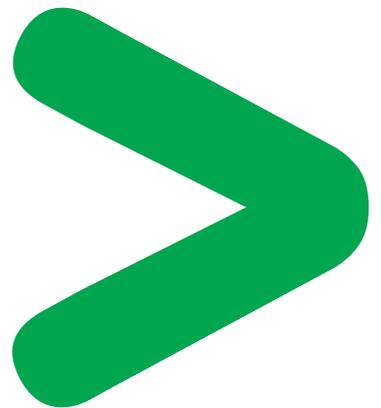


# Product Environmental Profile

Multiple-pushbutton pulse switches

Ø 22 mm Metal

Harmony ZB4 BA7341



# Product Environmental Profile - PEP

## Product Overview

With a wide variety of models: double-button, double-button with indicator light, triple-button, metal or plastic versions, the new Harmony multi-button range is suitable for all applications where multiple pushbuttons are required.

For greater simplicity and effectiveness, all the multi-button versions are supplied in a ready-to-use or ready-to-assemble version.

A wide range of caps (colours, markings and positions) is available to customers for subsequent assembly.

All the versions provide IP66 protection and do not require an extra protective cover.

The attractive design of this new range of multi-button switches is similar to the other switches in the Harmony range.

This range consists of 87 head models and complete products (head + contact) which differ mainly by the number of buttons, the colour of the buttons, the cap markings and the use of LEDs. This range also includes accessories such as marked caps and protective covers.

The representative product used for the analysis was the Harmony ZB4BA7341 multi-button switch. 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".

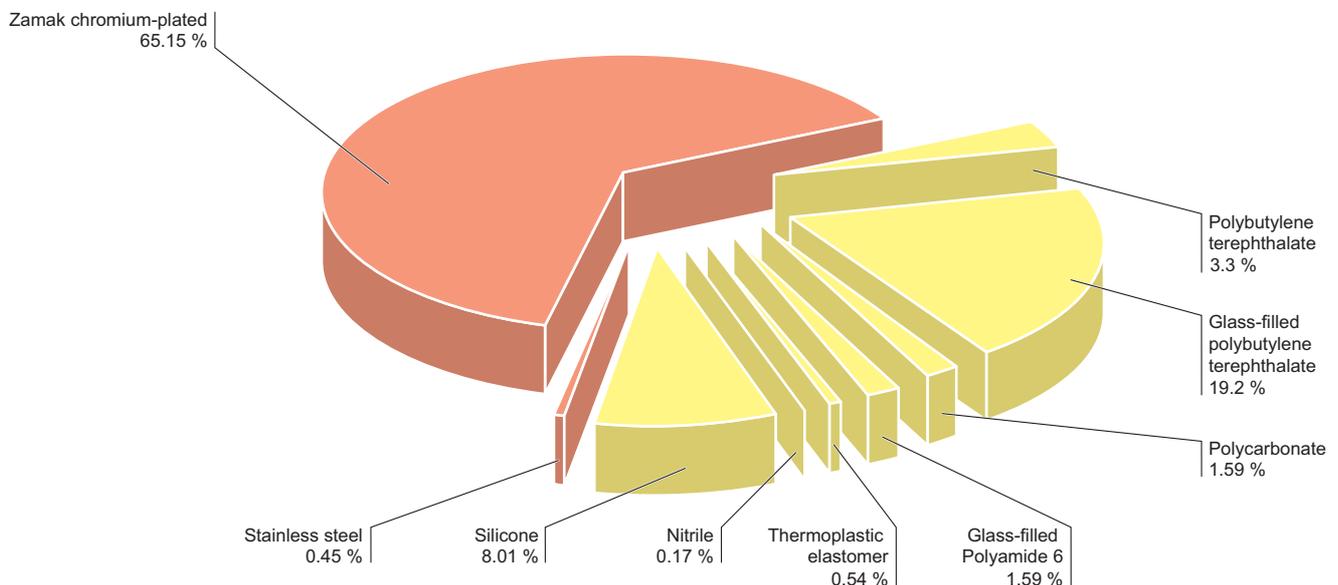
This analysis takes the stages in the life cycle of the product into account.

## Constituent materials

The mass of the products in the range is from 66 g to 68 g, not including the packaging.

It is 66 g for the Harmony ZB4BA7341 multi-button switch analysed.

The constituent materials are distributed as follows:



All necessary steps have been taken with our services, suppliers and subcontractors to ensure that the materials used in the composition of the Harmony multi-button product range do not contain any substances prohibited by the legislation that was in force<sup>(1)</sup> when it was put on the market. The products in the range are designed in compliance with the requirements of the RoHS directive (directive 2002/95/EC of 27 January 2003) and do not contain levels of lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls PBB, polybrominated diphenyl ethers PBDE) above the permissible thresholds mentioned in the directive.

(1) according to the list available on request.

# Product Environmental Profile - PEP

## Manufacturing

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

## 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 Harmony ZB4BA7341 is 5 g. It is made of recyclable materials: cardboard (5 g). The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

## Use

The products in the Harmony multi-button range do not generate any environmental pollution requiring special precautionary measures (noise, emissions, etc.).

## End of life

At end of life, the products in the Harmony ZB4BA7 range have been optimized to decrease the amount of waste and allow recovery of the product components and materials. This product range doesn't 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 of the Harmony multi-buttons range is: 70 %. As described in the recyclability calculation method this ratio includes only metals and plastics which have proven industrial recycling processes.

## Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 4, and its database, version 10, were used for the Life Cycle Assessment (LCA). The assumed service life of the product is 10 years, the utilisation rate of the installation is 82% and the European electrical power model is used. The analysis focused on a Harmony multi-button switch. The environmental impacts were analysed for the Manufacturing (M) phase, including the processing of raw materials, and for the Distribution (D) and Utilisation (U) phases.

### Presentation of product environmental impacts:

Indicator	Unit	For a Harmony ZB4BA7341 product			
		S = F + D + U	F	D	U
Depletion of natural resources	Y-1	6.71 10 <sup>-12</sup>	100 %	0.0 %	0.0 %
Water depletion	dm <sup>3</sup>	4.74	100 %	0.0 %	0.0 %
Contribution to the greenhouse effect	g≈CO <sub>2</sub>	2.83 10 <sup>2</sup>	100 %	0.0 %	0.0 %
Atmospheric warming potential	g≈CFC-11	6.51 10 <sup>-5</sup>	100 %	0.0 %	0.0 %
Atmospheric ozone creation	g≈C <sub>2</sub> H <sub>4</sub>	1.17 10 <sup>-1</sup>	100 %	0.0 %	0.0 %
Air acidification	g≈H <sup>+</sup>	7.78 10 <sup>-2</sup>	100 %	0.0 %	0.0 %
Hazardous waste production	kg	0.24 10 <sup>-3</sup>	100 %	0.0 %	0.0 %

The life cycle analysis showed that the Utilisation phase 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 products in the range were designed in conformity with the RoHS directive (2002/95/EC of 27 January 2003), they can be integrated unrestrictedly in a device or installation directly governed by these regulations.

*N.B.: The environmental impacts of the product depend on the conditions under which it is installed and used.*

*The environmental impact values listed in the above table are only valid within the specified context and cannot be used directly in the environmental report on 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<sup>3</sup>.

### 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<sub>2</sub>.

### 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 ethene (C<sub>2</sub>H<sub>4</sub>).

### 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<sup>+</sup>.

### 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.



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

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This document is based on ISO 14020 which relates to the general principles of environmental declarations and the ISO TR 14025 technical report relating to type III environmental declarations.

It was produced according to the instructions in the PEP drafting guide, version 4.

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