Product Environmental Profile

Communication Cable for Automation

Schneider Electric

Product Environmental Profile - PEP

Product overview

These cables allow communication between automatism platforms and devices to install, upgrade and debug industrial workshops.

This range is composed of different EMC screened cables, PVC jacket, for different lengths and equipped with many types of connectors

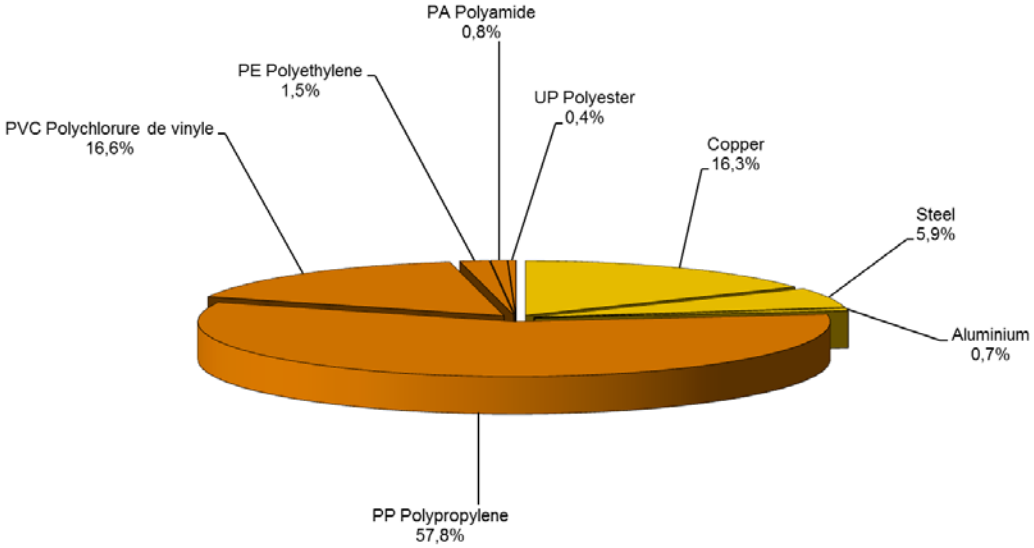
The representative product used for the analysis is BMXXCAUSBH018.

The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with a similar technology.

The environmental analysis was performed in conformity with ISO 14040.

Constituent materials

The mass of the product range is between 100 and 1000g . Weight of BMXXCAUSBH018 is 173 g including packaging.
The constituent materials are distributed as follows:



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or only contain in the authorised proportions, lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls - PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive

Manufacturing

The BMXXCAUSB product range is manufactured at a Schneider Electric production site on which an ISO14001 certified environmental management system has been established.

Distribution

The weight and volume of the packaging have been optimized, based on the European Union's packaging directive.
The BMXXCAUSBH018 packaging weight is 1*00 g*. It consists of a PP shrink film.

Use

The dissipated power depends on the conditions under which the product is implemented and used. The dissipated power is 0.676 mW for the referenced BMXXCAUSBH018.

End of life

At end of life, the communication cables have been optimized to decrease the amount of waste and allow recovery of the product components and materials.
This product must be collected and concentrated to special end-of-life treatment.
The recyclability potential of the products has been evaluated using the “Codde- BV recyclability and recoverability calculation method” (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).
According to this method, the potential recyclability ratio is: **72.1 %.**
As described in the recyclability calculation method this ratio includes only metals and plastics which have proven industrial recycling processes.

Environmental impacts

Life cycle assessment has been performed on the following life cycle phases: Materials and Manufacturing (M), Distribution (D), Installation (I) Use (U), and End of life (E).
Modeling hypothesis and method:
- the calculation was performed on the BMXXCAUSBH018
- product packaging: is included
- installation components : no special components included.
- scenario for the Use phase: this product range is included in the category 1 "Energy passing product", assumed service life is 10 years.
Dissipation is 0.676 mW and service uptime percentage is 100%
The electrical power model used for calculation is european model.
End of life impacts are based on a worst case transport distance to the recycling plant (1000km)

Presentation of the product environmental impacts

Environmental indicators	Unit	1 meter of communication cable (connectors and packaging included)					
		S = M + D + I + U + E	M	D	I	U	E
Air Acidification (AA for PEP)	**kg H+ eq**	1,87E-04	1,77E-04	2,79E-06	0,00E+00	4,59E-06	2,24E-06
Air toxicity (AT for PEP)	**m^3**	4,17E+05	4,04E+05	4,15E+03	0,00E+00	5,67E+03	3,33E+03
Energy Depletion (ED for PEP)	**MJ**	1,92E+01	1,82E+01	2,09E-01	0,00E+00	6,77E-01	1,61E-01
Global Warming Potential (GWP for PEP)	**kg CO_2 eq.**	6,78E-01	6,18E-01	1,49E-02	0,00E+00	3,42E-02	1,14E-02
Hazardous Waste Production (HWP for PEP)	**kg**	2,13E-02	2,07E-02	1,84E-08	0,00E+00	5,67E-04	1,41E-08
Ozone Depletion Potential (ODP for PEP)	**kg CFC-11 eq.**	2,03E-08	1,84E-08	2,81E-11	0,00E+00	1,86E-09	2,16E-11
Photochemical Ozone Creation Potential (POCP for PEP)	**kg C_2H_4 eq.**	2,94E-04	2,75E-04	3,83E-06	0,00E+00	1,20E-05	2,84E-06
Raw Material Depletion (RMD for PEP)	**Y-1**	8,97E-16	8,95E-16	3,03E-19	0,00E+00	7,69E-19	2,33E-19
Water Depletion (WD for PEP)	**dm3**	6,17E+00	6,07E+00	1,54E-03	0,00E+00	9,79E-02	1,18E-03
Water Eutrophication (WE for PEP)	**kg PO_4^{3-} eq.**	3,73E-05	3,72E-05	2,76E-08	0,00E+00	8,04E-08	2,12E-08
Water Toxicity (WT for PEP)	**m^3**	3,15E-01	2,94E-01	6,34E-03	0,00E+00	9,82E-03	4,88E-03

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 5.2.1.4, and with its database version CODDE-2013-02.
The Manufacturing phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

This result is for 1 meter of communication cable (connectors and packaging included).

For the environmental impact calculation for another cable configuration (other length) please use next tables.
For example, if you need environmental impact for BMXXCAUSBH018 (1,8 meter), you should add the value of the first table with 0,8 time the values on the second table.
Packaging is considered to be the same for all communication cable lengths.

Product Environmental Profile - PEP

Environmental indicators	Unit	For each communication cable additional meter					
		S = M + D + I + U + E	M	D	I	U	E
Air Acidification (AA for PEP)	kg H+ eq	1,11E-04	1,10E-04	7,71E-07	0,00E+00	0,00E+00	6,21E-07
Air toxicity (AT for PEP)	m^3	3,19E+05	3,17E+05	1,15E+03	0,00E+00	0,00E+00	9,25E+02
Energy Depletion (ED for PEP)	MJ	3,65E+00	3,55E+00	5,78E-02	0,00E+00	0,00E+00	4,46E-02
Global Warming Potential (GWP for PEP)	kg CO_2 eq.	1,45E-01	1,38E-01	4,11E-03	0,00E+00	0,00E+00	3,17E-03
Hazardous Waste Production (HWP for PEP)	kg	1,74E-02	1,74E-02	5,07E-09	0,00E+00	0,00E+00	3,92E-09
Ozone Depletion Potential (ODP for PEP)	kg CFC-11 eq.	1,72E-08	1,72E-08	7,77E-12	0,00E+00	0,00E+00	6,00E-12
Photochemical Ozone Creation Potential (POCP for PEP)	kg C_2H_4 eq.	5,91E-05	5,72E-05	1,06E-06	0,00E+00	0,00E+00	7,88E-07
Raw Material Depletion (RMD for PEP)	Y-1	8,32E-16	8,32E-16	8,38E-20	0,00E+00	0,00E+00	6,47E-20
Water Depletion (WD for PEP)	dm3	4,80E+00	4,80E+00	4,26E-04	0,00E+00	0,00E+00	3,29E-04
Water Eutrophication (WE for PEP)	kg PO_4^{3-} eq.	1,32E-05	1,31E-05	7,62E-09	0,00E+00	0,00E+00	5,88E-09
Water Toxicity (WT for PEP)	m^3	2,13E-01	2,09E-01	1,75E-03	0,00E+00	0,00E+00	1,35E-03

System approach

As the products of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction in an assembly or an installation subject to this Directive.
Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

Glossary

Raw Material Depletion (RMD)	This indicator quantifies the consumption of raw materials during the life cycle of the product. It is expressed as the fraction of natural resources that disappear each year, with respect to all the annual reserves of the material.
Energy Depletion (ED)	This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources. This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.
Water Depletion (WD)	This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm^3.
Global Warming (GW)	The global warming of the planet is the result of the increase in the greenhouse effect due to the sunlight reflected by the earth's surface being absorbed by certain gases known as "greenhouse-effect" gases. The effect is quantified in gram equivalent of CO_2.
Ozone Depletion (OD)	This indicator defines the contribution to the phenomenon of the disappearance of the stratospheric ozone layer due to the emission of certain specific gases. The effect is expressed in gram equivalent of CFC-11.
Air Toxicity (AT)	This indicator represents the air toxicity in a human environment. It takes into account the usually accepted concentrations for several gases in the air and the quantity of gas released over the life cycle. The indication given corresponds to the air volume needed to dilute these gases down to acceptable concentrations.
Photochemical Ozone Creation (POC)	This indicator quantifies the contribution to the "smog" phenomenon (the photochemical oxidation of certain gases which generates ozone) and is expressed in gram equivalent of ethylene (C_2H_4).
Air Acidification (AA)	The acid substances present in the atmosphere are carried by rain. A high level of acidity in the rain can cause damage to forests. The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mode equivalent of H^+.
Water Toxicity (WT)	This indicator represents the water toxicity. It takes into account the usually accepted concentrations for several substances in water and the quantity of substances released over the life cycle. The indication given corresponds to the water volume needed to dilute these substances down to acceptable concentrations.
Hazardous Waste Production (HWP)	This indicator calculates the quantity of specially treated waste created during all the life cycle phases (manufacturing, distribution and utilization). For example, special industrial waste in the manufacturing phase, waste associated with the production of electrical power, etc. It is expressed in kg.

PEP achieved with Schneider-Electric TT01 V9 and TT02 V16 procedures in compliance with ISO14040 series standards
PEP in line with PEPecopassport PCR : PEP–PCR–ed 2.1-EN-2012 12 11

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