

# Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## [Malleable Iron Fittings]

EPD of multiple products, based on average results of the included products  
Products included are listed in Appendix 1.

from

**[JINAN MEIDE CASTING CO., LTD.]**



|                          |                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------|
| Programme:               | The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a> |
| Programme operator:      | EPD International AB                                                                      |
| EPD registration number: | EPD-IES-0022899                                                                           |
| Publication date:        | 2025-06-13                                                                                |
| Valid until:             | 2030-06-13                                                                                |

*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](http://www.environdec.com)*



## General information

### Programme information

|                   |                                                                     |
|-------------------|---------------------------------------------------------------------|
| <b>Programme:</b> | The International EPD® System                                       |
| <b>Address:</b>   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| <b>Website:</b>   | <a href="http://www.environdec.com">www.environdec.com</a>          |
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|                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Accountabilities for PCR, LCA and independent, third-party verification</b>                                                                                                                                                 |
| <b>Product Category Rules (PCR)</b>                                                                                                                                                                                            |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR)                                                                                                                                                          |
| Product Category Rules (PCR): <i>PCR 2019:14, Construction Products, Version 1.3.4 valid until: 2025.6.20</i>                                                                                                                  |
| PCR review was conducted by: <i>The technical Committee of the International EPD System. Review chair: Maurizio Feschi. The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a></i> |
| <b>Life Cycle Assessment (LCA)</b>                                                                                                                                                                                             |
| LCA accountability: <i>JINAN MEIDE CASTING CO., LTD.</i>                                                                                                                                                                       |
| <b>Third-party verification</b>                                                                                                                                                                                                |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:                                                                                                                            |
| <input checked="" type="checkbox"/> EPD verification by accredited certification body                                                                                                                                          |
| Third-party verification: <Pin Tian, Bureau Veritas Certification Sweden AB> is an approved certification body accountable for the third-party verification                                                                    |
| The certification body is accredited by: < Bureau Veritas Certification Sweden AB, accredited by SWEDEC with accreditation number 1236>                                                                                        |
| Procedure for follow-up of data during EPD validity involves third party verifier:                                                                                                                                             |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                            |

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

Owner of the EPD: JINAN MEIDE CASTING CO., LTD.

Contact: Joe Zuo, zhiqiang.zuo@meide-casting.com

Description of the organisation: JINAN MEIDE CASTING CO., LTD. (Meide Group), established in 1961, is a global leader in fluid conveyance solutions with diversified operations across 140+ countries. Specializing in water supply, fire protection, gas systems, and infrastructure projects (e.g., New York World Trade Center, Shanghai Tower), the group operates nine manufacturing bases in China (Jinan, Linyi, Tai'an, etc.) and overseas (Thailand, Vietnam, Poland), supported by 22 digital factories and 2 overseas representative offices. Spanning 3.8 km<sup>2</sup> with 12,000+ employees (2,000+ overseas), it drives innovation through its national R&D center, 900+ patents, and leadership in drafting 100+ industry standards. Recognized as a "Top 100 Chinese Light Industry Enterprise" and "Green Foundry Demonstration Company," Meide Group holds 400+ honors for technological excellence and operational integrity.

Product-related or management system-related certifications: JINAN MEIDE CASTING CO., LTD.

International is certified for: ISO 9001, ISO 14001, ISO 45001

Name and location of production site(s): JINAN MEIDE CASTING CO., LTD., No.1 Meide Street, Meigui Town, Pingyin County Jinan Shandong 250400 CN

## Product information

Product name: Malleable Iron Fittings

Product identification: Malleable Iron Fittings

Product description: Malleable Iron Fittings are a type of pipe made of steel. The production process includes casting cast iron into white cast iron, and then subjecting it to malleable annealing treatment to decompose the cementite into clustered graphite, thereby obtaining malleable cast iron.

UN CPC code: 412

Geographical scope: Global

## LCA information

Functional unit / declared unit: 1 kg of Malleable Iron Fittings

Reference service life: Not applicable

Time representativeness: Data input was collected in January 2024 - December 2024.

Database(s) and LCA software used: Ecoinvent v3.11, SimaPro 10.2.0.0

Description of system boundaries: Cradle to gate, with options (A1-A3, A4, A5, C1-C4, D)

The following information describes the scenarios in the different modules of the EPD.

Module A1-A3 = Sourcing of raw materials from China. Prioritize using primary data and use database data when the quality of primary data is poor or missing. Electricity is matched based on regions, and the emission factor of State Grid electricity used is refer to "Electricity, medium voltage {CN-NCGC}| market for electricity, medium voltage | Cut-off, U". Photovoltaic power emission factor is refer to "Electricity, low voltage {CN-SD}| electricity production, photovoltaic, 570kWp open ground installation, multi-Si | Cut-off, U".

Module A4 = Global transportation refers to the actual sea freight distance. Domestic transportation is calculated based on an average of 1000km. For road transportation, calculations are made based on trucks with a carrying capacity of 16-32 tons. For sea transportation, calculations are made based on container ship.

Module A5 = Manual installation without energy consumption.

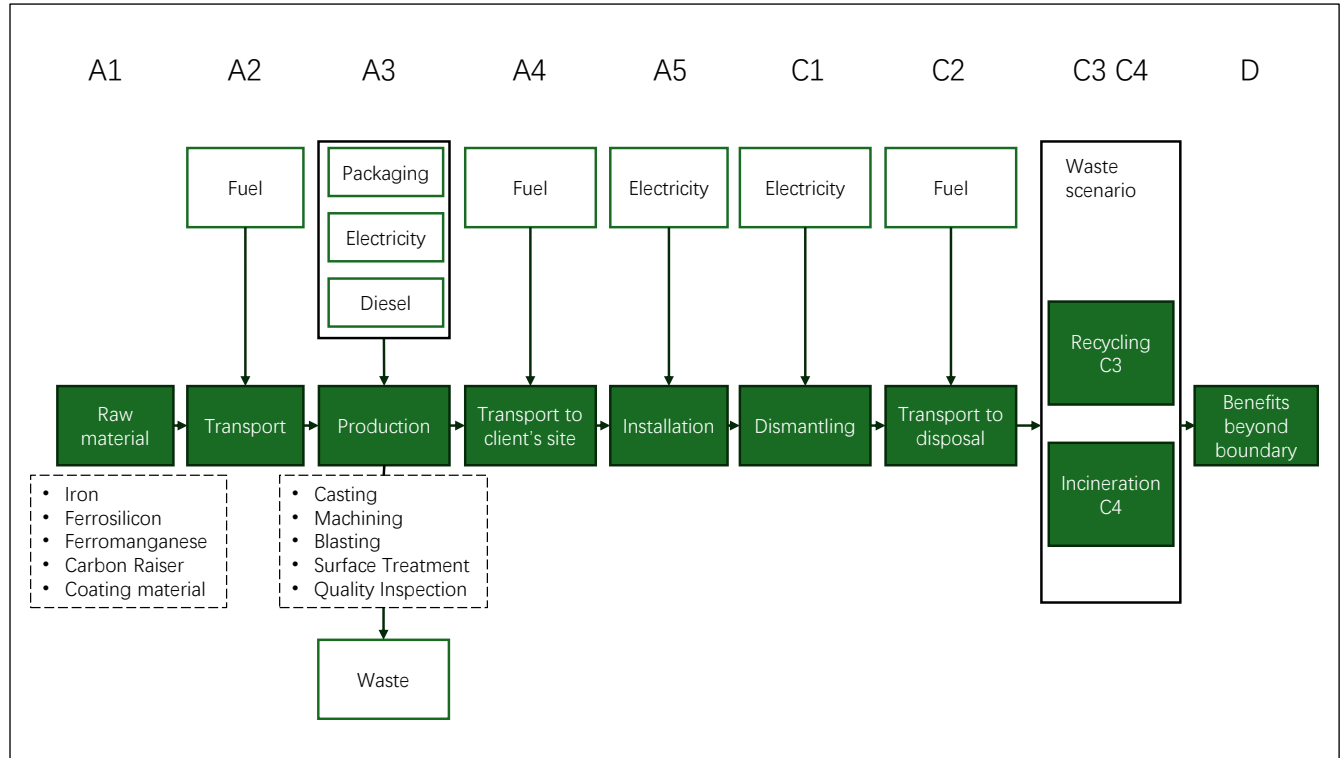
Module C1 = The removal process of the product aligns with its installation phase.

Module C2 = For road transportation, calculations are made based on trucks with a carrying capacity of 16-32 tons.

Module C3, and C4 = Waste treatment of the product. The main component of the product is metal, assuming 85% goes into recycling disposal and 15% goes into incineration disposal without energy recovery. The assumption of 85% recycling rate is referred to the “Annual Research and Consultation Report of Panorama survey and Investment strategy on China Industry”-CIRN and Sweden scenario.

Module D = Benefits beyond the system are tied to the recycling of metals, and the subsequent substitution of iron cf. Annex D in 15804+A2.

System diagram:



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

|                      | Product stage       |           |               | Construction process stage |                           | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Resource recovery stage            |
|----------------------|---------------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
|                      | Raw material supply | Transport | Manufacturing | Transport                  | Construction installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| Module               | A1                  | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| Modules declared     | x                   | x         | x             | x                          | x                         | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | x                          | x         | x                | x        | x                                  |
| Geography            | CN                  | CN        | CN            | GLO                        | GLO                       | -         | -           | -      | -           | -             | -                      | -                     | GLO                        | GLO       | GLO              | GLO      | GLO                                |
| Specific data used   | 92%                 |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – products | <10%                |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – sites    | 0%                  |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |

\* Specific data used - the proportion of primary data in the raw material acquisition stage is 0%, the proportion of primary data transported upstream to the manufacturing site is 0.3%, the proportion of primary data in the manufacturing stage is 91.7%, and the total proportion of primary data in stages A1-A3 is 92.0%

## Content information

| Product components  | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|---------------------|------------|----------------------------------|-----------------------------------------|
| Iron                | 9.06E-01   | 31%                              | 0                                       |
| Ferrosilicon        | 5.04E-03   | 0                                | 0                                       |
| Ferromanganese      | 1.07E-03   | 0                                | 0                                       |
| Carbon Raiser       | 9.97E-03   | 0                                | 0                                       |
| Zinc                | 7.79E-02   | 0                                | 0                                       |
| TOTAL               | 1          |                                  |                                         |
| Packaging materials | Weight, kg | Weight-% (versus the product)    | Weight biogenic carbon, kg C/kg         |
| Pallet              | 7.44E-02   | 7.4%                             | 0                                       |
| Plastic             | 1.69E-03   | 0.2%                             | 0                                       |
| Corrugated box      | 8.87E-02   | 8.9%                             | 0                                       |
| TOTAL               | 1.65E-01   |                                  |                                         |

| Dangerous substances from the candidate list of SVHC for Authorisation | EC No. | CAS No. | Weight-% per functional or declared unit |
|------------------------------------------------------------------------|--------|---------|------------------------------------------|
| NA                                                                     | NA     | NA      | NA                                       |

## Results of the environmental performance indicators

### Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |          |          |          |          |           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                               | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A1-A3     | A4       | A5       | C1       | C2       | C3       | C4       | D         |
| GWP-fossil                              | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4.19E+00  | 1.76E-01 | 0.00E+00 | 0.00E+00 | 7.75E-03 | 5.36E-02 | 2.67E-03 | -1.83E+00 |
| GWP-biogenic                            | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -1.99E-03 | 8.51E-05 | 0.00E+00 | 0.00E+00 | 2.59E-05 | 5.48E-06 | 1.30E-06 | -8.18E-04 |
| GWP-luluc                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -1.60E-01 | 5.06E-05 | 0.00E+00 | 0.00E+00 | 1.35E-05 | 1.08E-05 | 3.41E-06 | -2.66E-03 |
| GWP-total                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4.03E+00  | 1.76E-01 | 0.00E+00 | 0.00E+00 | 7.79E-03 | 5.36E-02 | 2.68E-03 | -1.84E+00 |
| ODP                                     | kg CFC 11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2.44E-08  | 2.46E-09 | 0.00E+00 | 0.00E+00 | 1.24E-10 | 7.96E-10 | 5.59E-11 | -9.79E-09 |
| AP                                      | mol H <sup>+</sup> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.19E-02  | 1.33E-03 | 0.00E+00 | 0.00E+00 | 3.57E-05 | 4.79E-04 | 1.50E-05 | -7.49E-03 |
| EP-freshwater                           | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8.77E-04  | 1.71E-05 | 0.00E+00 | 0.00E+00 | 8.31E-07 | 1.73E-06 | 1.96E-06 | -1.26E-03 |
| EP-marine                               | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4.47E-03  | 3.27E-04 | 0.00E+00 | 0.00E+00 | 1.34E-05 | 2.23E-04 | 5.73E-06 | -1.66E-03 |
| EP-terrestrial                          | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.78E-02  | 3.60E-03 | 0.00E+00 | 0.00E+00 | 1.44E-04 | 2.44E-03 | 6.26E-05 | -1.78E-02 |
| POCP                                    | kg NMVOC eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.35E-02  | 1.22E-03 | 0.00E+00 | 0.00E+00 | 4.99E-05 | 7.30E-04 | 2.15E-05 | -5.96E-03 |
| ADP-minerals&metals*                    | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7.72E-06  | 4.99E-07 | 0.00E+00 | 0.00E+00 | 2.50E-08 | 1.91E-08 | 7.51E-09 | -1.67E-05 |
| ADP-fossil*                             | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4.36E+01  | 2.43E+00 | 0.00E+00 | 0.00E+00 | 1.10E-01 | 6.97E-01 | 4.39E-02 | -1.92E+01 |
| WDP*                                    | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3.07E-01  | 1.09E-02 | 0.00E+00 | 0.00E+00 | 5.46E-04 | 1.51E-03 | 1.17E-03 | -4.57E-01 |
| Acronyms                                | 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 |           |          |          |          |          |          |          |           |

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

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit |                        |          |          |          |          |          |          |          |           |
|-----------------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                               | Unit                   | A1-A3    | A4       | A5       | C1       | C2       | C3       | C4       | D         |
| GWP-GHG <sup>1</sup>                    | kg CO <sub>2</sub> eq. | 4.19E+00 | 1.76E-01 | 0.00E+00 | 0.00E+00 | 7.78E-03 | 5.36E-02 | 2.68E-03 | -1.84E+00 |

## Resource use indicators

| Results per functional or declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |          |          |          |          |          |          |           |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                               | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A1-A3    | A4       | A5       | C1       | C2       | C3       | C4       | D         |
| PERE                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| PERM                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 9.90E+00 | 3.24E-02 | 0.00E+00 | 0.00E+00 | 1.67E-03 | 4.39E-03 | 8.80E-04 | -2.15E+00 |
| PERT                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 9.90E+00 | 3.24E-02 | 0.00E+00 | 0.00E+00 | 1.67E-03 | 4.39E-03 | 8.80E-04 | -2.15E+00 |
| PENRE                                   | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| PENRM                                   | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4.66E+01 | 2.59E+00 | 0.00E+00 | 0.00E+00 | 1.17E-01 | 7.42E-01 | 4.68E-02 | -2.04E+01 |
| PENRT                                   | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4.66E+01 | 2.59E+00 | 0.00E+00 | 0.00E+00 | 1.17E-01 | 7.42E-01 | 4.68E-02 | -2.04E+01 |
| SM                                      | kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.00E+00 | 0.00E+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 | 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 | 0.00E+00  |
| FW                                      | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.76E-01 | 1.08E-02 | 0.00E+00 | 0.00E+00 | 5.43E-04 | 1.49E-03 | 1.17E-03 | -4.15E-01 |
| Acronyms                                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials;<br>PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources used as raw materials; 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 |          |          |          |          |          |          |          |           |

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

## Waste indicators

| Results per functional or declared unit |      |          |          |          |          |          |          |          |           |
|-----------------------------------------|------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                               | Unit | A1-A3    | A4       | A5       | C1       | C2       | C3       | C4       | D         |
| Hazardous waste disposed                | kg   | 1.80E-04 | 1.57E-05 | 0.00E+00 | 0.00E+00 | 7.37E-07 | 4.86E-06 | 3.19E-07 | -1.67E-04 |
| Non-hazardous waste disposed            | kg   | 1.34E-01 | 1.22E-01 | 0.00E+00 | 0.00E+00 | 6.98E-03 | 4.72E-04 | 1.01E-01 | -1.32E-01 |
| Radioactive waste disposed              | kg   | 1.39E-05 | 4.64E-07 | 0.00E+00 | 0.00E+00 | 2.40E-08 | 7.30E-08 | 1.27E-08 | -1.64E-05 |

## Output flow indicators

| Results per functional or declared unit |      |          |          |          |          |          |          |          |          |
|-----------------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|
| Indicator                               | Unit | A1-A3    | A4       | A5       | C1       | C2       | C3       | C4       | D        |
| 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 | 0.00E+00 |
| Material for recycling                  | kg   | 1.30E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.50E-01 | 0.00E+00 | 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 | 0.00E+00 |
| Exported energy, electricity            | MJ   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy, thermal                | MJ   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

## Additional environmental information

### Cut-off criteria:

The general rules apply for the exclusion of inputs and outputs in the LCA which complies with 15804:2012+A2:2019. 6.3.6. In cases of insufficient input data or data gaps for a unit process, the cutoff criteria shall be 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that. The total neglected input flows, e.g., per module A1-A3, A4-A5, and B1-B5, B6-B7, C1-C4 and module D shall be a maximum of 5 % of energy usage and mass.

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances. See the PCR and sections 5.4, 7.3 and 7.4 in EN 15804.

### Allocation rules:

Allocation is made according to the proportion of the target product's output to the total output of the entire factory. During the calculation process, the consumption of energy/resources and the generation of waste, etc., are all apportioned based on this principle.

## References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14. CONSTRUCTION PRODUCTS. VERSION 1.3.4

ISO 14040:2006 Environmental management – Life cycle assessment-Principles and Framework

ISO 14044:2006 Environmental management - Life cycle assessment – Requirements and guidelines

EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declaration -

Core rules for the product category of construction products

## Appendix 1

Included products

| No. | Product Model | Size      | No. | Product Model | Size      |
|-----|---------------|-----------|-----|---------------|-----------|
| 1   | 1#            | DN6-DN150 | 39  | 246           | DN6-DN150 |
| 2   | 1#F           |           | 40  | 246L          |           |
| 3   | 1A            |           | 41  | 270           |           |
| 4   | 1AF           |           | 42  | 280           |           |
| 5   | 2#            |           | 43  | 291           |           |
| 6   | 2A            |           | 44  | 291LM         |           |
| 7   | 2AF           |           | 45  | 291N          |           |
| 8   | 3#            |           | 46  | 291S          |           |
| 9   | 40            |           | 47  | 300           |           |
| 10  | 40F           |           | 48  | 310           |           |
| 11  | 41            |           | 49  | 312           |           |
| 12  | 85            |           | 50  | 321-4         |           |
| 13  | 90            |           | 51  | 321-6         |           |
| 14  | 90R           |           | 52  | 321-H         |           |
| 15  | 92            |           | 53  | 321P          |           |
| 16  | 92R           |           | 54  | 321PW         |           |
| 17  | 95            |           | 55  | 321TD         |           |
| 18  | 96            |           | 56  | 330           |           |
| 19  | 97            |           | 57  | 330D          |           |
| 20  | 98            |           | 58  | 331           |           |
| 21  | 120           |           | 59  | 340           |           |
| 22  | 121           |           | 60  | 340Q          |           |
| 23  | 130           |           | 61  | 341           |           |
| 24  | 130R          |           | 62  | 342           |           |
| 25  | 131           |           | 63  | 342A          |           |
| 26  | 131R          |           | 64  | 526           |           |
| 27  | 134           |           | 65  | 529A          |           |
| 28  | 134R          |           | 66  | 529X          |           |
| 29  | 137RL         |           | 67  | 1221          |           |
| 30  | 165           |           | 68  | 1223          |           |
| 31  | 180           |           | 69  | 1224          |           |
| 32  | 180R          |           | 70  | LAA           |           |
| 33  | 220           |           | 71  | LAF           |           |
| 34  | 220S          |           | 72  | LCC           |           |
| 35  | 240           |           | 73  | SCC           |           |
| 36  | 241           |           | 74  | TCC           |           |
| 37  | 241D          |           | 75  | 810L-1        |           |
| 38  | 245           |           | 76  | UXWG          |           |

