Product Environmental Profile

Harmony XPEA, XPEC, XPEY
Plastic foot switches

PEP ecoPASSPORT®

Schneider Electric

Product Environmental Profile - PEP

Product Overview

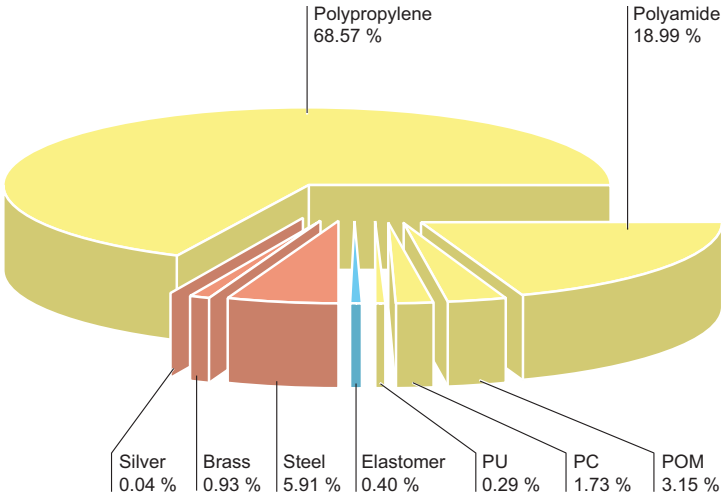
The main purpose of the Harmony XPEA, XPEC, XPEY product range is to provide start and stop commands for many types of machines running in various operating modes: inching, jogging, continuous.
This range consists of plastic switches with single or dual control, with or without a protective cover and locking device. This table summarises the products in the Harmony XPEA, XPEC, XPEY plastic range:

Reference	Protective cover	Locking device	Number of notches	Contact operation
XPE•510	Yes	Yes	1 step	1 “O+C”
XPE•511	Yes	Yes	1 step	2 “O+C”
XPE•711	Yes	Yes	2 steps	2 “O+C”
XPE•310	Yes	No	1 step	1 “O+C”
XPE•311	Yes	No	1 step	2 “O+C”
XPE•611	Yes	No	2 steps	2 “O+C”
XPE•810	No	Yes	1 step	1 “O+C”
XPE•911	No	Yes	2 steps	2 “O+C”
XPE•110	No	No	1 step	1 “O+C”
XPE•111	No	No	1 step	2 “O+C”
XPE•211	No	No	2 steps	2 “O+C”

The product used for the analysis of the plastic range is the single-control foot switch with a protective cover and latching device, the XPE•510.The environmental impacts of this referenced product are representative of the impacts of the other products in the range for which the same technology is used.
The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment - Principle and framework". This analysis takes the stages in the life cycle of the product into account.

Constituent materials

The mass of the products in the range is from 275 g to 700 g, not including the packaging. It is 692 g for the XPE•510 analysed.
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 in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

The Harmony XPE product range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.

Product Environmental Profile - PEP

Distribution

The weight and volume of the packaging have been reduced in compliance with the European Union's packaging directive. The weight of the packaging of the XPE•510 is 162 g. It consists of cardboard and paper, which are 100 % recyclable materials. The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Utilization

The products in the Harmony XPEA, XPEC, XPEY range do not generate any environmental pollution requiring special precautionary measures (noise, emissions, etc.). The dissipated power depends on the conditions under which the product is implemented and used. To minimise losses due to the Joule effect, the resistance of the electrical contacts has been optimised to ensure that the environmental impact of the product is negligible when it is in use.

End of life

At end of life, the products in the Harmony XPEA, XPEC, XPEY range can either be dismantled or crushed to facilitate the recovery of the various constituent materials. The recycling potential is more than 75 %. This percentage includes all the metal parts (steel, brass or silver alloy) and the plastic parts made of polypropylene.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 1.6, and its database, version 5.4, were used for the Life Cycle Assessment (LCA).
The analysis focused on an XPE•510.
The environmental impacts were analysed for the Manufacturing (M) phase, including the processing of raw materials, and for the Distribution (D) phase.

Presentation of product environmental impacts:

Indicateurs environnementaux	Unit	Impacts for 1 x XPE•510 plastic foot switch		
		M + D	M	D
Raw Material Depletion	**Y-1**	**$2{,}08\ 10^{-14}$**	100 %	0 %
Water Depletion	**dm^3**	**27.9**	74,1 %	25,9 %
Global Warming	**g≈CO_2**	**$4{,}03\ 10^{+03}$**	69,7 %	30,3 %
Ozone Depletion	**g≈CFC-11**	**$1{,}41\ 10^{-03}$**	80,8 %	19,2 %
Photochemical Ozone Creation	**g≈C_2H_4**	**9,25**	77,6 %	22,4 %
Air Acidification	**g≈H^+**	**$7{,}98\ 10^{-01}$**	77,2 %	22,8 %
Hazardous Waste Production	**kg**	**$2{,}06\ 10^{-02}$**	99 %	1 %

The life cycle analysis showed that the Manufacturing phase (phase M) has the greatest impact on most of the environmental indicators.
The environmental parameters of this phase were optimised at the design stage.

Product Environmental Profile - PEP

System approach

As the product 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 within an assembly or an installation submitted to this Directive.

N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.
Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of the 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 Potential (GWP)

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.

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 methane (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^+.

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.

Registration No.: SCHN-2011-106-V0	Programme information: www.pep-ecopassport.org
PEP in compliance with PEPecopassport according to PEP-AP0011 rules	
ACV rules are available from PEP editor on request	

We are committed to safeguarding our planet by "Combining innovation and continuous improvement to meet the new environmental challenges".

Schneider Electric Industries SAS
35, rue Joseph Monier
CS30323
F - 92506 Rueil Malmaison Cedex

RCS Nanterre 954 503 439
Capital social 896 313 776 €
www.schneider-electric.com

Published by: Schneider Electric