

Environmental Product Declaration



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Altech Cast Iron Drain Pipes and Fittings

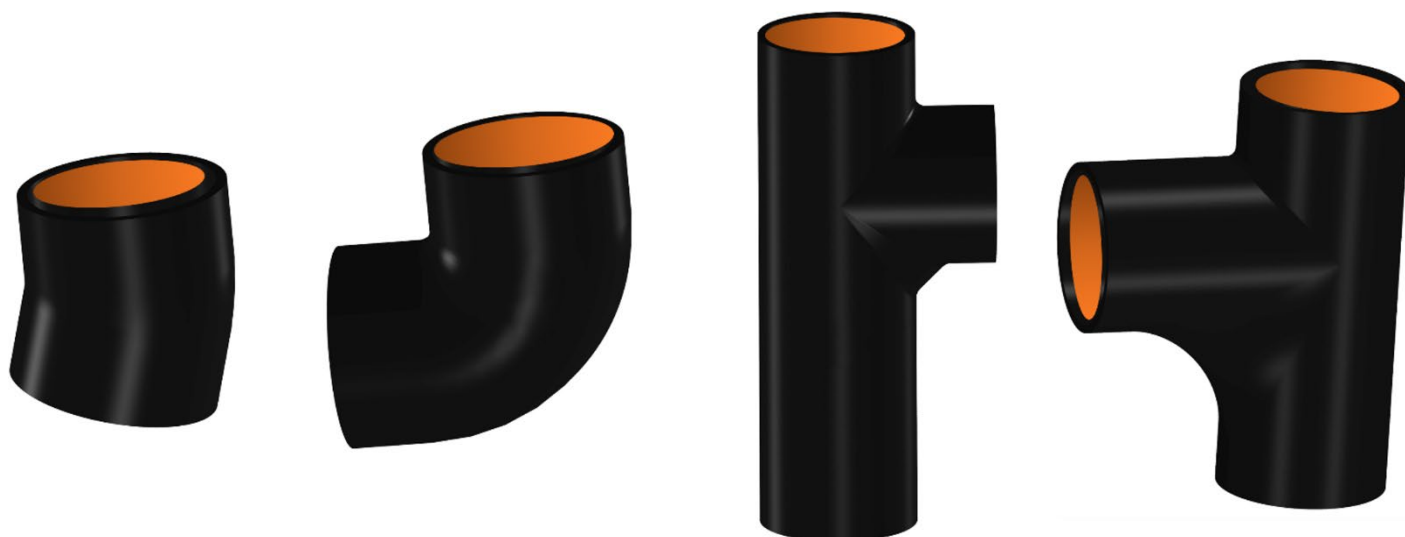
from

Saint-Gobain Building Distribution (SGDS)



| | |
|--------------------------|---|
| Program: | The International EPD® System, www.environdec.com |
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Program information

| | |
|-----------------|---|
| Program: | The International EPD® System |
| Address: | EPD International AB Box 210 60 SE-100 31 Stockholm Sweden |
| Website: | www.environdec.com |
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CEN standard EN 15804:2012 +A2 (2019) serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction products (EN 15804: A2) (1.3.1)

PCR review was conducted by: *The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com*

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification EPD verification

Third-party verifier: *Vladimir Koci, vladimir.koci@lcastudio.cz*



The procedure for follow-up of data during EPD validity involves third-party verifier:

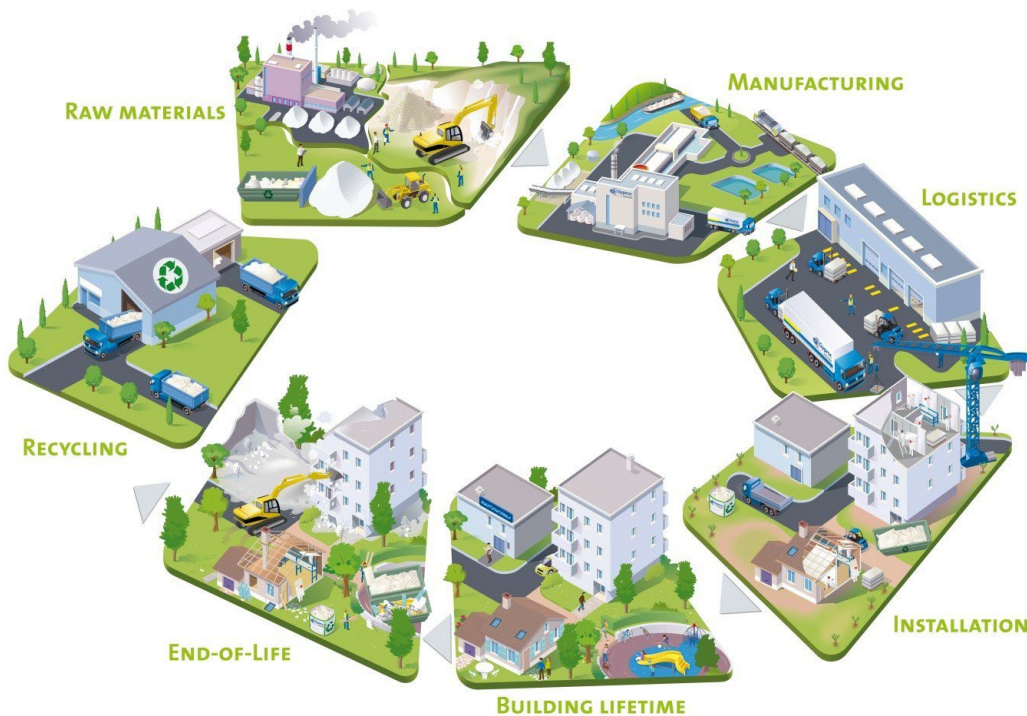
Yes No

The EPD owner has sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. EPDs made according to EN15804+A1, and EN15804+A2 are not comparable, especially since a majority of the environmental indicators are based on different versions. For further information about comparability, see EN 15804 and ISO 14025.

Company information

| | |
|--|--|
| Owner of the EPD | Saint-Gobain Distribution Sweden |
| Contact | Beriar Maroof (beriar.maroof@sgdsgruppen.se) |
| Description of the organisation | <p>SGDS Gruppen - specialists in collaboration for more efficient business in construction and installation. SGDS Gruppen AB is the head company of some of Sweden's leading trading companies in construction, sheet metal, tiles, and installation. All the companies have long and solid industry experience and provide most of Sweden's craftsmen with materials for various projects. Customers in different companies can also buy support items from the sister companies in the group. In selected cases, we take joint projects to facilitate the logistics of the supply of goods, which is then often critical for a smooth construction project.</p> <ul style="list-style-type: none"> • Optimera - construction trade for professional carpenters • Dahl – heat, plumbing, and sanitary specialist • Bevego - building sheet metal, ventilation, and technical insulation • Kakelspecialisten and Konradsson's Tiles - tiles, tiling, and bathroom fittings <p>The company focuses on sales and services, with direct contact with about 150,000 customers regularly.</p> <p>Saint-Gobain Distribution Sweden group (SGDS) is owned by Saint-Gobain with a presence in 64 countries and over 190 000 employees worldwide.</p> |
| Location of production site | China |

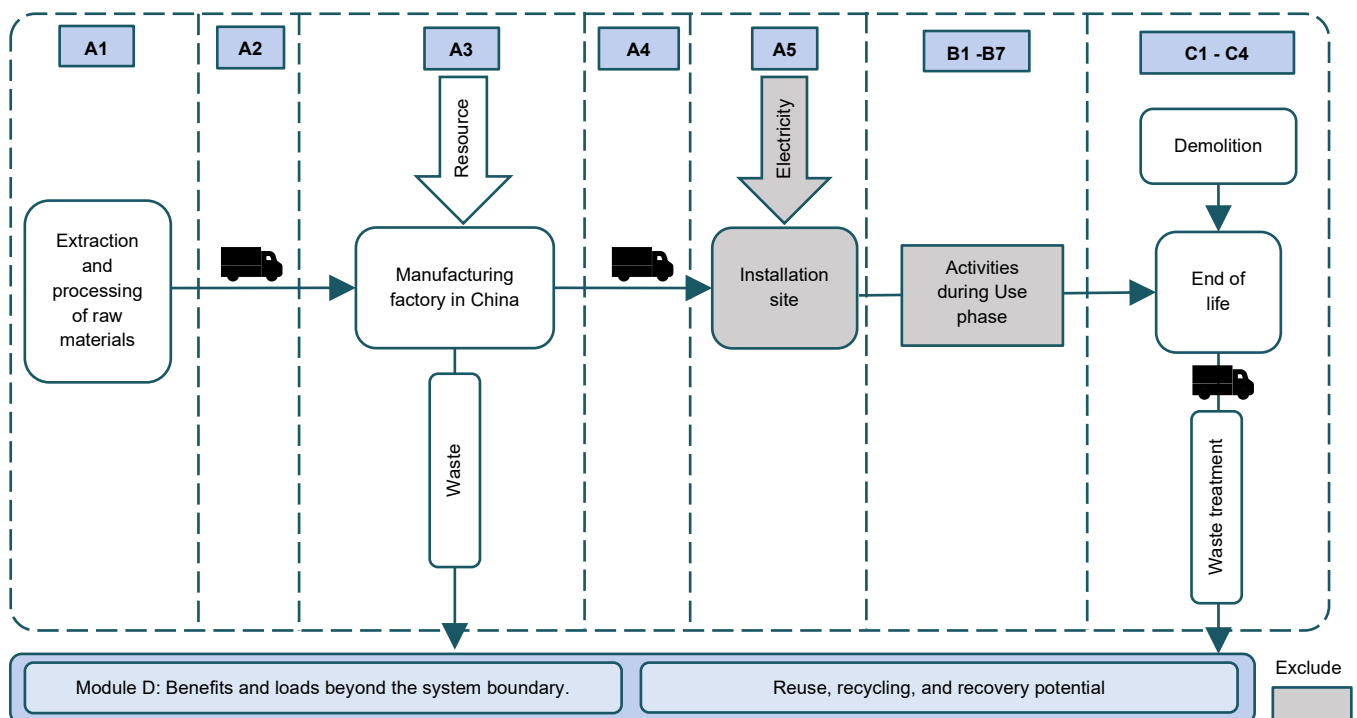


Product information

| | |
|-------------------------------|---|
| Product name | Altech Cast Iron Drain Pipes and Fittings by SGDS Gruppen |
| Product Identification | Altech Cast Iron Drain Pipes and Fittings / Gjutjärnsavloppsrör och Delar |
| Product Description | The Cast Iron Drain Pipes and Fittings in cast iron are of high quality and manufactured according to EN 877. The products are tested and approved as systems. These products are epoxy treated to ensure durability and all waste-water lines must be laid with falls and be correctly dimensioned to handle the expected sewage flow so that a self-cleaning of the system can be fulfilled and thus prevent blockages in the system and have an accepted installation instruction according to Safe Water Installation 2021:1. They can be used interior or exterior of buildings. |
| UN CPC code | 4128 - Tubes, pipes, and hollow profiles, of steel |
| Use | As drainpipes for grey water in plumbing systems |

LCA information

| | |
|--|--|
| Functional unit | 1 kg of Altech Cast Iron Drain Pipes and Fittings |
| Reference service life | 50 years |
| Database(s) and LCA software used | Calculation completed in MLC Professional Database (fka GaBi) 2023.1 with an integrated Ecoinvent database 3.9.1 |
| System boundaries | Cradle to Gate with options (A1-A3, A4, C1-C4, D). |



The manufacturers procure raw materials and manufacture finished products from manufacturers. The finished products are then transported and distributed locally to customers across Sweden. Environmental impact data for the product stage, A1-A3 sub-modules are adopted from the

manufacturer-provided data, and the transport associated with A4 from SGDS Gruppen's manufacturing units to local distribution in Sweden was assumed. The end-of-life reflects the Swedish market, where 1 % of ferrous metallic waste is landfilled, and 99 % recycled. For the credit for recovered material (module D), EU or GLO datasets were used.

Further Information

This EPD uses 1 kg weight of the Altech Cast Iron Drain Pipes and Fittings as the functional unit for the life cycle assessment as it covers products with varying dimensions. An average material composition was assumed to include all products for the study.

Modules Declared

X = modules included, ND = Not Declared

| | Product stage | | | Assembly stage | | Use stage | | | | | | | End-of-life stage | | | | BSB |
|--------------------|---------------|-----------|---------------|----------------|-----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
| | Raw materials | Transport | Manufacturing | Transport | Assembly* | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Declared | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | CN | CN | CN | GL | - | - | - | - | - | - | - | - | EU | EU | EU | EU | EU |
| Specific data used | > 90 % | | | | | | | | | | | | | | | | |
| Variation-Products | < 5 % | | | | | | | | | | | | | | | | |
| Variation-Sites | 0 % | | | | | | | | | | | | | | | | |

BSB-Benefits & loads beyond system boundary; ND – Not Declared; X – Declared; Reading example: $9,0E-03 = 9,0 \cdot 10^{-3} = 0,009$

* Module A5 is only partially declared, GWP biogenic arising due to packaging material in A1-A3 stages are balanced in A5 where it exits the product system boundary.

Data

Generic database data was used for the production of raw materials, energy, transportation, packaging, and end-of-life. Specific data was collected from the factory.

Data quality

All datasets used came from reputable databases Sphera MLC professional database (fka GaBi), version 2023.1, and Ecoinvent 3.9.1 database, with good technological representativeness and which represents China, Global, Sweden, or EU28 average for all the life cycle stages. Therefore, it can be considered good.

Time representativeness

The primary data (foreground data) used for the product manufacturing corresponds to the period from 1st April 2021 to 31st March 2022. The age of data from generic databases varies from 2013 – 2022.

Allocation

No co-product allocation has been applied since no co-products are generated, and therefore allocation has not been relevant.

Cut-off Criteria

The general rules for the exclusion of inputs and outputs follow the requirements in EN 15804+A2.

Content Declaration

| Product Components | Weight Percentage | Post-consumer materials weight % | Biogenic materials weight % and kg C / FU |
|---------------------|-------------------|----------------------------------|---|
| Carbon steel | < 1 % | 0,03 % | 0 |
| Cast Iron | 98 – 100 % | 98,41 % | 0 |
| EPDM | < 1 % | 0 | 0 |
| Epoxy | < 2 % | 0 | 0 |
| Total | 100,00 % | 98,44 % | 0 |
| Packaging Materials | Weight (kg/FU) | Weight-% (versus the product) | Weight biogenic carbon, kg C / FU |
| Cardboard | 0,0002 | 0,02 % | 2,53E-04 |
| Pallet | 0,0282 | 2,82 % | 4,29E-02 |
| PE - film | 0,0013 | 0,13 % | 0,00E+00 |
| Total | 0,0296 | 2,96 % | 4,31E-02 |

FU – Functional Unit

For confidentiality reasons, the precise specification is not given here but was used in the calculations. This is the average material composition of the products considered.

Packaging

Individual items are sold without any packaging whereas large orders are shipped on wooden pallets.

Information on the biogenic carbon content

| Biogenic carbon content | Unit per FU | Amount |
|--|-------------|----------|
| Biogenic carbon content in the product | kg C | 0,00E+00 |
| Biogenic carbon content in packaging | kg C | 4,31E-02 |

1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Information on energy content

| Energy content | Unit per FU | Amount |
|-------------------------------|-------------|----------|
| Energy content in the product | MJ | 0,00E+00 |

Revision Information

Biogenic emission from the product was balanced in C3, post-consumer material content in the raw material was revised, output flows were balanced, and biofuel content in the fuel used for transportation was removed.

Environmental Information

Potential environmental impact – indicators according to EN 15804+A2

| Results per functional unit: 1 kg of Altech Cast Iron Pipes and Fittings | | | | | | | | | |
|--|--|-----------|----------|----------|----------|----------|-----------|-----------|-----------|
| Indicator | Unit | A1–A3 | A4 | A5* | C1 | C2 | C3 | C4 | D |
| GWP-total | kg CO2 eq. | 2,55E+00 | 2,85E-02 | 4,31E-02 | 0,00E+00 | 1,62E-04 | 1,67E-02 | 4,55E-03 | -1,54E+00 |
| GWP-fossil | kg CO2 eq. | 2,58E+00 | 2,72E-02 | ND | 0,00E+00 | 1,55E-04 | 2,22E-02 | 4,60E-03 | -1,54E+00 |
| GWP-biogenic | kg CO2 eq. | -3,89E-02 | 1,30E-03 | 4,31E-02 | 0,00E+00 | 7,37E-06 | -5,49E-03 | -5,70E-05 | 9,07E-03 |
| GWP-LULUC | kg CO2 eq. | 3,88E-04 | 3,95E-09 | ND | 0,00E+00 | 1,18E-10 | 7,29E-07 | 4,68E-06 | -2,05E-04 |
| ODP | kg CFC-11 eq. | 2,16E-10 | 2,19E-16 | ND | 0,00E+00 | 6,48E-18 | 2,76E-12 | 7,60E-15 | -1,72E-13 |
| AP | mole H+ eq. | 2,48E-02 | 5,03E-05 | ND | 0,00E+00 | 2,89E-07 | 7,47E-06 | 1,48E-05 | -3,77E-03 |
| EP-freshwater** | kg P eq. | 1,02E-05 | 2,33E-09 | ND | 0,00E+00 | 1,92E-11 | 4,86E-08 | 4,17E-09 | -5,39E-07 |
| EP-marine | kg N eq. | 6,07E-03 | 1,79E-05 | ND | 0,00E+00 | 1,02E-07 | 1,91E-06 | 3,71E-06 | -6,06E-04 |
| EP-terrestrial | mole N eq. | 6,61E-02 | 1,97E-04 | ND | 0,00E+00 | 1,13E-06 | 2,67E-05 | 4,08E-05 | -5,43E-03 |
| POCP | kg NMVOC eq. | 1,70E-02 | 3,70E-05 | ND | 0,00E+00 | 2,11E-07 | 5,07E-06 | 1,16E-05 | -2,46E-03 |
| ADP-minerals & metals*** | kg Sb eq. | 2,72E-07 | 6,75E-12 | ND | 0,00E+00 | 2,00E-13 | 1,45E-09 | 1,26E-10 | -8,72E-06 |
| ADP-fossil*** | MJ | 3,53E+01 | 1,27E-03 | ND | 0,00E+00 | 3,80E-05 | 4,70E-02 | 6,88E-02 | -1,54E+01 |
| WDP*** | m3 | 9,47E-02 | 9,91E-05 | ND | 0,00E+00 | 7,98E-07 | 2,29E-03 | -6,25E-05 | -1,04E-01 |
| Acronyms | GWP-total: Global Warming Potential; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | | |

* A5 is only partially declared where only biogenic emission from the packaging was presented.

**Results in kg PO4 eq. can be obtained by multiplying the results in kg P eq. by a factor of 3,07.

***Results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Additional Mandatory indicator

| Results per functional unit: 1 kg of Altech Cast Iron Pipes and Fittings | | | | | | | | |
|--|------------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | A1–A3 | A4 | C1 | C2 | C3 | C4 | D |
| GWP-GHG | kg CO2 eq. | 2,61E+00 | 2,72E-02 | 0,00E+00 | 1,55E-04 | 2,22E-02 | 4,62E-03 | -1,54E+00 |

The GWP-GHG indicator is identical to GWP-total except that the characterisation factor (CF) for biogenic CO2 is set to zero. This means that the uptake and emissions of biogenic CO2 are “balanced out” already in modules A1-A3, instead of in modules A1-A5 (for packaging) or modules A-C (for product). In the context of Norwegian public procurement legislation, GWP-GHG is also referred to as GWP-IOBC.

Use of resources

| Results per functional unit: 1 kg of Altech Cast Iron Pipes and Fittings | | | | | | | | |
|--|--|----------|----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | A1–A3 | A4 | C1 | C2 | C3 | C4 | D |
| PERE | MJ | 1,63E+01 | 1,15E-03 | 0,00E+00 | 3,40E-05 | 2,22E-02 | 6,18E-03 | 6,04E-01 |
| PERM | MJ | 5,10E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | 1,69E+01 | 1,15E-03 | 0,00E+00 | 3,40E-05 | 2,22E-02 | 6,18E-03 | 6,04E-01 |
| PENRE | MJ | 3,53E+01 | 1,27E-03 | 0,00E+00 | 3,80E-05 | 4,70E-02 | 6,89E-02 | -1,54E+01 |
| PENRM | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PENRT | MJ | 3,53E+01 | 1,27E-03 | 0,00E+00 | 3,80E-05 | 4,70E-02 | 6,89E-02 | -1,54E+01 |
| SM | kg | 1,03E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | m3 | 7,20E-03 | 3,74E-06 | 0,00E+00 | 6,09E-08 | 6,21E-05 | 7,75E-07 | -1,56E-01 |
| Acronyms | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water | | | | | | | |

Waste and output flows

Waste

| Results per functional unit: 1 kg of ALTECH Cast Iron Drain Pipes and Fittings | | | | | | | | |
|--|--|----------|-----------|----------|-----------|-----------|----------|-----------|
| Indicator | Unit | A1–A3 | A4 | C1 | C2 | C3 | C4 | D |
| HWD | kg | 1,25E-03 | -2,42E-13 | 0,00E+00 | -7,17E-15 | -1,99E-12 | 5,68E-12 | -1,15E-07 |
| NHWD | kg | 2,77E-02 | 1,49E-06 | 0,00E+00 | 4,40E-08 | 2,87E-03 | 9,86E-02 | 1,85E-01 |
| RWD | kg | 1,69E-03 | 4,33E-07 | 0,00E+00 | 1,28E-08 | 5,36E-06 | 8,00E-07 | 2,05E-06 |
| Acronyms | HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed | | | | | | | |

Output flows

| Results per functional unit: 1 kg of ALTECH Cast Iron Drain Pipes and Fittings | | | | | | | | | |
|--|---|----------|----------|----------|----------|----------|----------|----------|----------|
| Indicator | Unit | A1–A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
| CRU | kg | 0,00E+00 | 0,00E+00 | 2,82E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR | kg | 6,46E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,96E-01 | 0,00E+00 | 0,00E+00 |
| MER | kg | 0,00E+00 | 0,00E+00 | 1,55E-04 | 0,00E+00 | 0,00E+00 | 7,78E-03 | 0,00E+00 | 0,00E+00 |
| EEE | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,07E-02 | 0,00E+00 | 0,00E+00 |
| EET | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,96E-02 | 0,00E+00 | 0,00E+00 |
| Acronyms | CRU Components for reuse; MFR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy | | | | | | | | |

Disclaimers

| ILCD classification | Indicator | Disclaimer |
|--|---|------------|
| ILCD Type 1 | Global warming potential (GWP) | None |
| | Depletion potential of the stratospheric ozone layer (ODP) | None |
| | Potential incidence of disease due to PM emissions (PM) | None |
| ILCD Type 2 | Acidification potential, Accumulated Exceedance (AP) | None |
| | Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater) | None |
| | Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine) | None |
| | Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | None |
| | Formation potential of tropospheric ozone (POCP) | None |
| | Potential Human exposure efficiency relative to U235 (IRP) | 1 |
| ILCD Type 3 | Abiotic depletion potential for non-fossil resources (ADP-minerals & metals) | 2 |
| | Abiotic depletion potential for fossil resources (ADP-fossil) | 2 |
| | Water (user) deprivation potential, deprivation-weighted water consumption (WDP) | 2 |
| | Potential Comparative Toxic Unit for ecosystems (ETP-fw) | 2 |
| | Potential Comparative Toxic Unit for humans (HTP-c) | 2 |
| | Potential Comparative Toxic Unit for humans (HTP-nc) | 2 |
| | Potential Soil quality index (SQP) | 2 |
| Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator. | | |
| Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. | | |

References

- EN 15804:2012+A2 Sustainability of construction works: Environmental product declaration – Core rules for the product category of construction products
- EPD International (2021) General Programme Instructions of the International EPD® System, version 4.0
- EPD International (2021) PCR 2019:14. Construction products and construction services (EN 15804: A2) v1.3.1.
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- ISO 14025:2006 International Standard ISO 14025: Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 14040:2006 International Standard ISO 14040: Environmental Management – Life cycle assessment – Principles and framework. Second edition 2006-07-01.
- ISO 14044:2006 International Standard ISO 14044: Environmental Management – Life cycle assessment – Requirements and Guidelines.
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Accessed 2023-08-03

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