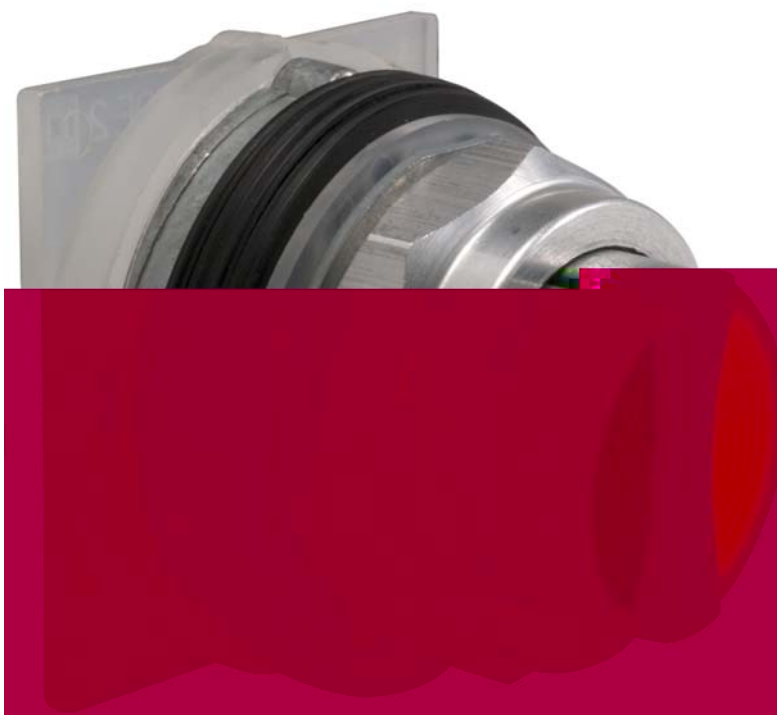


# Product Environmental Profile

Harmony™ 9001K Dual Function Operator



# Product Environmental Profile - PEP

## Product overview

The main purpose of the 9001K Dual Function Push Button range is to provide operator interface of a machine for applications where multiple pushbuttons are required.

This range consists of: a metal head operator, a variety of 3 colour caps (green-red-black), 3 different functions, both momentary, momentary interlock function and maintained interlock function and contact blocks. For products having the contact block, to determine the entire environmental impacts use the present PEP and add the impacts described on contact block subassembly PEP.

The representative product used for the analysis is 9001KR7GR.

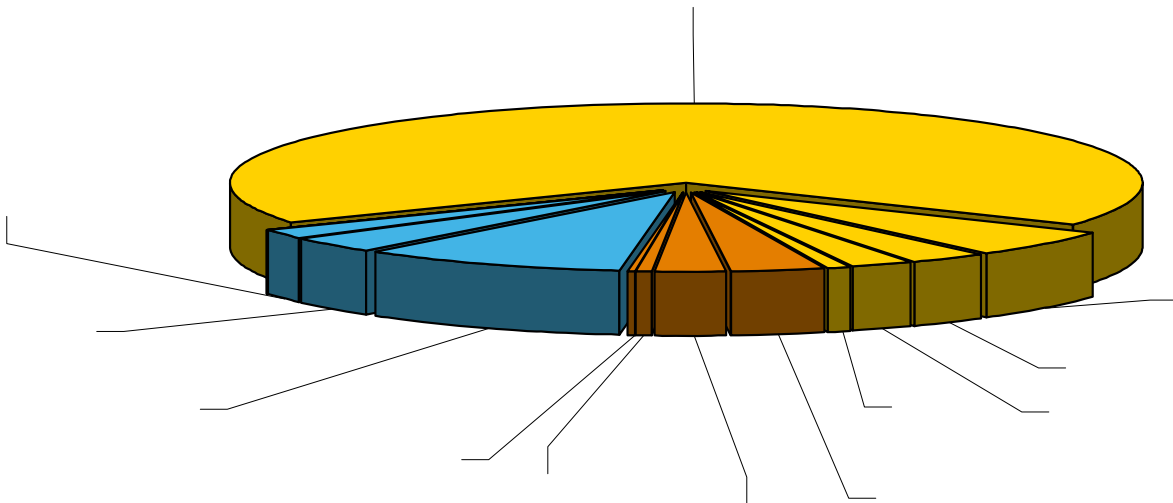
The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with a similar technology.

The environmental analysis was performed in conformity with ISO 14040.

## Constituent materials

The mass of the product range is from 116 g and 122 g including packaging. It is 122 g for the 9001KR7GR.

The constituent materials are distributed as follows:



# Product Environmental Profile - PEP

## End of life

At end of life, the products in the 9001K Dual Function range have been optimized to minimize 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 is: 71%.

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).

Modelling hypothesis and method:

- The calculation was performed on the 9001KR7GR.
- Product packaging: is included
- Installation components: no special components included.
- Scenario for the Use phase; this product range is included in the category 3: Enclosure or envelope (assumed service life is 20 years and use scenario is not needed to be defined).

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                | For 9001KR7GR         |          |          |      |      |          |
|------------------------------|---------------------|-----------------------|----------|----------|------|------|----------|
|                              |                     | S = M + D + I + U + E | M        | D        | I    | U    | E        |
| Raw Material Depletion       | Y-1                 | 2.82E-16              | 2.82E-16 | 5.01E-20 | 0.00 | 0.00 | 2.50E-19 |
| Energy Depletion             | MJ                  | 1.90E+01              | 1.88E+01 | 3.67E-02 | 0.00 | 0.00 | 1.83E-01 |
| Water depletion              | dm <sup>3</sup>     | 3.20                  | 3.18     | 3.48E-03 | 0.00 | 0.00 | 1.74E-02 |
| Global Warming               | g <sub>CO2</sub>    | 1.32E+03              | 1.31E+03 | 2.91     | 0.00 | 0.00 | 1.45E+01 |
| Ozone Depletion              | g <sub>CFC-11</sub> | 1.27E-04              | 1.14E-04 | 2.06E-06 | 0.00 | 0.00 | 1.03E-05 |
| Air Toxicity                 | m <sup>3</sup>      | 4.00E+05              | 3.97E+05 | 5.48E+02 | 0.00 | 0.00 | 2.74E+03 |
| Photochemical Ozone Creation | g <sub>C2H4</sub>   | 5.51E-01              | 5.36E-01 | 2.48E-03 | 0.00 | 0.00 | 1.24E-02 |
| Air acidification            | g <sub>H+</sub>     | 2.95E-01              | 2.93E-01 | 3.70E-04 | 0.00 | 0.00 | 1.85E-03 |
| Water Toxicity               | dm <sup>3</sup>     | 1.15E+02              | 1.13E+02 | 3.63E-01 | 0.00 | 0.00 | 1.82     |
| Water Eutrophication         | g <sub>PO4</sub>    | 3.07E-02              | 3.04E-02 | 4.83E-05 | 0.00 | 0.00 | 2.41E-04 |
| Hazardous waste production   | kg                  | 1.10E-01              | 1.10E-01 | 1.08E-06 | 0.00 | 0.00 | 5.40E-06 |

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 4.0, and with its database version 11.0.

The Manufacturing phase is the life cycle phase which has the greatest impact on the ma

# Product Environmental Profile - PEP

## Glossary

|                                     |  |
|-------------------------------------|--|
| <b>Raw Material Depletion (RMD)</b> | 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.   |
| <b>Energy Depletion (ED)</b>        | This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources.<br>This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.   |
| <b>Water Depletion (WD)</b>         | This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm <sup>3</sup> .   |
| <b>Global Warming (GW)</b>          | 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> .  |
| <b>Ozone Depletion (OD)</b>         | 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.   |
| <b>Air Toxicity (AT)</b>            | 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. |
| <b>Photochemical Ozone</b>          |  |

### Schneider Electric Industries SAS

35, rue Joseph Monier  
CS 30323  
F- 92506 Rueil Malmaison Cedex  
RCS Nanterre 954 503 439  
Capital social 896 313 776 €

Published by: Schneider Electric

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