-03	3.24E-03	9.28E-06	1.30E-05	2.47E-03	5.56E-05	-5.96E-04
POCP = Formation potential of tropo-spheric ozone								
<b>ADP-minerals &amp; metals</b>	<b>kg Sb eq.</b>	1.72E-04	1.58E-04	6.90E-09	4.95E-10	1.44E-05	4.36E-08	-5.46E-07
<b>ADP-fossil</b>	<b>MJ</b>	4.98E+01	1.54E+01	3.04E-02	3.03E-02	3.42E+01	1.87E-01	-2.60E+00
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
<b>WDP</b>	<b>m<sup>3</sup> e depr.</b>	7.82E-01	3.84E-01	9.01E-05	2.01E-04	3.97E-01	9.52E-04	-8.01E-02
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	1.01E+01	1.57E+00	4.23E-04	6.19E-04	8.55E+00	2.75E-03	-9.60E-02
PERM	MJ	1.24E-01	1.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.02E+01	1.69E+00	4.23E-04	6.19E-04	8.55E+00	2.75E-03	-9.60E-02
PENRE	MJ	4.86E+01	1.45E+01	3.04E-02	3.03E-02	3.38E+01	1.87E-01	-2.60E+00
PENRM	MJ	8.94E-01	8.94E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.95E+01	1.54E+01	3.04E-02	3.03E-02	3.38E+01	1.87E-01	-2.60E+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 re-sources)

### Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy re-sources

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	m³	4.46E-02	1.42E-02	3.35E-06	1.04E-05	3.03E-02	3.25E-05	-1.91E-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	8.32E-05	6.85E-05	7.82E-08	7.82E-08	1.41E-05	4.86E-07	-1.98E-06
Non- hazardous waste disposed	kg	2.50E-01	1.29E-01	1.53E-03	2.65E-03	9.77E-02	1.94E-02	-1.37E-02
Radioactive waste disposed	kg	4.29E-04	6.42E-05	2.06E-07	1.98E-07	3.63E-04	1.25E-06	-7.53E-07

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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	1.41E-03	1.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	6.74E-02	9.15E-04	0.00E+00	9.07E-03	0.00E+00	5.74E-02	0.00E+00
Materials for energy recovery	kg	1.01E-02	3.46E-03	0.00E+00	1.02E-03	0.00E+00	5.67E-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	5.56E-03	0.00E+00	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
2TKA000231G1	1.14	1.14	1.00	1.00	1.12	1.12
2TKA000232G1	1.30	1.30	1.46	1.00	1.32	1.32
2TKA000233G1	1.20	1.20	1.46	1.00	1.24	1.24
2TKA000237G1	1.09	1.09	1.46	1.00	1.14	1.14
2TKA000239G1	1.00	1.00	1.00	1.00	1.00	1.00
2TKA000240G1	1.25	1.25	1.46	1.00	1.28	1.28
2TKA000242G1	1.29	1.29	1.46	1.61	1.31	1.31
2TKA000243G1	1.19	1.19	1.46	1.00	1.23	1.23
2TKA000244G1	1.32	1.32	1.46	1.61	1.34	1.34
2TKA000245G1	1.27	1.27	1.59	1.00	1.31	1.31
2TKA00000133	1.04	1.04	2.68	1.61	1.26	1.26

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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 <sub>2</sub> 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 <sup>+</sup> 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 <sup>3</sup> e 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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Independent verification of the declaration and data, in compliance with ISO 14025: 2006							
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 another program							
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"							



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