# Product Environmental Profile

**Resi9 Miniature circuit breaker C Curve**

*as referent product for :*

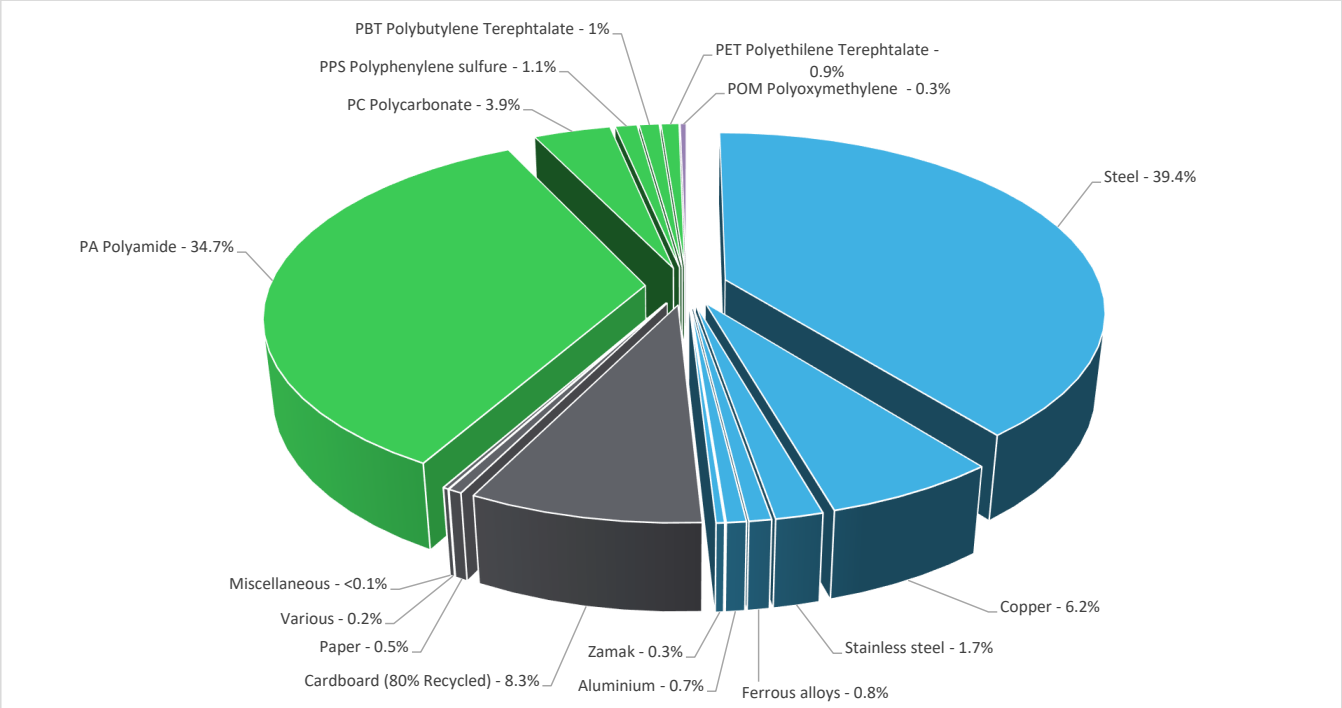
***All MCBs in Resi9 Range***

## General information

| | |
|---|---|
| **Reference product** | Resi9 Miniature circuit breaker C Curve - R9F06116 |
| **Description of the product** | Resi9 one-pole miniature circuit breaker R9F06116 is designed to protect residential installations againts overloads and short-circuits |
| **Description of the range** | The indicators values of this Resi9 MCB can be extrapolated, based on the Mass and Energy values of the products, for other Resi9 MCB range of products.<br>The environmental impacts of this reference product are representative of the impacts of the other products of the range which are developed with a similar technology. |
| **Functional unit** | Protect during 20 years the installation against overloads and short-circuits in circuit with assigned voltage [U] 230V AC and rated current [In] 16A. This protection is ensured in accordance with the following parameters:<br>- Number of poles Np-1<br>- Rated breaking capacity Icn- 6000A<br>- Tripping curve-C |

## Constituent materials

| | | |
|---|---|---|
| **Reference product mass** | 123.5 g | including the product, its packaging and additional elements and accessories |




| | | |
|---|---|---|
| | Plastics | 41.9% |
| | Metals | 49.1% |
| | Others | 9% |

## Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website
https://www.se.com/ww/en/work/support/green-premium/

## Additional environmental information

| | | | |
|---|---|---|---|
| **End Of Life** | Recyclability potential: | **53%** | Recyclability rate has been calculated based on REEECY'LAB tool developed by Ecosystem, for components/materials not covered by the tool, data from the "ECO'DEEE recyclability and recoverability calculation method" was taken. If no data was found a conservative assumption was used (0% recyclability). |

# Environmental impacts

| | |
|---|---|
| **Reference service 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. |
| **Use scenario** | Load rate: 50% of 16A (In)<br>Use time rate: 30% of the time over 20 years (RLT) |
| **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. |
| **Geographical representativeness** | New Zealand |

| Energy model used | [A1 - A3] | [A5] | [B6] | [C1 - C4] |
|---|---|---|---|---|
| | Electricity Mix; Production mix; Low voltage; IN | Electricity mix; AC; consumption mix, at consumer; 230V; NZ | Electricity mix; AC; consumption mix, at consumer; 230V; NZ | Electricity mix; AC; consumption mix, at consumer; 230V; NZ |

| Mandatory Indicators | | Resi9 Miniature circuit breaker C Curve - R9F06116 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Impact indicators | Unit | Total | Manufacturing [A1 - A3] | Distribution [A4] | Installation [A5] | Use [B1 - B7] | End of Life [C1 - C4] | Benefits [D] |
| Contribution to climate change | kg CO2 eq | 4.70E+00 | 7.80E-01 | 6.57E-02 | 1.97E-02 | 3.51E+00 | 3.20E-01 | -1.14E+00 |
| Contribution to climate change-fossil | kg CO2 eq | 4.69E+00 | 7.72E-01 | 6.57E-02 | 1.88E-02 | 3.51E+00 | 3.18E-01 | -1.13E+00 |
| Contribution to climate change-biogenic | kg CO2 eq | 1.03E-02 | 7.80E-03 | 0* | 8.76E-04 | 0* | 1.58E-03 | -6.77E-03 |
| Contribution to climate change-land use and land use change | kg CO2 eq | 2.64E-08 | 0* | 0* | 0* | 0* | 2.64E-08 | 0.00E+00 |
| Contribution to ozone depletion | kg CFC-11 eq | 3.32E-07 | 2.36E-07 | 5.80E-08 | 1.30E-09 | 3.41E-08 | 1.79E-09 | -1.68E-07 |
| Contribution to acidification | mol H+ eq | 2.18E-02 | 7.64E-03 | 2.89E-04 | 7.82E-05 | 1.30E-02 | 7.60E-04 | -7.89E-03 |
| Contribution to eutrophication, freshwater | kg $(PO4)^{3-}$ eq | 6.75E-05 | 1.10E-05 | 7.70E-09 | 1.42E-07 | 7.13E-08 | 5.62E-05 | -2.11E-06 |
| Contribution to eutrophication marine | kg N eq | 3.20E-03 | 1.08E-03 | 1.33E-04 | 2.07E-05 | 1.83E-03 | 1.35E-04 | -6.76E-04 |
| Contribution to eutrophication, terrestrial | mol N eq | 3.51E-02 | 1.18E-02 | 1.44E-03 | 1.56E-04 | 2.01E-02 | 1.57E-03 | -7.77E-03 |
| Contribution to photochemical ozone formation - human health | kg COVNM eq | 1.13E-02 | 3.46E-03 | 4.71E-04 | 4.18E-05 | 6.81E-03 | 4.92E-04 | -2.75E-03 |
| Contribution to resource use, minerals and metals | kg Sb eq | 1.42E-04 | 1.40E-04 | 0* | 0* | 1.74E-07 | 1.59E-06 | -3.28E-04 |
| Contribution to resource use, fossils | MJ | 4.92E+01 | 1.28E+01 | 7.98E-01 | 2.05E-01 | 2.42E+01 | 1.11E+01 | -2.48E+01 |
| Contribution to water use | m3 eq | 1.81E-01 | 0* | 3.34E-03 | 8.42E-03 | 9.78E-02 | 1.11E-01 | -5.11E-01 |

| Inventory flows Indicators | | Resi9 Miniature circuit breaker C Curve - R9F06116 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Inventory flows | Unit | Total | Manufact. [A1 - A3] | Distribution [A4] | Installation [A5] | Use [B1 - B7] | End of Life [C1 - C4] | Benefits [D] |
| Contribution to use of renewable primary energy excluding renewable primary energy used as raw material | MJ | 4.35E+01 | 2.29E-01 | 0* | 1.47E-02 | 4.33E+01 | 3.88E-02 | -1.48E-01 |
| Contribution to use of renewable primary energy resources used as raw material | MJ | 4.63E-02 | 4.63E-02 | 0* | 0* | 0* | 0* | -1.95E-01 |
| Contribution to total use of renewable primary energy resources | MJ | 4.36E+01 | 2.76E-01 | 0* | 1.47E-02 | 4.33E+01 | 3.88E-02 | -3.43E-01 |
| Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material | MJ | 4.78E+01 | 1.15E+01 | 7.98E-01 | 2.05E-01 | 2.42E+01 | 1.11E+01 | -2.48E+01 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Contribution to use of non renewable primary energy resources used as raw material | MJ | 1.32E+00 | 1.32E+00 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to total use of non-renewable primary energy resources | MJ | 4.92E+01 | 1.28E+01 | 7.98E-01 | 2.05E-01 | 2.42E+01 | 1.11E+01 | -2.48E+01 |
| Contribution to use of secondary material | kg | 9.64E-03 | 9.64E-03 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to use of renewable secondary fuels | MJ | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to use of non renewable secondary fuels | MJ | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to net use of freshwater | $m^3$ | 4.22E-03 | 0* | 7.77E-05 | 1.96E-04 | 2.28E-03 | 2.58E-03 | -1.19E-02 |
| Contribution to hazardous waste disposed | kg | 6.72E+00 | 6.54E+00 | 0* | 0* | 6.17E-02 | 1.16E-01 | -2.60E+01 |
| Contribution to non hazardous waste disposed | kg | 1.01E+00 | 5.69E-01 | 0* | 6.41E-02 | 3.25E-01 | 5.26E-02 | -1.23E+00 |
| Contribution to radioactive waste disposed | kg | 3.09E-04 | 2.60E-04 | 1.31E-05 | 8.61E-06 | 2.46E-05 | 2.46E-06 | -4.88E-04 |
| Contribution to components for reuse | kg | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to materials for recycling | kg | 7.08E-02 | 0* | 0* | 1.08E-02 | 0* | 6.00E-02 | 0.00E+00 |
| Contribution to materials for energy recovery | kg | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to exported energy | MJ | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to biogenic carbon content of the product | kg de C | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to biogenic carbon content of the associated packaging | kg de C | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |

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

*Life cycle assessment performed with EIME version 5.9.4, database version 2022-01 in compliance with ISO14044.*

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range, ratios to apply can be provided upon request

*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.*

| | | | |
|---|---|---|---|
| *Registration number :* | ENVPEP2210011_V1 | *Drafting rules* | PEP-PCR-ed4-2021 09 06 |
| *Validity period* | 5 years | *Supplemented by* | PSR-0005-ed2-2016 03 29 |
| *Date of issue* | 09/2023 | *Information and reference documents* | www.pep-ecopassport.org |

*Independent verification of the declaration and data, in compliance with ISO 14021 : 2016*

Internal X External

*The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)*

*PEP are compliant with XP C08-100-1 :2016 or EN 50693:2019*

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

*Document in compliance with ISO 14021 : 2016 « Environmental labels and declarations. Type II environmental declarations »*

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