# Product Environmental Profile

## M22-I Surface Mounting Enclosure (M22 Accessories)

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|---|---|
| **Representative product** | M22-I6-* (Y7-197636)<br>Product Category: Unequipped enclosures and cabinets |
| **Description of the product** | Eaton M22 Accessories offer a complete range of Surface mounting Enclosure. This study mainly focuses on M22-I6-* (Y7-197636). This accessory is designed to facilitate the coupling of Individually markable with pushbutton configuration in one place. They generally have knockouts on rear, top and lateral side of the product to have proper cable entrance. They come is different sizes mainly depending on their capacity to hold multiple pushbuttons. The enclosure and housing are fitted securely using high grade steel screws. |
| **Homogeneous Environmental Families Covered** | The PEP concerns following product offerings from M22 Surface Mounting Enclosure accessories series as mentioned below:<br>• Series: M22 Accessories<br>• Color: Yellow Enclosure with Dark Grey housing, White Enclosure with Light Grey Housing<br>• Mounting Locations: 1, 2, 3, 4, 6, 12<br>• Cable Gland Size: M20, M25, PG16<br>• Application Area: All Application Area |
| **Functional unit** | "Protect people from direct contact with live active parts and ensure the grouping of control, command and protection devices in a single enclosure having the following dimensions 80mm X 56mm X 252mm, while protecting them against mechanical impacts (IK06) and the penetration of solid objects and liquids (IP66), according to the appropriate use scenario, and for the reference service life of the product of 20 years." |
| **Company information** | Eaton Industries GmbH,<br>Power Management & Control Components Division,<br>Hein-Moeller-Str. 7-11, 53115 Bonn, Germany<br>Email: productstewardship-es@eaton.com |

| Constituent Materials | | | |
|---|---|---|---|
| Reference product mass | 4.84E-01Kg (With Packaging) | | |
| Category PEP material | Material constituent | Mass (kg) | % Contribution |
| Plastics | Polycarbonate With 30% Glass Fiber | 3.54E-01 | 73.2% |
| Other | Carton | 8.78E-02 | 18.1% |
| Other | Wooden Pallet | 2.92E-02 | 6.0% |
| Metals | Steel | 1.20E-02 | 2.5% |
| Plastics | Low Density Polyethylene Film | 5.02E-04 | 0.1% |
| Other | Label | 5.00E-04 | 0.1% |
| Total | | 4.84E-01 | 100.0% |

| Substance Assessment |
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| The representative product is compliant with the EU-RoHS Directive (2011/65/EU) and the product doesn't contain any substance listed as Substance-of-Very-High-Concern (SVHC) on the Candidate List of the EU-REACH Regulation (1907/2006/EC). |

| **Additional Environmental Information** | |
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| **Manufacturing** | The reference product is assembled at an Eaton plant 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 does not require energy consumption and maintenance during operation. |
| **End of life** | Recyclability of product is equal to 39% based on the method described in IEC/TR 62635, Edition 1.0/2012-10 "Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment". |

| Environmental Impacts | |
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| 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.<br>System modelling was carried out using the commercial LCA software EIME v6.2.5 with database version CODDE-2024-06.<br>Indicators Set: PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0 | |
| Manufacturing Phase | The product is assembled as well as packed at Eaton facility Eaton Holzhausen, Germany plant.<br>Energy model used: Germany |
| Distribution Phase | Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in France 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.<br>Energy model used: Europe |

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| Use Phase | Reference lifetime: 20 Years<br>Usage profile: No energy consumption by the product during its useful life. Also, product do not require any maintenance/replacement during useful life. |
| End of life Phase | Product disposed with WEEE guidelines.<br>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.<br>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 | B1-B7 – Use* | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|
| Climate change - total (GWP) | kg $CO_2$ eq. | 2.11E+00 | 1.52E+00 | 1.15E-01 | 3.41E-01 | 0.00E+00 | 1.29E-01 | -3.37E-01 |
| Climate change - fossil fuels (GWP-f) | kg $CO_2$ eq. | 2.04E+00 | 1.64E+00 | 1.15E-01 | 1.50E-01 | 0.00E+00 | 1.29E-01 | -4.50E-01 |
| Climate change - biogenics (GWP-b) | kg $CO_2$ eq. | 7.29E-02 | -1.18E-01 | 0.00E+00 | 1.91E-01 | 0.00E+00 | 4.69E-05 | 1.13E-01 |
| Climate change - land use and land use transformation (GWP-lu) | kg $CO_2$ eq. | 3.94E-04 | 3.94E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -1.20E-04 |
| Ozone depletion (ODP) | kg eq. CFC-11 | 7.01E-08 | 6.48E-08 | 1.77E-10 | 1.43E-09 | 0.00E+00 | 3.66E-09 | -2.41E-08 |
| Acidification (AP) | mole of H+ eq. | 7.15E-03 | 5.50E-03 | 7.31E-04 | 3.17E-04 | 0.00E+00 | 5.98E-04 | -1.32E-03 |
| Freshwater eutrophication (Ep-fw) | kg P eq. | 2.05E-05 | 9.85E-06 | 4.33E-08 | 1.52E-06 | 0.00E+00 | 9.08E-06 | -3.49E-06 |
| Marine aquatic eutrophication (Ep-m) | kg of N eq. | 1.83E-03 | 1.20E-03 | 3.43E-04 | 1.56E-04 | 0.00E+00 | 1.28E-04 | -3.29E-04 |
| Terrestrial eutrophication (Ep-t) | mole of N eq. | 1.94E-02 | 1.32E-02 | 3.76E-03 | 9.89E-04 | 0.00E+00 | 1.46E-03 | -3.18E-03 |
| Photochemical ozone formation (POCP) | kg of NMVOC eq. | 5.80E-03 | 4.21E-03 | 9.49E-04 | 2.45E-04 | 0.00E+00 | 4.02E-04 | -9.75E-04 |
| Depletion of abiotic resources - elements (ADP-e) | kg eq. Sb | 1.25E-05 | 1.25E-05 | 4.55E-09 | 4.63E-09 | 0.00E+00 | 7.14E-09 | -6.70E-06 |
| Depletion of abiotic resources - fossil fuels (ADP-f) | MJ | 4.41E+01 | 3.77E+01 | 1.61E+00 | 1.00E+00 | 0.00E+00 | 3.79E+00 | -9.87E+00 |
| Water scarcity (WDP) | $m^3$ eq. deprivation worldwide | 4.00E-01 | 3.73E-01 | 4.39E-04 | 8.74E-03 | 0.00E+00 | 1.77E-02 | -1.06E-01 |

*The product does not have any Use phase Consumption, hence all values are kept as “0”.

**Inventory Flow Indicators: Mandatory**

| Inventory flow indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B1-B7 - 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 | 3.52E+00 | 3.01E+00 | 2.15E-03 | 3.32E-01 | 0.00E+00 | 1.83E-01 | -1.62E-01 |
| Use of renewable primary energy resources used as raw materials | MJ | 2.28E+00 | 2.28E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -1.62E+00 |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 5.80E+00 | 5.29E+00 | 2.15E-03 | 3.32E-01 | 0.00E+00 | 1.83E-01 | -1.79E+00 |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ | 3.50E+01 | 2.86E+01 | 1.61E+00 | 1.00E+00 | 0.00E+00 | 3.79E+00 | -7.10E+00 |
| Use of non-renewable primary energy resources used as raw materials | MJ | 9.12E+00 | 9.12E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -2.77E+00 |
| Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 4.41E+01 | 3.77E+01 | 1.61E+00 | 1.00E+00 | 0.00E+00 | 3.79E+00 | -9.87E+00 |
| 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 | $m^3$ | 9.84E-03 | 8.74E-03 | 1.02E-05 | 6.78E-04 | 0.00E+00 | 4.11E-04 | -2.48E-03 |
| Hazardous waste disposed of | kg | 1.28E+00 | 9.12E-01 | 0.00E+00 | 2.66E-03 | 0.00E+00 | 3.69E-01 | -4.85E-01 |
| Non-hazardous waste disposed of | kg | 1.40E+00 | 1.02E+00 | 4.05E-03 | 5.84E-02 | 0.00E+00 | 3.17E-01 | -3.13E-01 |
| Radioactive waste disposed of | kg | 5.17E-04 | 4.88E-04 | 2.89E-06 | 7.10E-06 | 0.00E+00 | 1.83E-05 | -1.63E-04 |
| 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 | 2.12E-01 | 2.37E-02 | 0.00E+00 | 9.02E-02 | 0.00E+00 | 9.82E-02 | 0.00E+00 |
| Materials for energy recovery | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy | MJ by energy vector | 1.36E-02 | 0.00E+00 | 0.00E+00 | 1.36E-02 | 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. | 4.92E-02 | 4.92E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*The product does not have any Use phase Consumption, hence all values are kept as “0”.

**Environmental Impact Indicators: Optional**

| Optional Environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B1-B7 – Use* | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|
| Emission of fine particles | incidence of diseases | 6.90E-08 | 5.72E-08 | 5.95E-09 | 1.85E-09 | 0.00E+00 | 3.98E-09 | -1.87E-08 |
| Ionizing radiation, human health | kBq $U^{235}$ eq. | 1.45E+00 | 1.38E+00 | 2.81E-04 | 1.26E-02 | 0.00E+00 | 5.98E-02 | -7.37E-01 |
| Ecotoxicity, fresh water | CTUe | 1.78E+01 | 1.57E+01 | 7.56E-02 | 1.53E+00 | 0.00E+00 | 5.75E-01 | -5.72E+00 |
| Human toxicity, cancer effects | CTUh | 1.57E-07 | 1.46E-07 | 2.03E-12 | 1.12E-08 | 0.00E+00 | 1.89E-11 | -8.23E-08 |
| Human toxicity, non-cancer effects | CTUh | 1.45E-08 | 1.33E-08 | 3.93E-11 | 3.30E-10 | 0.00E+00 | 8.14E-10 | -4.11E-09 |
| Impacts related to land use/soil quality | - | 1.11E+00 | 1.11E+00 | 0.00E+00 | 2.39E-04 | 0.00E+00 | 0.00E+00 | -3.34E-01 |
| Total use of primary energy during the life cycle | MJ | 4.99E+01 | 4.30E+01 | 1.61E+00 | 1.34E+00 | 0.00E+00 | 3.98E+00 | -1.17E+01 |

*The product does not have any Use phase Consumption, hence all values are kept as “0”.

To evaluate the environmental impact of other product covered by this PEP, multiply the impact figures by- **Factors for Manufacturing, Distribution, Installation, Use, End-of-Life and Module-D Phase:**

| Part Number | Product Description | Extrapolation factor for all phase |
|---|---|---|
| Y7-197636 | M22-I6-* (Reference) | 1.00 |
| Y7-197631 | M22-I1-* | 0.39 |
| Y7-197632 | M22-IY1-* | 0.39 |
| Y7-197633 | M22-I2-* | 0.56 |
| Y7-197634 | M22-I3-* | 0.67 |
| Y7-197635 | M22-I4-* | 0.76 |
| Y7-216535 | M22-I1 | 0.39 |
| Y7-216536 | M22-IY1 | 0.39 |
| Y7-216537 | M22-I2 | 0.56 |
| Y7-216538 | M22-I3 | 0.67 |
| Y7-216539 | M22-I4 | 0.76 |
| Y7-216540 | M22-I6 | 1.00 |
| Y7-229233 | M22-I1-PG | 0.39 |
| Y7-229234 | M22-IY1-PG | 0.39 |
| Y7-229235 | M22-I2-PG | 0.56 |
| Y7-229236 | M22-I3-PG | 0.67 |
| Y7-229237 | M22-I4-PG | 0.76 |
| Y7-229238 | M22-I6-PG | 1.00 |
| Y7-222688 | M22-I12 | 3.55 |

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| 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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| *Registration Number* | EATO-00299-V01.01-EN | *Drafting rules* | PCR-ed4-EN-2021 09 06 |
| *Verifier accreditation Number* | VH56 | Supplemented by | PSR-0005-ed3.1-EN-2023 12 08 |
| *Date of issue* | 04-2025 | *Information and reference documents* | www.pep-ecopassport.org |
| | | *Validity period* | 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) | | | |
| *PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019*<br>*The components of the present PEP may not be compared with components from any other program.* | | | |
| *Document complies with ISO 14025: 2006 « Environmental labels and declarations. Type III environmental declarations »* | | | |