# ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

| | |
|---|---|
| Owner of the Declaration | Saarstahl AG |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
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| Valid to | 11.08.2030 |

## S-PURE+ Wire Rod

## Saarstahl AG

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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# General Information

## Saarstahl AG

**Programme holder**

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

**Declaration number**

EPD-SAS-20250294-CBC1-EN

**This declaration is based on the product category rules:**

Structural steels, 01.08.2021
(PCR checked and approved by the SVR)

**Issue date**

12.08.2025

**Valid to**

11.08.2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

## S-PURE+ Wire Rod

**Owner of the declaration**

Saarstahl AG
Bismarckstraße 57-59
66333 Völklingen
Germany

**Declared product / declared unit**

The declared unit is 1 metric ton of wire rod.

**Scope:**

The EPD declaration applies to 1 metric tonne of Wire Rod manufactured at Saarstahl Ascoval & the Saarstahl AG hot rolling mills.

The "S-Pure+" Wire Rod are high-quality products produced via secondary steelmaking. Saarstahl Ascoval located in St. Saulves (France) is a subsidary of the Saarstahl group specialised in bloom production from recycled steel scrap.

The LCA does represent 100% EAF pre-material based bloom within the reference year of 2023.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

**Verification**

| |
|---|
| The standard EN 15804 serves as the core PCR |
| Independent verification of the declaration and data according to ISO 14025:2011 |
| ☐ internally ☒ externally |

Dr. Niels Jungbluth,
(Independent verifier)

## Product

### Product description/Product definition

The S-PURE+ Wire Rod is a high-quality product of Saarstahl based on EAF pre-material, melted at Saarstahl Ascoval and hot rolled at the rolling mills of Saarstahl.

The Wire rod is available in the formats round (4.5 – 53.0 mm), square (14.0 – 38.0 mm), hexagonal (14.0 – 42.5 mm) and flat (16.0 – 35.0 x 8.0 – 35.0 mm). The steel types include special steels, cold heading grades, free cutting steels, gauze wire, soft drawing grades, welding wire, prestressing steels, and rope wire. In the steelmaking process we offer Mechanical Soft Reduction (MSR) for improved material properties. In the rolling process single thermo-mechanical (TM) rolling by loop and double thermomechanical (DTM) are options for improved wire rod properties.
For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the building codes of the federal states and the corresponding national specifications.

### Application

Saarstahl wire rod products are utilised in a wide range of applications like the construction sector, e.g. for welding technology in steel structures or special solutions for stadium construction. Saarstahl is also a leader throughout Europe when it comes to special requirements regarding safety and stability such as for bridges and road construction. Prestressing steels are used in the construction industry and must withstand the highest mechanical loads, especially in terms of tensile strength. The main applications for prestressing steel include bridge construction, industrial and residential construction, railway track construction and wind turbines.
In the automotive sector our wire rod is used where the requirements in quality and safety are highest: in engine and gear components, in fuel injection systems, in tires, springs or connecting elements. For tires our range of products includes wire rod for the production of steel cord wire (SKD) and tire bead wire. Our spring steels are used in suspension springs (cold or hot forged), clutch springs, brake accumulator springs, springs in luggage compartment opening systems, engine valve springs and stabilizers. We produce high-quality free cutting steels for discerning customers in the automotive and mechanical engineering sectors worldwide. Cold heading steel grades are deployed for screws, bolts, nuts or rivets. Free cutting steel is used as an input material for drawing, peeling and lathe turning.
The mechanical engineering sector comprises among other things, challenging product development projects for welding applications or fasteners. This includes welding wires such as shielded arc welding wires, electrode core wires, submerged arc welding wires and gas welding filler rods, bearing steels for anti-friction bearing rings, rolling elements, cams and wheel bearing flanges.
As a steel supplier for wind turbines, Saarstahl plays a key role in the expansion of renewable energy. We also develop innovative products in the offshore sector that help safely convey natural gas and oil from depths of thousands of meters under the sea. Our wire rod products help reliably transport electricity over hundreds of kilometers. Fasteners made from our steels are also an important component in the construction of wind turbines.
We offer our customers a wide range of products for track construction. In terms of wire rod these include rail clamps, concrete sleepers (prestressing steel) and sleeper screws.
Many consumer goods are manufactured from our primary products. From paper clips, shopping trolleys in the supermarket and upholstery springs to bicycle spokes or even electrical appliances. Further information can be found on the Saarstahl website.

### Technical Data

Coldheading wires are mainly produced according to DIN EN 10263; Sprigsteels are produced mainly according to DIN EN ISO 10089 and DIN EN 10270.
For the Freecutting Steels e.g. the DIN EN 1651, DIN EN 10087 or DIN EN 10277 are of importance. For different grades other standards can be of relevance.

We also manufacture customer-specific grades in accordance with the above standards
This EPD applies to all wire rod in the condition as rolled, annealed, quenched and tempered (=Maraform) and in surface conditions phosphated, soaped or composited.

### Constructional data

| Name | Value | Unit |
|---|---|---|
| Density | 7850 | $kg/m^3$ |
| Coefficient of thermal expansion | 11.7 | $10^{-6}K^{-1}$ |
| Thermal conductivity | 50 | W/(mK) |
| Melting point | 1500 | °C |

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics.

The delivery status can be within a diameter range of 4.5 - 53.0 mm in a rolled, annealed, quenched or tempered condition.

### Base materials/Ancillary materials

The "S-PURE+ Wire Rod" products of Saarstahl AG are manufactured with 100 % continuously cast bloom (with about 97 % scrap and alloying elements) pre-material produced from EAF at Saarstahl Ascoval. The overall composition of the steel grades depends on the customer specification and application use of the final product.
The product contains substances in the European Chemicals Agency (ECHA) candidate list/ (15 January 2019) above 0.1 mass %: no.

The product contains further carcinogenic, mutagenic, reprotoxic (CMR) substances of category 1A or 1B that are not in the candidate list, above 0.1 mass % in at least one sub-product: no.

Biocides have been added to the construction product, or the product has been treated with biocides (a treated product pursuant to the Biocidal Product Regulation (EU) No. 528/2012): no.

### Reference service life

The specification of a reference service life of any Wire Rod product is based on the multiple purposes and final application options (e.g. regarding stress levels).
The various steel grade options available, including the optimal choice of product or specification, do increase the lifetime drastically.
However, the service life of any steel product can be enhanced by regular maintenance of the final user.

## LCA: Calculation rules

**Declared Unit**
The reference unit is 1 ton of structural steel wire rod.

Foreground data describing the on-site production are integrated into the *LCA FE Software* model for all sites under study. The LCI is assessed based on annual production data. Background data are taken from the *LCA FE Database*.

**Declared unit and mass reference**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | t |
| Conversion factor to 1 kg | 0,001 | |

The average EPD is calculated considering a production volume-weighted approach.

Other declared units are allowed if the conversion is shown transparently.

For the production of wire rod, the steel slab from Ascoval (France) is processed at the sites Burbach and Neunkirchen in Germany. If the wire rod were only be processed in one of the sites, the results for climate change would vary by +/-2,1 %.

**System boundary**
Type of the EPD: cradle-to-gate - with modules C1-C4 and module D

Modules A1-A3 cover the production stage, including the upstream burdens of purchased raw materials, their transport and the manufacturing at the production sites under study. Material and energy flows for the electric arc furnace (EAF) as well as the hot strip mills are considered. Electricity consumption of the production of the wire rod is modelled via residual grid mix (production in Germany/France + imports - exports -certified" green" electricity). The electricity consumed is modelled with 0,847 kg $CO_2$e/kWh for Germany, and with 0,159 kg $CO_2$e/kWh for France. The natural gas supplied is modelled with 0,559 kg $CO_2$e/kg for Germany, and with 0,628 kg $CO_2$e/kg for France.

Modules C1-C4 consider the dismantling of the considered product (C1, PhD Siebers), the transportation of the dismantled components to their final EoL destination (C2), the waste processing for reuse, recovery or recycling (C3), as well as the disposal (C4).

Module D refers to the End-of-Life, including recycling and/or reuse.

**Geographic Representativeness**
Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

**Comparability**
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The *LCA FE Database* (CUP version 2024.2) was used to calculate the LCA.

## LCA: Scenarios and additional technical information

**Characteristic product properties of biogenic carbon**
The declared product does not include biogenic carbon.
Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of $CO_2$.

This EPD covers four End of Life scenarios (*SteelConstruction-info; Sansom, M./ Meijer, J.*):

- Scenario 0: 100 % Recycling
- Scenario 1: 100 % Reuse
- Scenario 2: 100 % Loss/Landfilled
- Scenario 3: 88 % Recycling, 11 % Reuse and 1 % Loss

Metals are assumed to reach the end of waste status directly at the construction site. The treatment, as well as net benefits and loads of reuse or recycling potentials (for the net scrap amount only), are grouped into module D.

**End of life (C1 - C4)**

| Name | Value | Unit |
|---|---|---|
| Landfilling - Scenario 0 | 0 | kg |
| Landfilling - Scenario 1 | 0 | kg |
| Landfilling - Scenario 2 | 1000 | kg |
| Landfilling - Scenario 3 | 10 | kg |

**Reuse, recovery and/or recycling potentials (D), relevant scenario information**

| Name | Value | Unit |
|---|---|---|
| Recycling - Scenario 0 | 1000 | kg |
| Recycling - Scenario 1 | 0 | kg |
| Recycling - Scenario 2 | 0 | kg |
| Recycling - Scenario 3 | 880 | kg |
| Reuse - Scenario 0 | 0 | kg |
| Reuse - Scenario 1 | 1000 | kg |
| Reuse - Scenario 2 | 0 | kg |
| Reuse - Scenario 3 | 110 | kg |

## LCA: Results

The following table contains the LCA results for a declared unit of 1 ton structural steel - wire rod.

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)**

| Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Benefits and loads beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw material supply | Transport | Manufacturing | Transport from the gate to the site | 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 |
| X | X | X | MND | MND | MND | MND | MNR | MNR | MNR | MND | MND | X | X | X | X | X |

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 ton wire rod**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C3/1 | C3/2 | C3/3 | C4 | C4/1 | C4/2 | C4/3 | D | D/1 | D/2 | D/3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg $CO_2$ eq | 6.33E+02 | 2.1E+01 | 3.18E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5E+01 | 1.5E-01 | 2.31E+02 | -6.33E+02 | 1.96E+03 | 1.53E+02 |
| GWP-fossil | kg $CO_2$ eq | 6.33E+02 | 2.1E+01 | 3.21E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5E+01 | 1.5E-01 | 2.32E+02 | -6.33E+02 | 1.97E+03 | 1.54E+02 |
| GWP-biogenic | kg $CO_2$ eq | 2.87E-01 | -8.58E-02 | -8.04E-02 | 0 | 0 | 0 | 0 | 0 | 0 | -1.03E-01 | -1.03E-03 | -1.37E+00 | -2.87E-01 | -1.16E+01 | -1.35E+00 |
| GWP-luluc | kg $CO_2$ eq | 1.54E-01 | 1.16E-02 | 5.26E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 8.98E-02 | 8.98E-04 | 3.09E-02 | -1.54E-01 | 2.62E-01 | 1.28E-02 |
| ODP | kg CFC11 eq | 2.97E-09 | 8.98E-12 | 4.61E-13 | 0 | 0 | 0 | 0 | 0 | 0 | 4.04E-11 | 4.04E-13 | -3.12E-10 | -2.97E-09 | -2.64E-09 | -6.27E-10 |
| AP | mol $H^+$ eq | 1.89E+00 | 1.94E-01 | 4.16E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 1.06E-01 | 1.06E-03 | 5.68E-01 | -1.89E+00 | 4.82E+00 | 3.4E-01 |
| EP-freshwater | kg P eq | 3.09E-04 | 1.06E-04 | 1.34E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 3.4E-05 | 3.4E-07 | 5.41E-05 | -3.09E-04 | 4.59E-04 | 1.81E-05 |
| EP-marine | kg N eq | 4.25E-01 | 9.93E-02 | 1.5E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 2.74E-02 | 2.74E-04 | 9.12E-02 | -4.25E-01 | 7.74E-01 | 4.13E-02 |
| EP-terrestrial | mol N eq | 4.51E+00 | 1.09E+00 | 1.78E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 3.01E-01 | 3.01E-03 | 8.17E-01 | -4.51E+00 | 6.93E+00 | 2.92E-01 |
| POCP | kg NMVOC eq | 1.2E+00 | 2.7E-01 | 4.16E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 8.37E-02 | 8.37E-04 | 3.7E-01 | -1.2E+00 | 3.14E+00 | 2.25E-01 |
| ADPE | kg Sb eq | 7.64E-04 | 2.79E-06 | 2.73E-07 | 0 | 0 | 0 | 0 | 0 | 0 | 9.7E-07 | 9.7E-09 | 1.31E-03 | -7.64E-04 | 1.11E-02 | 1.18E-03 |
| ADPF | MJ | 1.21E+04 | 2.9E+02 | 4.12E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 1.97E+02 | 1.97E+00 | 2.31E+03 | -1.21E+04 | 1.96E+04 | 8.93E+02 |
| WDP | $m^3$ world eq deprived | 7.04E+01 | 1.31E+00 | 4.85E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 1.71E+00 | 1.71E-02 | 1.57E+01 | -7.04E+01 | 1.33E+02 | 7.37E+00 |

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 ton wire rod**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C3/1 | C3/2 | C3/3 | C4 | C4/1 | C4/2 | C4/3 | D | D/1 | D/2 | D/3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 1.05E+03 | 1.61E+01 | 3.55E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 3.44E+01 | 3.44E-01 | -9.11E+01 | -1.05E+03 | -7.73E+02 | -2.04E+02 |
| PERM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 1.05E+03 | 1.61E+01 | 3.55E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 3.44E+01 | 3.44E-01 | -9.11E+01 | -1.05E+03 | -7.73E+02 | -2.04E+02 |
| PENRE | MJ | 1.21E+04 | 2.9E+02 | 4.12E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 1.97E+02 | 1.97E+00 | 2.31E+03 | -1.21E+04 | 1.96E+04 | 8.93E+02 |
| PENRM | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 1.21E+04 | 2.9E+02 | 4.12E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 1.97E+02 | 1.97E+00 | 2.31E+03 | -1.21E+04 | 1.96E+04 | 8.93E+02 |
| SM | kg | 1.13E+03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1.34E+02 | 0 | 0 | -1.29E+02 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | $m^3$ | 3.16E+00 | 4.34E-02 | 3.95E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 5.23E-02 | 5.23E-04 | 2.35E+01 | -3.16E+00 | 1.99E+02 | 2.23E+01 |

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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:**
**1 ton wire rod**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C3/1 | C3/2 | C3/3 | C4 | C4/1 | C4/2 | C4/3 | D | D/1 | D/2 | D/3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 1.59E-06 | 4.5E-08 | 1.58E-09 | 0 | 0 | 0 | 0 | 0 | 0 | 4.91E-08 | 4.91E-10 | 1.73E-05 | -1.59E-06 | 1.46E-04 | 1.65E-05 |
| NHWD | kg | 6.36E +00 | 3.28E-02 | 6.73E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 1E+03 | 1E+01 | -2.79E +01 | -6.36E +00 | -2.37E +02 | -2.76E +01 |
| RWD | kg | 2.03E +00 | 1.7E-03 | 7.51E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 2.07E-03 | 2.07E-05 | -2.53E-04 | -2.03E +00 | -2.14E-03 | -2.23E-01 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MFR | kg | 0 | 0 | 0 | 1E+03 | 0 | 0 | 8.8E+02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MER | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EEE | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EET | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:**
**1 ton wire rod**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C3/1 | C3/2 | C3/3 | C4 | C4/1 | C4/2 | C4/3 | D | D/1 | D/2 | D/3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM | Disease incidence | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| IR | kBq U235 eq | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ETP-fw | CTUe | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| HTP-c | CTUh | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| HTP-nc | CTUh | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| SQP | SQP | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.
Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

If the declared product (wire rod) would only be processed in one of the sites (Burbach, Neunkirchen), the results for climate change would vary by +/-2,2 %.

## References


**EN 10087**

EN10087:1998, Free-cutting steels: technical delivery conditions for semi-finished products, hot-rolled bars and rods.

**EN 10089**

EN 10089:2002, Hot rolled steels for quenched and tempered springs - Technical delivery conditions.

**EN 10263**

EN 10263-1:2002, Steel rod, bars and wire for cold heading and cold extrusion - Part1: General technical delivery conditions.

**EN 10270**

EN 10270-1:2017, Steel wire for mechanical springs - Part1: Palented cold drawn unalloyed spring steel wire.

**EN 10277**

EN 10277:1999, Bright steel products - technical delivery conditions - Part 5: Steels for quenching and tempering.

**EN 15804**

EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

**EN 15804**

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

**ISO 14025**

EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

**ECHA Candidate List**

ECHA Publication: Candidate List of substances of very high concern for Authorisation
(published in accordance with Article 59(10) of the REACH Regulation).

**Use of biocidal products EU Regulation No. 528/2012**

Regulation (EU) No 528/2012 of the European Parliament and of the
Council of 22 May 2012 concerning the making available on the market and use of biocidal products Text with EEA relevance.

**IBU 2024**
Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version2.0, Berlin: Institut Bauen und Umwelt e.V., www.ibuepd.com

**LCA FE (GaBi) Software / Database**
LCA FE, Software and Database for Life Cycle Engineering, Sphera Solution GmbH, Leinfelden-Echterdingen, 2024,http://documentation.gabi-software.com

**PCR, Part A**
Product Category Rules for Building -Related Products and Services, Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN15804+A2:2019, version 1.4, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 2024

**PCR, Part B**
Requirements on the EPD for Structural steels – Institut Bauen und Umwelt e.V., Königswinter (pub.): From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU), version /v 11, 2024

**Sansom, M. / Meijer, J.**
Life-cycle assessment (LCA) for steel construction, Ascot,Culemborg, 2002

**SteelConstruction-info**
https://www.steelconstruction.info/The_recycling_and_reuse_survey

**Publisher**

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

**Author of the Life Cycle Assessment**

Sphera Solutions GmbH
Hauptstraße 111- 113
70771 Leinfelden-Echterdingen
Germany

+49 711 341817-0
info@sphera.com
www.sphera.com

**Owner of the Declaration**

Saarstahl AG
Bismarckstraße 57-59
66333 Völklingen
Germany

00496898100
saarstahl@saarstahl.com
https://www.saarstahl.com/