

# Product Environmental Profile

**Altivar Process ATV650, Variable speed drive, 45kW, 380 to 480V, 3 phases, IP55**

**Altivar Process ATV600**





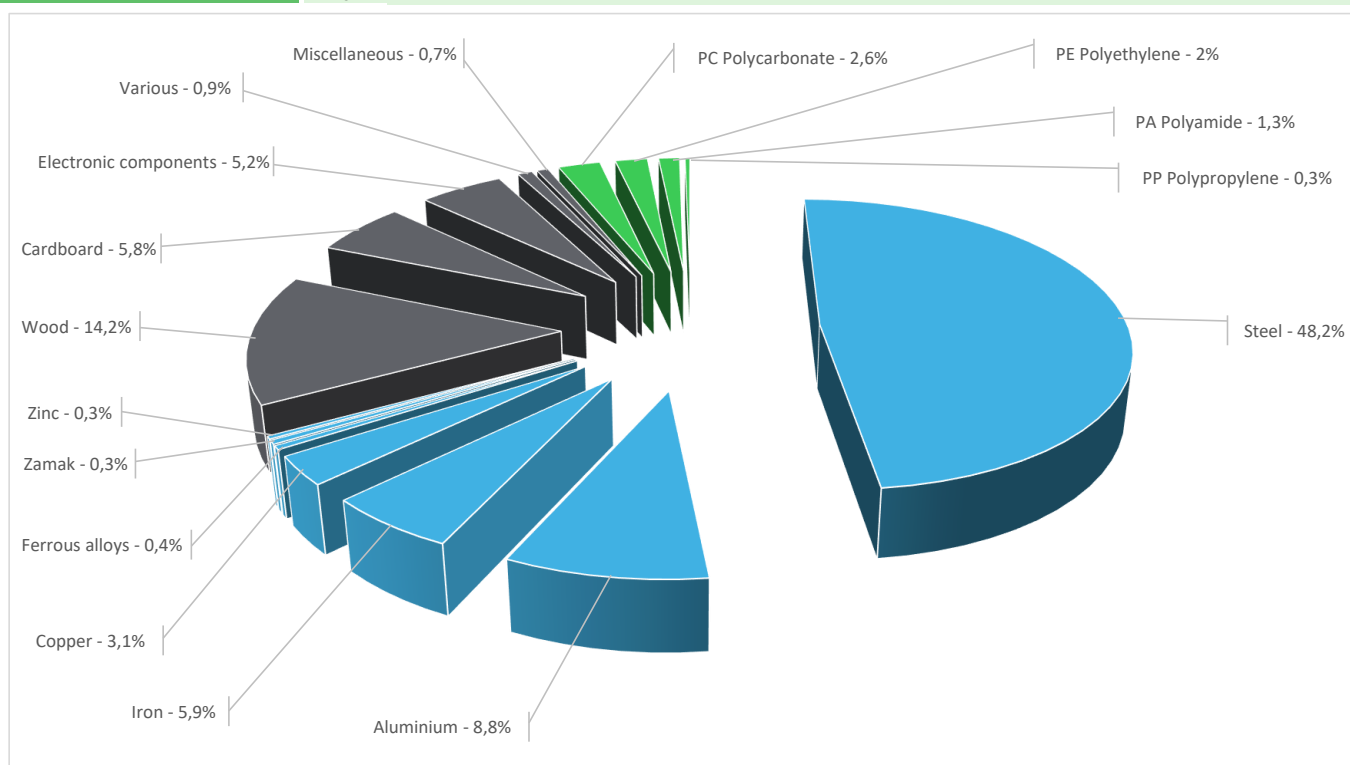
## General information

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference product          | Altivar Process ATV650, Variable speed drive, 45kW, 380 to 480V, 3 phases, IP55 - ATV650D45N4E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Description of the product | The main function of the Altivar Process product range is the speed control and variation of a synchronous or asynchronous electric motor for fluid management and industrial applications.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description of the range   | This PEP refer to a range of products assimilated to a reference product by an extrapolation rule. This range consists of products Altivar Process ATV600 designed for industrial processes in the following market segments: oil and gas, mining, minerals and metals, food and beverage water and wastewater. The rating is from 30 to 45 kW (40 to 60 HP). 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            | To adapt the speed and torque of synchronous, asynchronous or reluctance motor to the machine's operating point for 45 kW for heavy duty electric motors for fluid management and industrial applications in IP55/UL type 1 conditions, at 380V to 480V rated 3-phases voltage supply. Calculation of the environmental impacts is based on 10 years of product service lifetime. The usage profile taken into account is 6% uptime in full phase, 15% uptime in medium high phase, 35% uptime in medium low phase and 44% uptime in low phase of the 5000h operating time and 1000h of standby according to the CEMEP guide: pump/fan/compressor. |



## Constituent materials

|                        |       |                                                                           |
|------------------------|-------|---------------------------------------------------------------------------|
| Reference product mass | 66 kg | including the product, its packaging, additional elements and accessories |
|------------------------|-------|---------------------------------------------------------------------------|



|          |       |
|----------|-------|
| Plastics | 6,2%  |
| Metals   | 67,0% |
| Others   | 26,8% |



## Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric website

<https://www.se.com>



## Additional environmental information

|             |                          |     |                                                                                                                                                                                                                                                                                                                                                 |
|-------------|--------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| End Of Life | Recyclability potential: | 90% | The recyclability rate was calculated from the recycling rates of each material making up the product based on REEECY*LAB tool developed by Ecosystem, for components/materials not covered by the tool, data from the EIME database and the related PSR was taken. If no data was found a conservative assumption was used (0% recyclability). |
|-------------|--------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|


**Environmental impacts**

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                              |                |                                                                   |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------|
| Reference service life time      | 10 years                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                                   |
| Product category                 | Other equipments - Active product                                                                                                                                                                                                                                                                                                                                                                                            |                |                                                                   |
| Life cycle of the product        | The manufacturing, the distribution, the installation, the use and the end of life were taken into consideration in this study                                                                                                                                                                                                                                                                                               |                |                                                                   |
| Electricity consumption          | The electricity consumed during manufacturing processes is considered for each part of the product individually, the final assembly generates a negligible consumption                                                                                                                                                                                                                                                       |                |                                                                   |
| Installation elements            | The product does not require any special installation operations                                                                                                                                                                                                                                                                                                                                                             |                |                                                                   |
| Use scenario                     | The product is in full phase 6% of the time with a power use of 876W, in medium high phase 15% of the time with a power use 611W, in medium low phase 35% of the time with a power use 362W, in low phase 44% of the time with a power use 291W uptime in low phase of the 5000h operating time for 10 years and 1000h of standby according to the CEMEP guide: pump/fan/compressor. Drive efficiency according to EN 17038. |                |                                                                   |
| Time representativeness          | The collected data are representative of the year 2025                                                                                                                                                                                                                                                                                                                                                                       |                |                                                                   |
| Technological representativeness | The Modules of Technologies such as material production, manufacturing processes and transport technology used in the PEP analysis (LCA EIME in the case) are similar and representative of the actual type of technologies used to make the product.                                                                                                                                                                        |                |                                                                   |
| Geographical representativeness  | Final assembly site                                                                                                                                                                                                                                                                                                                                                                                                          | Use phase      |                                                                   |
|                                  | China, Wuxi                                                                                                                                                                                                                                                                                                                                                                                                                  | Europe         |                                                                   |
| Energy model used                | [A1 - A3]                                                                                                                                                                                                                                                                                                                                                                                                                    | [A5]           | [B6]                                                              |
|                                  | Electricity mix; Production mix; low voltage; 2022; China, CN                                                                                                                                                                                                                                                                                                                                                                | No energy used | Electricity mix; Production mix; low voltage; 2022; Europe, EU-27 |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                              |                | [C1 - C4]                                                         |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                              |                | Global, European and French datasets are used.                    |

Detailed results of the optional indicators mentioned in PCRed4 are available in the LCA report and on demand in a digital format - Country Customer Care Center - <http://www.se.com/contact>

| Mandatory Indicators                                         |              | Altivar Process ATV650, Variable speed drive, 45kW, 380 to 480V, 3 phases, IP55 - ATV650D45N4E |                           |                     |                     |                 |                         |                          |
|--------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------|---------------------------|---------------------|---------------------|-----------------|-------------------------|--------------------------|
| Impact indicators                                            | Unit         | Total (without Module D)                                                                       | [A1 - A3] - Manufacturing | [A4] - Distribution | [A5] - Installation | [B1 - B7] - Use | [C1 - C4] - End of life | [D] - Benefits and loads |
| Contribution to climate change                               | kg CO2 eq    | 1,30E+04                                                                                       | 4,68E+02                  | 1,02E+01            | 3,43E+01            | 1,24E+04        | 8,32E+01                | -2,07E+02                |
| Contribution to climate change-fossil                        | kg CO2 eq    | 1,28E+04                                                                                       | 4,88E+02                  | 1,02E+01            | 1,36E+01            | 1,22E+04        | 8,30E+01                | -2,13E+02                |
| Contribution to climate change-biogenic                      | kg CO2 eq    | 2,76E+02                                                                                       | -2,00E+01                 | 0*                  | 2,07E+01            | 2,75E+02        | 2,56E-01                | 5,95E+00                 |
| Contribution to climate change-land use and land use change  | kg CO2 eq    | 2,87E-03                                                                                       | 2,78E-03                  | 1,47E-05            | 9,74E-07            | 0               | 7,33E-05                | -2,27E-03                |
| Contribution to ozone depletion                              | kg CFC-11 eq | 1,02E-04                                                                                       | 4,56E-05                  | 1,16E-07            | 1,30E-07            | 5,33E-05        | 3,01E-06                | -2,93E-05                |
| Contribution to acidification                                | mol H+ eq    | 6,91E+01                                                                                       | 3,59E+00                  | 1,61E-02            | 2,61E-02            | 6,51E+01        | 3,51E-01                | -1,31E+00                |
| Contribution to eutrophication, freshwater                   | kg P eq      | 3,22E-02                                                                                       | 1,85E-03                  | 3,74E-05            | 1,41E-04            | 2,98E-02        | 3,14E-04                | -7,18E-04                |
| Contribution to eutrophication marine                        | kg N eq      | 8,17E+00                                                                                       | 4,96E-01                  | 3,09E-03            | 9,06E-03            | 7,62E+00        | 4,12E-02                | -1,28E-01                |
| Contribution to eutrophication, terrestrial                  | mol N eq     | 1,28E+02                                                                                       | 5,48E+00                  | 3,39E-02            | 8,06E-02            | 1,22E+02        | 4,80E-01                | -1,42E+00                |
| Contribution to photochemical ozone formation - human health | kg COVNM eq  | 2,60E+01                                                                                       | 1,69E+00                  | 1,08E-02            | 2,03E-02            | 2,42E+01        | 1,45E-01                | -4,85E-01                |
| Contribution to resource use, minerals and metals            | kg Sb eq     | 7,15E-02                                                                                       | 6,74E-02                  | 0*                  | 0*                  | 4,04E-03        | 2,26E-05                | -3,91E-02                |
| Contribution to resource use, fossils                        | MJ           | 3,13E+05                                                                                       | 1,31E+04                  | 1,78E+02            | 9,10E+01            | 2,98E+05        | 1,45E+03                | -4,23E+03                |
| Contribution to water use                                    | m3 eq        | 1,17E+03                                                                                       | 2,16E+02                  | 3,62E-01            | 5,81E-01            | 9,43E+02        | 1,19E+01                | -7,40E+01                |

| Inventory flows Indicators                                                                                      |      | Altivar Process ATV650, Variable speed drive, 45kW, 380 to 480V, 3 phases, IP55 - ATV650D45N4E |                           |                     |                     |                 |                         |                          |
|-----------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|---------------------------|---------------------|---------------------|-----------------|-------------------------|--------------------------|
| Inventory flows                                                                                                 | Unit | Total (without Module D)                                                                       | [A1 - A3] - Manufacturing | [A4] - Distribution | [A5] - Installation | [B1 - B7] - Use | [C1 - C4] - End of life | [D] - Benefits and loads |
| Contribution to use of renewable primary energy excluding renewable primary energy used as raw material         | MJ   | 7,04E+04                                                                                       | 3,88E+02                  | 0*                  | 5,33E+01            | 6,99E+04        | 6,17E+01                | -7,84E+01                |
| Contribution to use of renewable primary energy resources used as raw material                                  | MJ   | 2,55E+02                                                                                       | 2,55E+02                  | 0                   | 0                   | 0               | 0                       | -1,16E+02                |
| Contribution to total use of renewable primary energy resources                                                 | MJ   | 7,06E+04                                                                                       | 6,43E+02                  | 0*                  | 5,33E+01            | 6,99E+04        | 6,17E+01                | -1,95E+02                |
| Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material | MJ   | 3,13E+05                                                                                       | 1,29E+04                  | 1,78E+02            | 9,10E+01            | 2,98E+05        | 1,45E+03                | -4,15E+03                |
| Contribution to use of non renewable primary energy resources used as raw material                              | MJ   | 2,58E+02                                                                                       | 2,58E+02                  | 0                   | 0                   | 0               | 0                       | -8,22E+01                |
| Contribution to total use of non-renewable primary energy resources                                             | MJ   | 3,13E+05                                                                                       | 1,31E+04                  | 1,78E+02            | 9,10E+01            | 2,98E+05        | 1,45E+03                | -4,23E+03                |
| Contribution to use of secondary material                                                                       | kg   | 3,25E+00                                                                                       | 3,25E+00                  | 0                   | 0                   | 0               | 0                       | 0                        |
| Contribution to use of renewable secondary fuels                                                                | MJ   | 0                                                                                              | 0                         | 0                   | 0                   | 0               | 0                       | 0                        |
| Contribution to use of non renewable secondary fuels                                                            | MJ   | 0                                                                                              | 0                         | 0                   | 0                   | 0               | 0                       | 0                        |
| Contribution to net use of freshwater                                                                           | m³   | 2,75E+01                                                                                       | 5,04E+00                  | 8,43E-03            | 3,40E-02            | 2,20E+01        | 3,52E-01                | -1,72E+00                |
| Contribution to hazardous waste disposed                                                                        | kg   | 2,77E+03                                                                                       | 2,42E+03                  | 0*                  | 1,68E+00            | 3,44E+02        | 5,08E+00                | -3,06E+03                |
| Contribution to non hazardous waste disposed                                                                    | kg   | 2,25E+03                                                                                       | 3,15E+02                  | 9,04E-01            | 6,32E+00            | 1,88E+03        | 5,48E+01                | -2,47E+02                |
| Contribution to radioactive waste disposed                                                                      | kg   | 6,45E-01                                                                                       | 1,95E-01                  | 7,16E-04            | 5,75E-04            | 4,42E-01        | 6,95E-03                | -1,57E-01                |
| Contribution to components for reuse                                                                            | kg   | 0                                                                                              | 0                         | 0                   | 0                   | 0               | 0                       | 0                        |
| Contribution to materials for recycling                                                                         | kg   | 6,17E+01                                                                                       | 6,82E+00                  | 0                   | 6,74E+00            | 0               | 4,82E+01                | 0                        |
| Contribution to materials for energy recovery                                                                   | kg   | 0                                                                                              | 0                         | 0                   | 0                   | 0               | 0                       | 0                        |
| Contribution to exported energy                                                                                 | MJ   | 4,45E+00                                                                                       | 9,63E-01                  | 0                   | 3,41E+00            | 0               | 7,32E-02                | 0                        |

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

|                                                                     |         |          |
|---------------------------------------------------------------------|---------|----------|
| Contribution to biogenic carbon content of the product              | kg of C | 0,00E+00 |
| Contribution to biogenic carbon content of the associated packaging | kg of C | 5,01E+00 |

\* The calculation of the biogenic carbon is based on the Ademe for the Cardboard (28%), EN16485 for Wood (39,52%), and APESA/RECORD for Paper (37,8%)

| Mandatory Indicators                                         |              | Altivar Process ATV650, Variable speed drive, 45kW, 380 to 480V, 3 phases, IP55 - ATV650D45N4E |      |      |      |      |      |          |      |
|--------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------|------|------|------|------|------|----------|------|
| Impact indicators                                            | Unit         | [B1 - B7] - Use                                                                                | [B1] | [B2] | [B3] | [B4] | [B5] | [B6]     | [B7] |
| Contribution to climate change                               | kg CO2 eq    | 1,24E+04                                                                                       | 0    | 0    | 0    | 0    | 0    | 1,24E+04 | 0    |
| Contribution to climate change-fossil                        | kg CO2 eq    | 1,22E+04                                                                                       | 0    | 0    | 0    | 0    | 0    | 1,22E+04 | 0    |
| Contribution to climate change-biogenic                      | kg CO2 eq    | 2,75E+02                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,75E+02 | 0    |
| Contribution to climate change-land use and land use change  | kg CO2 eq    | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to ozone depletion                              | kg CFC-11 eq | 5,33E-05                                                                                       | 0    | 0    | 0    | 0    | 0    | 5,33E-05 | 0    |
| Contribution to acidification                                | mol H+ eq    | 6,51E+01                                                                                       | 0    | 0    | 0    | 0    | 0    | 6,51E+01 | 0    |
| Contribution to eutrophication, freshwater                   | kg P eq      | 2,98E-02                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,98E-02 | 0    |
| Contribution to eutrophication marine                        | kg N eq      | 7,62E+00                                                                                       | 0    | 0    | 0    | 0    | 0    | 7,62E+00 | 0    |
| Contribution to eutrophication, terrestrial                  | mol N eq     | 1,22E+02                                                                                       | 0    | 0    | 0    | 0    | 0    | 1,22E+02 | 0    |
| Contribution to photochemical ozone formation - human health | kg COVNM eq  | 2,42E+01                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,42E+01 | 0    |
| Contribution to resource use, minerals and metals            | kg Sb eq     | 4,04E-03                                                                                       | 0    | 0    | 0    | 0    | 0    | 4,04E-03 | 0    |
| Contribution to resource use, fossils                        | MJ           | 2,98E+05                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,98E+05 | 0    |
| Contribution to water use                                    | m3 eq        | 9,43E+02                                                                                       | 0    | 0    | 0    | 0    | 0    | 9,43E+02 | 0    |

| Inventory flows Indicators                                                                                      |      | Altivar Process ATV650, Variable speed drive, 45kW, 380 to 480V, 3 phases, IP55 - ATV650D45N4E |      |      |      |      |      |          |      |
|-----------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------|------|------|------|------|------|----------|------|
| Inventory flows                                                                                                 | Unit | [B1 - B7] - Use                                                                                | [B1] | [B2] | [B3] | [B4] | [B5] | [B6]     | [B7] |
| Contribution to use of renewable primary energy excluding renewable primary energy used as raw material         | MJ   | 6,99E+04                                                                                       | 0    | 0    | 0    | 0    | 0    | 6,99E+04 | 0    |
| Contribution to use of renewable primary energy resources used as raw material                                  | MJ   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to total use of renewable primary energy resources                                                 | MJ   | 6,99E+04                                                                                       | 0    | 0    | 0    | 0    | 0    | 6,99E+04 | 0    |
| Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material | MJ   | 2,98E+05                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,98E+05 | 0    |
| Contribution to use of non renewable primary energy resources used as raw material                              | MJ   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to total use of non-renewable primary energy resources                                             | MJ   | 2,98E+05                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,98E+05 | 0    |
| Contribution to use of secondary material                                                                       | kg   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to use of renewable secondary fuels                                                                | MJ   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to use of non renewable secondary fuels                                                            | MJ   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to net use of freshwater                                                                           | m³   | 2,20E+01                                                                                       | 0    | 0    | 0    | 0    | 0    | 2,20E+01 | 0    |
| Contribution to hazardous waste disposed                                                                        | kg   | 3,44E+02                                                                                       | 0    | 0    | 0    | 0    | 0    | 3,44E+02 | 0    |
| Contribution to non hazardous waste disposed                                                                    | kg   | 1,88E+03                                                                                       | 0    | 0    | 0    | 0    | 0    | 1,88E+03 | 0    |
| Contribution to radioactive waste disposed                                                                      | kg   | 4,42E-01                                                                                       | 0    | 0    | 0    | 0    | 0    | 4,42E-01 | 0    |
| Contribution to components for reuse                                                                            | kg   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to materials for recycling                                                                         | kg   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to materials for energy recovery                                                                   | kg   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |
| Contribution to exported energy                                                                                 | MJ   | 0                                                                                              | 0    | 0    | 0    | 0    | 0    | 0        | 0    |

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

Life cycle assessment performed with EIME version v6.2.5-6, database version 2024-01 in compliance with ISO14044, EF3.1 method is applied, for biogenic carbon storage, assessment methodology -1/1 is used

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.

To extrapolate the impact to another product from the range, apply the following extrapolation rules to each indicator per life cycle stage:

MANUFACTURING (i) = Mass of (product+packaging) in grams / Mass of (reference product+reference packaging) in grams

DISTRIBUTION (i) = Mass of (product+packaging) in grams / Mass of (reference product+reference packaging) in grams

INSTALLATION (i) = Mass of (packaging) in grams / Mass of (reference packaging) in grams

USE (i) = Electricity consumption in kWh / Electricity consumption of the reference product in kWh

END OF LIFE (i) = Mass of (product) in grams / Mass of (reference product) in grams

TOTAL (i) = Σ Life Cycle Stages (i)

By multiplying these coefficients with the impacts of the reference product, you will obtain the impacts of the concerned extrapolated product.

Please find all the informations regarding the products on <https://www.se.com>

Electricity consumption for linked products can be provided upon request.

|                                                                                                                    |                      |                                     |                                                                      |
|--------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------|----------------------------------------------------------------------|
| Registration number :                                                                                              | SCHN-00711-V02.01-EN | Drafting rules                      | PEP-PCR-ed4-2021 09 06                                               |
|                                                                                                                    |                      | Supplemented by                     | PSR-0005-ed3.1-EN-2023 12 08                                         |
| Verifier accreditation N°                                                                                          | VH50                 | Information and reference documents | <a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a> |
| Date of issue                                                                                                      | 06-2026              | Validity period                     | 5 years                                                              |
| Independent verification of the declaration and data, in compliance with ISO 14025 : 2006                          |                      |                                     |                                                                      |
| Internal                      External    X                                                                        |                      |                                     |                                                                      |
| The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)                              |                      |                                     |                                                                      |
| PEPs are compliant with NF C08-100-1:2022 and EN 50693:2019 or NF E38-500 :2022                                    |                      |                                     |                                                                      |
| 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" |                      |                                     |                                                                      |



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