Product Environmental Profile

QO Miniature Circuit Breakers
**General information**

**Representative product**  
QO Miniature Circuit Breakers - QO120PAFGF

**Description of the product**  
The main function of this product is to ensure protection of low voltage electrical installations

**Functional unit**  
Protect during 20 years the installation against overloads and short-circuits in circuit with assigned voltage 120V and rated current 20A. Product followed the standard UL489. This protection is ensured in accordance with the following parameters:
- Number of poles 1p
- Rated breaking capacity 10KA

**Constituent materials**

**Reference product mass**  
184 g including the product, its packaging and additional elements and accessories

**Representative product**

- Various - 34.3%
- Electronic components - 16.4%
- Cardboard - 10.4%
- Paper - 4.0%
- Miscellaneous - 0.6%
- PBT Polybutylene Terephtalate - 5.2%
- PA Polyamide - 1.8%
- Stainless steel - 2.0%
- Bronze - 0.8%
- Aluminium - 0.9%
- Nickel - 1.1%
- Ferrous alloys - 1.2%
- Iron - 5.6%
- Brass - 3.0%
- Copper - 5.2%
- Steel - 10.5%
- Various - 34.3%

**Plastics**  
7.0%

**Metals**  
30.3%

**Others**  
62.7%

**Substance assessment**

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2011/65/EU of 8 June 2011) 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.

## Additional environmental information

The QO Miniature Circuit Breakers presents the following relevant environmental aspects:

### Manufacturing
- Manufactured at a Schneider Electric production site ISO14001 certified

### Distribution
- Weight and volume of the packaging optimized, based on the European Union's packaging directive
- Packaging weight is 25.6 g, consisting of Cardboard (99%), plastic (1%)

### Installation
- The product does not require special installation procedure and requires little to no energy to install. The disposal of the packaging materials are accounted for during the installation phase (including transport to disposal).

### Use
- The product does not require special maintenance operations.

### End of life
- End of life optimized to decrease the amount of waste and allow recovery of the product components and materials.
- This product contains Electronic card (26.5g) that should be separated from the stream of waste so as to optimize end-of-life treatment.
- The location of these components and other recommendations are given in the End of Life Instruction document which is available on the Schneider-Electric Green Premium website [http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page](http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page)


## Environmental impacts

### Reference life time
- 20 years

### Product category
- Circuit-breakers

### Installation elements
- The product does not require special installation procedure and requires little to no energy to install. The disposal of the packaging materials are accounted for during the installation phase (including transport to disposal).

### Use scenario
- Load rate: 50% of In
- Use time rate: 30% of RLT

### Geographical representativeness
- United States of America

### Technological representativeness
- The Modules of Technologies such as material production, manufacturing process and transport technology used in this PEP analysis (LCA-EIME in this case) are similar and representative of the actual type of technologies used to make the product in production.

### Energy model used
- Energy model used: Mexico

### Impact indicators

<table>
<thead>
<tr>
<th>Impact indicators</th>
<th>Compulsory indicators</th>
<th>Unit</th>
<th>Total</th>
<th>Manufacturing</th>
<th>Distribution</th>
<th>Installation</th>
<th>Use</th>
<th>End of Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to mineral resources depletion</td>
<td>kg Sb eq</td>
<td>6.57E-04</td>
<td>6.57E-04</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
<td>7.15E-08</td>
<td>0*</td>
</tr>
<tr>
<td>Contribution to the soil and water acidification</td>
<td>kg SO₂ eq</td>
<td>1.20E-02</td>
<td>4.73E-03</td>
<td>2.81E-04</td>
<td>5.78E-06</td>
<td>6.97E-03</td>
<td>5.94E-05</td>
<td></td>
</tr>
<tr>
<td>Contribution to water eutrophication</td>
<td>kg PO₄³⁻ eq</td>
<td>2.87E-03</td>
<td>9.45E-04</td>
<td>6.47E-05</td>
<td>1.41E-06</td>
<td>1.84E-03</td>
<td>2.41E-05</td>
<td></td>
</tr>
<tr>
<td>Contribution to global warming</td>
<td>kg CO₂ eq</td>
<td>1.00E+01</td>
<td>2.60E+00</td>
<td>6.22E-02</td>
<td>1.39E-03</td>
<td>7.28E+00</td>
<td>6.70E-02</td>
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</tr>
<tr>
<td>Contribution to ozone layer depletion</td>
<td>kg CFC11 eq</td>
<td>4.78E-07</td>
<td>3.44E-07</td>
<td>1.26E-10</td>
<td>0*</td>
<td>1.32E-07</td>
<td>2.39E-09</td>
<td></td>
</tr>
<tr>
<td>Contribution to photochemical oxidation</td>
<td>kg C₆H₆ eq</td>
<td>1.85E-03</td>
<td>7.03E-04</td>
<td>2.08E-05</td>
<td>4.32E-07</td>
<td>1.12E-03</td>
<td>5.46E-06</td>
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</tr>
</tbody>
</table>

### Resources use

<table>
<thead>
<tr>
<th>Resources use</th>
<th>Unit</th>
<th>Total</th>
<th>Manufacturing</th>
<th>Distribution</th>
<th>Installation</th>
<th>Use</th>
<th>End of Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net use of freshwater</td>
<td>m³</td>
<td>3.10E-01</td>
<td>2.97E-01</td>
<td>0*</td>
<td>0*</td>
<td>1.29E-02</td>
<td>3.85E-05</td>
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<tr>
<td>Total Primary Energy</td>
<td>MJ</td>
<td>1.41E+02</td>
<td>4.21E+01</td>
<td>8.80E-01</td>
<td>1.81E-02</td>
<td>9.80E+01</td>
<td>2.67E-01</td>
</tr>
</tbody>
</table>

Energy model used: Electricity mix; AC; consumption mix, at consumer; 120V; US

*Energy model used: Mexico

**SCHN-00909-V01.01-EN - PEP ECOPASSPORT® - QO Miniature Circuit Breakers**

**Manufacturing**

**Total**

**Distribution**

**Installation**

**Use**

**End of Life**

<table>
<thead>
<tr>
<th>Unit</th>
<th>MJ</th>
<th>1.17E+02</th>
<th>2.72E+01</th>
<th>8.74E-01</th>
<th>1.80E-02</th>
<th>8.86E+01</th>
<th>2.17E-01</th>
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<tbody>
<tr>
<td>m³</td>
<td>6.02E+02</td>
<td>2.29E+02</td>
<td>1.02E+01</td>
<td>2.10E-01</td>
<td>3.59E+02</td>
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<tr>
<td>kg</td>
<td>3.08E-02</td>
<td>3.08E-02</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
<td></td>
</tr>
<tr>
<td>MJ</td>
<td>1.34E+02</td>
<td>4.09E+01</td>
<td>8.78E-01</td>
<td>1.81E-02</td>
<td>9.21E+01</td>
<td>2.67E-01</td>
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<tr>
<td>kg</td>
<td>2.01E+00</td>
<td>8.97E-01</td>
<td>2.21E-03</td>
<td>0*</td>
<td>1.11E+00</td>
<td>7.64E-04</td>
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<tr>
<td>MJ</td>
<td>0.00E+00</td>
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<td>0*</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
<td></td>
</tr>
</tbody>
</table>

**Use of non-renewable primary energy resources used as raw material**

| MJ          | 1.85E+00 | 1.85E+00 | 0*       | 0*       | 0*       | 0*       |
| MJ          | 0.00E+00 | 0*       | 0*       | 0*       | 0*       | 0*       |

**Waste categories**

| kg         | 6.43E-02 | 1.50E-02 | 0*       | 2.55E-02 | 0*       | 4.38E-02 |
| kg         | 0.00E+00 | 0*       | 0*       | 0*       | 0*       | 0*       |
| kg         | 0.00E+00 | 0*       | 0*       | 0*       | 0*       | 0*       |
| MJ         | 8.10E-05 | 7.61E-06 | 0*       | 7.34E-05 | 0*       | 1.64E-02 |

*represents less than 0.01% of the total life cycle of the reference flow

**Life cycle assessment performed with EIME version EIME v5.9.4, database version 2022-01 in compliance with ISO14044.**

The use phase is the life cycle phase which has the greatest impact on the majority of environmental indicators (based on compulsory indicators).
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.

<table>
<thead>
<tr>
<th>Registration number</th>
<th>SCHN-00909-V01.01-EN</th>
<th>Drafting rules</th>
<th>PCR-ed3-EN-2015 04 02</th>
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<tr>
<td>Verifier accreditation N°</td>
<td>VH32</td>
<td>Supplemented by</td>
<td>PSR-0005-ed2-EN-2016 03 29</td>
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<td>Date of issue</td>
<td>08/2023</td>
<td>Information and reference documents</td>
<td><a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a></td>
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<td>Internal</td>
<td>Validity period</td>
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<td>External X</td>
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</tbody>
</table>

Independent verification of the declaration and data, in compliance with ISO 14025 : 2010

The PCR review was conducted by a panel of experts chaired by Philippe Osset (SOLINNEN)

PEP are compliant with XP C08-100-1-2016

The elements of the present PEP cannot be compared with elements from another program.

Document in compliance with ISO 14025 : 2010 « Environmental labels and declarations. Type III environmental declarations »

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