



Product Environmental Profile



Eaton ZV Plug-in Busbar System 50A, Connecting Angle L1/N-10

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|---|--|--------|------------|--------|-------------|--------|----------------|--------|----------------|--------|-----------------|
| Representative product | ZV-L1/N-10 (263941) Product Category: Other Equipment - Passive Product- non-continuous operation | | | | | | | | | | |
| Description of the product | Eaton ZV Plug-in Busbar System 50A. Connection Angle L1/N; ZV variable plug-in busbar system offers flexible connection options for 3-phase and 1-phase switchgear assemblies in accordance with EN 61439-1. With just three different connection brackets and one phase busbar type, residual current devices (RCDs) and miniature circuit breakers (MCBs) can be easily connected. The busbar can be shortened as required and is then sealed with an insulating profile cover and the appropriate end caps. | | | | | | | | | | |
| Homogeneous Environmental Families Covered | The PEP concerns following product offerings from Eaton Industries ZV terminal block as mentioned below: <table border="0"> <tr> <td>263942</td> <td>ZV-L1/N-36</td> </tr> <tr> <td>263943</td> <td>ZV-L1/N-100</td> </tr> <tr> <td>263950</td> <td>ZV-L1/N-80A-10</td> </tr> <tr> <td>263951</td> <td>ZV-L1/N-80A-36</td> </tr> <tr> <td>263952</td> <td>ZV-L1/N-80A-100</td> </tr> </table> | 263942 | ZV-L1/N-36 | 263943 | ZV-L1/N-100 | 263950 | ZV-L1/N-80A-10 | 263951 | ZV-L1/N-80A-36 | 263952 | ZV-L1/N-80A-100 |
| 263942 | ZV-L1/N-36 | | | | | | | | | | |
| 263943 | ZV-L1/N-100 | | | | | | | | | | |
| 263950 | ZV-L1/N-80A-10 | | | | | | | | | | |
| 263951 | ZV-L1/N-80A-36 | | | | | | | | | | |
| 263952 | ZV-L1/N-80A-100 | | | | | | | | | | |
| Functional unit | <i>"The distribution of electrical power using one unit of Eaton 1+N Phase Busbar Connector, current up to 50A, over a reference service life of 20 years."</i> | | | | | | | | | | |
| Company information | Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania, 437157 Email: productstewardship-es@eaton.com | | | | | | | | | | |

| Constituent Materials | | | |
|------------------------|------------------------------|-----------|----------------|
| Reference product mass | 7.09E-03 Kg (With packaging) | | |
| Category PEP Material | Material constituent | Mass (kg) | % Contribution |
| Metals | Copper | 3.07E-03 | 43.3% |
| Other | Cardboard | 1.48E-03 | 20.9% |
| Other | Label | 1.35E-03 | 19.0% |
| Metals | Steel | 5.40E-04 | 7.6% |
| Plastics | Low Density Polyethylene | 3.90E-04 | 5.5% |
| Metals | Zinc (Plating) | 1.88E-04 | 2.7% |
| Other | Wood | 6.25E-05 | 0.9% |
| Metals | Nickel (Plating) | 4.24E-06 | 0.1% |
| Total | | 7.09E-03 | 100.0% |

Substance Assessment

The representative product is compliant with the EU-RoHS Directive (2011/65/EU) with exemption and the product does contain lead as substance listed as Substance-of-Very-High-Concern (SVHC) on the Candidate List of the EU-REACH Regulation (1907/2006/ECHA).

Additional Environmental Information

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|----------------------|--|
| Manufacturing | The reference product is assembled at an Eaton plant Sarbi, Romania holding management system certifications according to ISO 14001 standards. |
| Distribution | Eaton is committed to minimizing weight and volume of product and packaging with focus to optimize transport efficiency. |
| Installation | The installation process does not require any energy consumption and there is no waste other than the obsolete product packaging generated during this step. |
| Use | The product requires energy consumption during operation. |
| End of life | The recyclability rate of the overall product is 67.3% if it is properly dismantled prior to shredding. The rate is calculated based on "WEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME). |

Environmental Impacts

The calculation of the environmental impacts is the result of the Product's Life Cycle Analysis in accordance with ISO 14040/44, covering the entire lifecycle, i.e., "Cradle-to-Grave" including the following life cycle phases: production, distribution, installation, use and end of life.

System modelling was carried out using the commercial LCA software EIME v6.3.0.1 with database version CODDE-2024-06 Updated on 2024-06-04.

Indicators Set: PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0

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|----------------------------|--|
| Manufacturing Phase | The product is assembled as well as packed at Eaton facility Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania plant. Energy model used: Romania |
| Distribution Phase | Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in Europe is considered as per PCR rules. |
| Installation Phase | Product is installed in Europe. Installation of product and treatment of packaging waste are considered in this phase. There is no energy consumption for reference product. |

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| | Energy model used: Europe |
| Use Phase | Reference lifetime: 20 Years Usage profile: The product has power loss of 0.0095 W at full load condition. For non-continuous operations considering 30% of the loading rate and 30% of the use time rate, total losses are 0.045 kWh over the 20 years. Products do not require any maintenance/replacement during useful life. non-continuous operation is considered as per PSR-0005 section 3.15.2.1. Energy model used: Europe |
| End of life Phase | Product disposed with WEEE guidelines. Energy model used: Europe |
| Module-D | Module D is calculated according to PCR-ed4-EN-2021 09 06 based on the materials recycled and the modelled end-of-life scenario. It expresses the net benefits and loads beyond the boundaries of the system and are not to be included in the life cycle totals. |

Environmental Impact Indicators: Mandatory

| Mandatory environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|--|--|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Climate change – total (GWP) | kg CO ₂ eq. | 5.66E-02 | 2.52E-02 | 1.86E-03 | 8.50E-03 | 1.59E-02 | 5.14E-03 | -5.38E-03 |
| Climate change - fossil fuels (GWP-f) | kg CO ₂ eq. | 5.41E-02 | 2.80E-02 | 1.86E-03 | 3.79E-03 | 1.58E-02 | 4.63E-03 | -8.18E-03 |
| Climate change – biogenics (GWP-b) | kg CO ₂ eq. | 2.47E-03 | -2.78E-03 | 7.61E-09 | 4.71E-03 | 2.92E-05 | 5.15E-04 | 2.80E-03 |
| Climate change - land use and land use transformation (GWP-lu) | kg CO ₂ eq. | 1.65E-08 | 6.95E-09 | 2.81E-09 | 1.17E-10 | 0.00E+00 | 6.66E-09 | 0.00E+00 |
| Ozone depletion (ODP) | kg eq. CFC-11 | 4.56E-09 | 4.15E-09 | 2.26E-11 | 4.97E-11 | 7.68E-11 | 2.61E-10 | -1.52E-09 |
| Acidification (AP) | mole of H ⁺ eq. | 9.96E-04 | 8.51E-04 | 2.94E-06 | 1.06E-05 | 8.13E-05 | 4.98E-05 | -3.20E-04 |
| Freshwater eutrophication (EP-fw) | kg P eq. | 1.70E-05 | 5.13E-06 | 6.95E-09 | 4.60E-08 | 4.17E-08 | 1.18E-05 | -3.17E-08 |
| Marine aquatic eutrophication (EP-m) | kg of N eq. | 4.57E-05 | 2.55E-05 | 5.33E-07 | 4.63E-06 | 9.90E-06 | 5.09E-06 | -9.14E-06 |
| Terrestrial eutrophication (EP-t) | mole of N eq. | 5.51E-04 | 2.84E-04 | 5.85E-06 | 3.15E-05 | 1.59E-04 | 7.08E-05 | -9.65E-05 |
| Photochemical ozone formation (POCP) | kg of NMVOC eq. | 1.90E-04 | 1.33E-04 | 1.89E-06 | 7.38E-06 | 3.11E-05 | 1.74E-05 | -4.71E-05 |
| Depletion of abiotic resources – elements (ADPe) | kg eq. Sb | 6.52E-06 | 6.13E-06 | 6.63E-10 | 2.12E-10 | 5.61E-09 | 3.83E-07 | -2.46E-06 |
| Depletion of abiotic resources - fossil fuels (ADP-f) | MJ | 1.31E+00 | 6.94E-01 | 3.30E-02 | 3.52E-02 | 4.00E-01 | 1.44E-01 | -2.26E-01 |
| Water scarcity (WDP) | m ³ of eq.. deprivation worldwide | 6.09E-02 | 4.88E-02 | 6.70E-05 | 2.76E-04 | 1.21E-03 | 1.05E-02 | -1.67E-02 |

*Only B6 (Energy Consumption) is taken into account, the other sub-modules of the use phase (B1-B5, B7) are zero.

Inventory Flow Indicators: Mandatory

| Inventory flow indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|---------------------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials | MJ | 1.71E-01 | 5.02E-02 | 1.04E-04 | 5.01E-03 | 1.06E-01 | 9.68E-03 | -1.57E-02 |
| Use of renewable primary energy resources used as raw materials | MJ | 3.95E-02 | 3.95E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -2.23E-02 |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 2.10E-01 | 8.98E-02 | 1.04E-04 | 5.01E-03 | 1.06E-01 | 9.68E-03 | -3.79E-02 |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ | 1.27E+00 | 6.58E-01 | 3.30E-02 | 3.52E-02 | 4.00E-01 | 1.44E-01 | -2.01E-01 |
| Use of non-renewable primary energy resources used as raw materials | MJ | 3.63E-02 | 3.63E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -2.50E-02 |
| Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 1.31E+00 | 6.94E-01 | 3.30E-02 | 3.52E-02 | 4.00E-01 | 1.44E-01 | -2.26E-01 |
| Use of secondary materials | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of non-renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Net use of fresh water | m ³ | 1.43E-03 | 1.14E-03 | 1.56E-06 | 2.09E-05 | 2.85E-05 | 2.45E-04 | -3.88E-04 |
| Hazardous waste disposed of | kg | 5.45E-01 | 5.39E-01 | 7.78E-06 | 2.36E-04 | 6.95E-04 | 4.48E-03 | -2.26E-01 |
| Non-hazardous waste disposed of | kg | 9.69E-03 | 4.75E-03 | 1.73E-04 | 1.32E-03 | 2.68E-03 | 7.71E-04 | -1.52E-03 |
| Radioactive waste disposed of | kg | 3.22E-06 | 2.18E-06 | 1.37E-07 | 2.25E-07 | 6.14E-07 | 6.82E-08 | -8.44E-07 |
| Components for re-use | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for recycling | kg | 5.99E-03 | 1.22E-03 | 0.00E+00 | 2.50E-03 | 0.00E+00 | 2.27E-03 | 0.00E+00 |
| Materials for energy recovery | kg | 5.14E-04 | 9.52E-05 | 0.00E+00 | 4.19E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy | MJ by energy vector | 2.09E-05 | 5.92E-09 | 0.00E+00 | 2.08E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Biogenic carbon content of the product | kg of C. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Biogenic carbon content of the associated packaging | kg of C. | 1.29E-03 | 1.29E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Only B6 (Energy Consumption) is taken into account, the other sub-modules of the use phase (B1-B5, B7) are zero.

Environmental Impact Indicators: Optional

| Optional Environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|--|-----------------------------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Emission of fine particles | incidence of diseases | 6.12E-09 | 5.10E-09 | 2.52E-11 | 6.33E-11 | 6.54E-10 | 2.70E-10 | -1.91E-09 |
| Ionizing radiation, human health | kBq of U ²³⁵ eq. | 2.65E+00 | 2.62E+00 | 6.58E-05 | 5.48E-04 | 2.28E-02 | 7.71E-04 | -2.04E+00 |

| Optional Environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|-------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Ecotoxicity, fresh water | CTUe | 9.94E-01 | 4.94E-01 | 5.43E-02 | 5.13E-02 | 3.00E-02 | 3.64E-01 | -1.09E-01 |
| Human toxicity, cancer effects | CTUh | 8.12E-10 | 4.59E-10 | 3.64E-13 | 3.40E-10 | 1.99E-12 | 1.20E-11 | -2.48E-10 |
| Human toxicity, non-cancer effects | CTUh | 1.20E-08 | 1.11E-08 | 6.95E-12 | 1.14E-11 | 4.76E-11 | 9.12E-10 | -4.06E-09 |
| Impacts related to land use/soil quality | - | 5.14E-02 | 1.54E-02 | 7.96E-06 | 1.05E-05 | 4.39E-04 | 3.56E-02 | 0.00E+00 |
| Total use of primary energy during the life cycle | MJ | 1.52E+00 | 7.84E-01 | 3.31E-02 | 4.02E-02 | 5.06E-01 | 1.54E-01 | -2.64E-01 |

*Only B6 (Energy Consumption) is taken into account, the other sub-modules of the use phase (B1-B5, B7) are zero.


To evaluate the environmental impact of other products covered by this PEP, multiply the impact figures by-

Factors for Manufacturing, Distribution, Installation, Use, End-of-Life, and Module-D Phase:

| Product Number | Product Description | Manufacturing, Distribution, Installation, Use, End of Life and Module-D | Use Phase |
|----------------|------------------------|--|-----------|
| 263941 | ZV-L1/N-10 (Reference) | 1.0 | 1.00 |
| 263942 | ZV-L1/N-36 | 1.0 | 1.00 |
| 263943 | ZV-L1/N-100 | 1.0 | 1.00 |
| 263950 | ZV-L1/N-80A-10 | 1.0 | 2.56 |
| 263951 | ZV-L1/N-80A-36 | 1.0 | 2.56 |
| 263952 | ZV-L1/N-80A-100 | 1.0 | 2.56 |

Disclaimer

This Product Environmental Profile and its content is based on information available to us. It refers to the product at the date of issue. We make no express or implied representations or warranties with respect to the information contained herein.

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| <i>Registration Number</i> | EATO-00348-V01.01-EN | <i>Drafting rules</i> | PCR-ed4-EN-2021 09 06 |
| <i>Verifier accreditation Number</i> | VH54 | Supplemented by | PSR-0005-ed3.1-EN-2023 12 08 |
| <i>Date of issue</i> | 05-2025 | <i>Information and reference documents</i> | www.pep-ecopassport.org |
| | | <i>Validity period</i> | 5 years |
| Independent verification of the declaration and data, in compliance with ISO 14025: 2006 | | | |
| Internal | X | External | |
| The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain) | | |  |
| <i>PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019</i> | | | |
| <i>The components of the present PEP may not be compared with components from any other program.</i> | | | |
| <i>Document complies with ISO 14025: 2006 « Environmental labels and declarations. Type III environmental declarations »</i> | | | |