Product Environmental Profile

800-1200A General Duty & Heavy Duty E-series Safety Switches

ENVPEP1405016 / PEP ecopassport SCHN-2014-024

Product Environmental Profile - PEP

Product overview

The main purpose of the E-series safety switch is to isolate power and provide an effective way to interrupt power in an emergency. Two primary applications for safety switches are as a lockout on sight disconnect and as a circuit isolation device.

E-series General Duty and Heavy Duty safety switches comply with UL® 98 and CSA® no22 on the offer noted below:

- General Duty rated 800A
- Heavy Duty rated 800 and1200 Amperes
- Fused and non-fused
- NEMA TYPE 1, 3R, 4X and 12
- General Duty suitable for use on 120/240 Vac systems
- Heavy Duty suitable for use on 120, 240, 480 and 600 Vac and 250 and 600 Vdc systems
- Horse power rated
- Suitable for use as service equipment

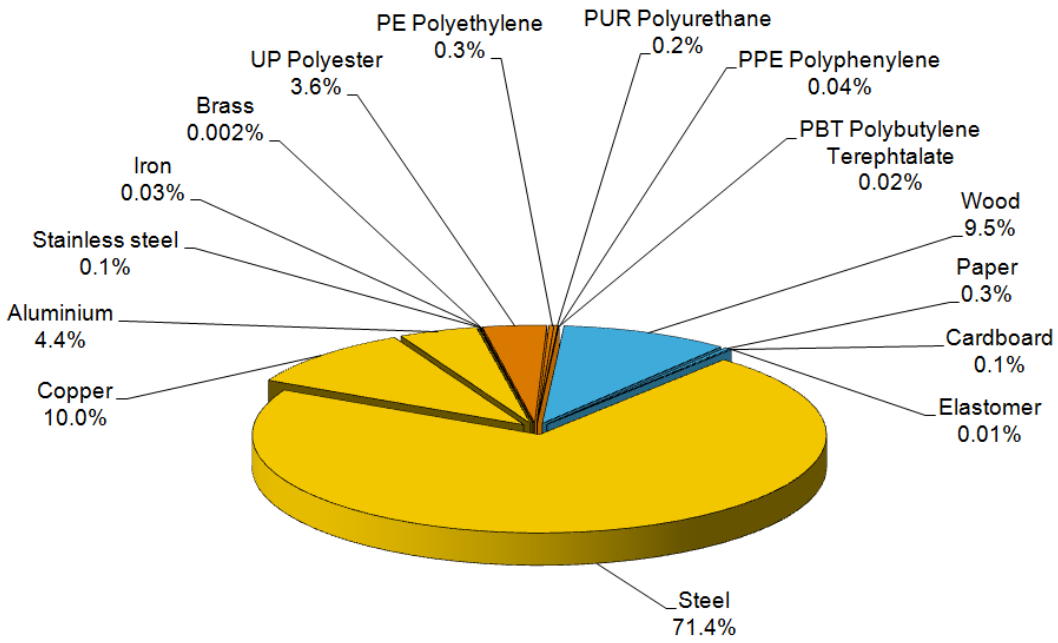
The representative product used for the analysis is the H367NR Safety Switch.

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 E-series Safety Switches is from 341 lbs (155 Kg) to 383 lbs (174 Kg) including packaging. It is 383 lbs (174 Kg) for the H367NR. 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

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website . (http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page)

Manufacturing

The E-series Safety Switches 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. The E-series Safety Switches packaging weight is 39.5 lbs. (19.9 K*g)* and consists of wooden pallet, steel shipping brace and polybag.

The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Use

The products of the E-series Safety Switches range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.

The dissipated power depends on the conditions under which the product is implemented and used. This dissipated power is between 124 W and 560 W for the E-series Safety Switches product range. It is 186 W for the referenced H367NR.

This thermal dissipation represents less than 0.1% of the power which passes through the product. The product range does not require special maintenance operations.

For recommended maintenance instructions refer to instruction bulletin 40273-829-02, available on the Schneider-Electric website: (http://www.downloads.schneider-electric.com/sites/oreo/us/document-detail.page?p_docId=25657056&p_Conf=i#http://www.schneider-electric.us)

End of life

At end of life, the products in the E-series Safety Switches range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.

The safety switch does not need any special end-of-life treatment. According to countries' practices this product can enter the usual end-of-life treatment process.

The recyclability potential of the products has been evaluated using the "ECO DEEE 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: 89%

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 H367NR
- product packaging: is included
- installation components: no special components included.
- scenario for the Use phase: this product range is included in the category Energy passing product with an: (assumed service life is 20 years and use scenario is: product dissipation is 186 W full load, loading rate is 30% and service uptime percentage is 100%)
- the geographical representative area for the assessment is United States and the electrical power model used for calculation is American model.

End of life impacts are based on a worst case transport distance to the recycling plant 621 miles (1000km)

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Presentation of the product environmental impacts

Data calculated for product use for a period of 20 years.

Environmental indicators	Unit	For a H367NR					
		S = M + D + I + U + E	M	D	I	U	E
Air Acidification	**kg H+ eq**	$4.68\ 10^{-1}$	$1.09\ 10^{-1}$	$8.82\ 10^{-3}$	0.00	$3.47\ 10^{-1}$	$2.25\ 10^{-3}$
Air toxicity	**m^3**	$6.86\ 10^{8}$	$2.59\ 10^{8}$	$1.31\ 10^{7}$	0.00	$4.10\ 10^{8}$	$3.35\ 10^{6}$
Energy Depletion	**MJ**	$3.41\ 10^{4}$	$6.79\ 10^{3}$	$6.67\ 10^{2}$	0.00	$2.65\ 10^{4}$	$1.61\ 10^{2}$
Global Warming Potential	**kg CO_2 eq.**	$2.58\ 10^{3}$	$4.85\ 10^{2}$	$4.73\ 10^{1}$	0.00	$2.04\ 10^{3}$	$1.14\ 10^{1}$
Hazardous Waste Production	**kg**	$5.37\ 10^{1}$	$1.08\ 10^{1}$	$5.86\ 10^{-5}$	0.00	$4.28\ 10^{1}$	$1.41\ 10^{-5}$
Ozone Depletion Potential	**kg CFC-11 eq.**	$5.36\ 10^{-5}$	$1.66\ 10^{-5}$	$8.97\ 10^{-8}$	0.00	$3.68\ 10^{-5}$	$2.17\ 10^{-8}$
Photochemical Ozone Creation Potential	**kg C_2H_4 eq.**	$4.53\ 10^{-1}$	$6.88\ 10^{-2}$	$1.09\ 10^{-2}$	0.00	$3.70\ 10^{-1}$	$2.85\ 10^{-3}$
Raw Material Depletion	**Y-1**	$1.14\ 10^{-12}$	$1.11\ 10^{-12}$	$9.68\ 10^{-16}$	0.00	$3.01\ 10^{-14}$	$2.34\ 10^{-16}$
Water Depletion	**dm3**	$1.02\ 10^{4}$	$6.64\ 10^{3}$	4.91	0.00	$3.60\ 10^{3}$	1.19
Water Eutrophication	**kg PO_4^{3-} eq.**	$2.73\ 10^{-2}$	$2.06\ 10^{-2}$	$8.80\ 10^{-5}$	0.00	$6.53\ 10^{-3}$	$2.13\ 10^{-5}$
Water Toxicity	**m^3**	$2.80\ 10^{2}$	$1.02\ 10^{2}$	$2.02\ 10^{1}$	0.00	$1.53\ 10^{2}$	4.90

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 5.3, and with its database version 2013-02.

The Use Phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range: the RMD, WD and WE impacts of the products of the family may be proportional extrapolated by the mass of the product. The other environmental indicators of the products in this family may be proportional extrapolated by the energy usage of the product.

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

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^+.
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.
Energy Depletion (ED)	This indicator gives the quantity of energy consumed, whether it is from fossil, hydroelectric, nuclear or other sources. It takes into account the energy from the material produced during combustion. It is expressed in MJ.
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.
Hazardous Waste Production (HWP)	This indicator quantifies 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.
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.
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).
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.
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.
Water Eutrophication (WE)	Eutrophication is a natural process defined as the enrichment in mineral salts of marine or lake waters or a process accelerated by human intervention, defined as the enrichment in nutritive elements (phosphorous compounds, nitrogen compounds and organic matter). This indicator represents the water eutrophication of lakes and marine waters by the release of specific substances in the effluents. It is expressed in grams equivalency of PO43-(phosphate).
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.

PEP achieved with Schneider-Electric TT01 V9 and TT02 V18 procedures in compliance with ISO14040 series standards

Registration N° : **SCHN-2014-024**				Applicable PCR : PEP–PCR–ed 2.1-EN-2012 12 11
Verifier accreditation N° : VH08				Program information: www.pep-ecopassport.org
Date of issue: 06-2014				Period of validity: 4 years
Independent verification of the declaration and data, according to ISO 14025:2006				
Internal		External	X	
In compliance with ISO 14025:2006 type III environmental declarations				
PCR review was conducted by an expert panel chaired by J. Chevalier (CSTB).				
The elements of the actual PEP cannot be compared with elements from another program.				

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