OTHER EQUIPMENTS

Product Environmental Profile

Environmental Product Declaration

According to ISO 14040 and ISO 14044
"PCR Product Category Rules for Electrical, Electronic and HVAC-R Products" (PCR-ed3-EN-2015 04 02)
"PSR Specific Rules for Electrical Switchgear and control gear Solutions"(PSR-0005-ed2-EN—2016 03 29)
Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"

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ABB Purpose & Embedding Sustainability

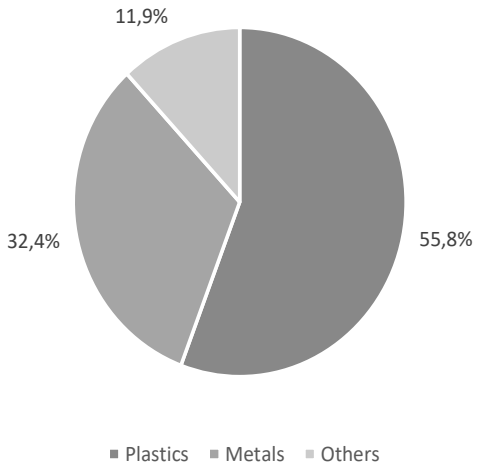
ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow.
With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.

ABB is also engaged with the Ellen MacArthur Foundation.

General Information

Reference product	2CLA210209N1201 2-way-switch total white
Description of the product	The Zenit Italy screw-type-switch family are a group of switches with high performances. This Screw-type product family, which is used for making and breaking electric current in a circuit
Functional unit	Establish, support and interrupt for 20 years rated currents in normal conditions of circuit characterized by the current 16 A (Ith). (The functional unit is based on the use scenario recommended by the PCR for the category of the reference product)
Other products covered	1-way-switch (BL, BB, PL, AA, AN, CV) 2-way-switch (BL, PL, AA, AN, CV) Intermediate switch(BL, BB, PL, AA, AN, CV) Double pole switch(BL, BB, PL, AA, AN, CV) Push-button(BL, BB, PL, AA, AN, CV)

Constituent materials



Total weight of Reference product (with packaging)	28,48 g
Total weight of product packaging	3,38 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-%**
PC	30,0	Brass	10,6	Carboard box and tray	11,9
PA	23,5	Galvanizel steel	12,2	–	–
ABS	2,3	Low-carbon steel	8,2	–	–
–	–	Copper	0,9	–	–
–	–	Silver	0,5	–	–

Additional Environmental Information

Manufacturing	Includes the environmental impacts associated with extraction and processing of the raw materials used to produce the product and its pacakging, transport to the manufacturing site and assembly.
Distribution	Includes the transportation in its pacakging from the manufacturer's last logistic platform to the distributor.
Installation	Installation stage includes the installation of the products made manually.
Use	Energy consumption is calculated by following the PSR. The energy models used in this phase are the specific energy mixes based on ABB distribution.
End of life	Includes its transportation from the installation site to the final end of life treatment site, and end of life treatment processes. A value of 300 km transport by lorry is used for the transportation.
Software and database used	Simapro 9.3.0.3 and Ecoinvent v3.8
Standards	“PCR Product Category Rules for Electrical, Electronic and HVAC-R Products” (PCR-ed3-EN-2015 04 02) and - “PSR Specific Rules for Electrical Switchgear and control gear Solutions“(PSR-0005-ed2-EN—2016 03 29)

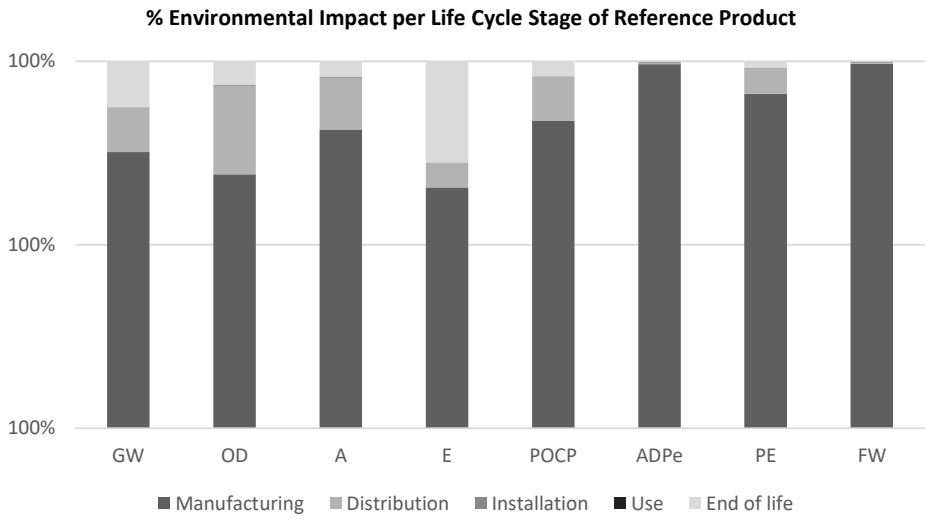
Environmental impacts

Reference lifetime	20 years
Product category	Switches
Installation elements	Installation carried out manually
Use scenario	Italy
Geographical representativeness	Global
Technological representativeness	Materials and processes data are specific for the production of 2-way-switches and its family
Energy model used	
Manufacturing	A specific mix of ABB's trading company has been used (Confidential)
Installation	Non-applicable
Use	Electricity, low voltage {IT}| market for | Cut-off, S
End of life	Non-applicable

Compulsory Indicators

Impact indicators	Unit	Total	Manu-facturing	Distri-bution	Instal-lation	Use	End of life
Global warming (GW)	kg CO_2 eq.	1,17E+01	1,17E+01	5,66E-03	0,00E+00	2,32E-05	5,88E-03
Ozone depletion (OD)	kg CFC-11 eq.	1,08E-06	1,08E-06	1,05E-09	0,00E+00	2,82E-12	2,77E-10
Acidification of soil and water (A)	kg SO_2 eq.	3,16E-02	3,15E-02	1,80E-05	0,00E+00	9,76E-08	5,31E-06
Eutrophication (E)	kg $(PO_4)^3$ eq.	1,50E-02	1,50E-02	4,01E-06	0,00E+00	2,57E-08	1,66E-05
Photochemical ozone creation (POCP)	kg C_2H_4 eq.	1,53E-03	1,53E-03	7,38E-07	0,00E+00	4,75E-09	2,50E-07
Depletion of abiotic resources – elements (ADPe)	kg Sb eq.	8,21E-04	8,21E-04	1,99E-08	0,00E+00	2,33E-10	5,29E-09

Resource use indicators	Unit	Total	Manu-facturing	Distri-bution	Instal-lation	Use	End of life
Total use of primary energy (PE)	MJ	3,13E+02	3,13E+02	8,77E-02	0,00E+00	4,84E-04	2,29E-02
Net freshwater use (FW)	m^3	1,50E+01	1,50E+01	2,60E-04	0,00E+00	1,56E-05	8,54E-05



Optional Indicators

Resource use indicators	Unit	Total	Manu-facturing	Distri-bution	Instal-lation	Use	End of life
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	1,17E+02	1,17E+02	1,22E-03	0,00E+00	1,22E-04	3,67E-04
Use of renewable primary energy resources as raw materials	MJ	5,66E-02	5,66E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources	MJ	1,17E+02	1,17E+02	1,22E-03	0,00E+00	1,22E-04	3,67E-04
Use of non-renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	1,95E+02	1,95E+02	8,64E-02	0,00E+00	3,62E-04	2,26E-02
Use of non-renewable primary energy resources as raw materials	MJ	4,09E-01	4,09E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources	MJ	1,96E+02	1,95E+02	8,64E-02	0,00E+00	3,62E-04	2,26E-02
Use of secondary materials	kg	7,94E-04	7,94E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Optional Indicators

Waste category indicators	Unit	Total	Manu-facturing	Distri-bution	Instal-lation	Use	End of life
Hazardous waste disposed	kg	6,79E-04	6,79E-04	2,26E-07	0,00E+00	7,22E-10	6,34E-08
Non-hazardous waste disposed	kg	1,15E+00	1,14E+00	4,45E-03	0,00E+00	1,28E-06	4,27E-03
Radioactive waste disposed	kg	6,26E-04	6,25E-04	5,85E-07	0,00E+00	1,04E-09	1,51E-07
Output flow indicators	**Unit**	**Total**	**Manu-facturing**	**Distri-bution**	**Instal-lation**	**Use**	**End of life**
Materials for recycling	kg	2,79E-02	3,86E-03	0,00E+00	0,00E+00	0,00E+00	2,40E-02
Materials for energy recovery	kg	1,60E-03	2,09E-04	0,00E+00	0,00E+00	0,00E+00	1,40E-03
Components for reuse	kg	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

For other products than the Reference product covered by this PEP, the environmental im-pacts 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

The only difference between the reference product and the push button is a little spring. This ring can be compared with the spring of a pen, so definitely a very small item, under the 5% of the total weight of the product. This is the reason why the extrapolation rule has been considered as 1 in this case.

The differences between the different variants are the number of contacts mainly so the energy lost can be kept the same between all the variants, as confirmed with the internal laboratory, who are the owners of the test, conducted to calculate this value.

Also, there is no difference in the end-of-life scenario, as they are all managed the same way by the waste manager agents. The packaging system and the disposal keeps the same between variants, so there is no difference between them on the distribution stage.

Product name	Manufacturing	Distribution	Installation	Use	End of life
1-way switch BL	0,97	0,97	1,00	1,00	0,97
1-way switch BB	0,97	0,97	1,00	1,00	0,97
1-way switch PL	0,97	0,97	1,00	1,00	0,97
1-way switch AA	0,97	0,97	1,00	1,00	0,97
1-way switch AN	0,97	0,97	1,00	1,00	0,97
1-way switch CV	0,97	0,97	1,00	1,00	0,97
2-way-switch BL	1,00	1,00	1,00	1,00	1,00
2-way-switch PL	1,00	1,00	1,00	1,00	1,00
2-way-switch AA	1,00	1,00	1,00	1,00	1,00
2-way-switch AN	1,00	1,00	1,00	1,00	1,00
2-way-switch CV	1,00	1,00	1,00	1,00	1,00
Intermediate switch BL	1,18	1,18	1,00	1,00	1,18
Intermediate switch BB	1,18	1,18	1,00	1,00	1,18
Intermediate switch PL	1,18	1,18	1,00	1,00	1,18
Intermediate switch AA	1,18	1,18	1,00	1,00	1,18
Intermediate switch AN	1,18	1,18	1,00	1,00	1,18
Intermediate switch CV	1,18	1,18	1,00	1,00	1,18
Double pole switch BL	1,16	1,16	1,00	1,00	1,16
Double pole switch BB	1,16	1,16	1,00	1,00	1,16
Double pole switch PL	1,16	1,16	1,00	1,00	1,16

Product name	Manufacturing	Distribution	Installation	Use	End of life
Double pole switch AA	1,16	1,16	1,00	1,00	1,16
Double pole switch AN	1,16	1,16	1,00	1,00	1,16
Double pole switch CV	1,16	1,16	1,00	1,00	1,16
Push-button BL	1,00	1,00	1,00	1,00	1,00
Push-button BB	1,00	1,00	1,00	1,00	1,00
Push-button PL	1,00	1,00	1,00	1,00	1,00
Push-button AA	1,00	1,00	1,00	1,00	1,00
Push-button AN	1,00	1,00	1,00	1,00	1,00
Push-button CV	1,00	1,00	1,00	1,00	1,00

Environmental Impact Indicator Glossary

Impact indicators	Description	Unit
Global warming (GW)	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. Includes fossil and biogenic	kg CO_2 eq.
Ozone depletion (OD)	Indicator of emissions to air that contribute to the destruction of the ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Indicator of the potential acidification of soils and water caused by the release of certain gases to the atmosphere	kg SO_2 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.	kg $(PO_4)^3$ 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 C_2H_4 eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.

Resource use indicators	Description	Unit
Total use of primary energy (PE)	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

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Verifier accreditation number: VH42		Information and reference documents: www.pep-ecopassport.org	
Date of issue:	12/2022	Validity period:	5 years
Independent verification of the declaration and data, in compliance with ISO 14025: 2010			
Internal ○		External ◉	
The PCR review was conducted by a panel of experts chaired by Philippe Osset (SOLINNEN)			
PEP are compliant with XP C08-100-1: 2016 The elements of the present PEP cannot be compared with elements from another program			
Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"			