

Hot Extruded Steel Shapes (Specialty Steel(Others))



Functional unit

1 t

System boundary

final products intermediate products

Production Stage and
optional supplementary information

Main specifications of the product

Production sites :

Kyushu Works Yawata Area (Hikari)

Type : Specialty Steel(Others)

Main standards :

FL500, FL500N, S33C, S35C, S45C

S53C, S55C

Company Information

NIPPON STEEL

<https://www.nipponsteel.com/en/product/pipe/list/06.html>

| | |
|-------------------------------------|--|
| Registration# | JR-AJ-24041E-A |
| PCR number | PA-180000-AJ-06 |
| PCR name | Steel products for construction use |
| Publication date | 10/07/2024 |
| Verification date | 08/02/2024 |
| Verification method | Product-by-product |
| Verification# | JV-AJ-24041 |
| Expiration date | 8/1/2029 |
| PCR review was conducted by: | |
| Approval date | 05/10/2023 |
| PCR review panel chair | Yasunari Matsuno (Chiba University) |

Third party verifier*

Yuki Sakamoto

Independent verification of data & declaration in
accordance with ISO14025 and ISO21930

internal external

*Auditor's name is stated if system certification has been performed.

1. Results of life cycle impact assessment (LCIA)

| Parameter | Stage | [A1~A3] + [D] | [A1~A3] | Unit |
|---------------------------------|-------|------------------|---------|-------------------------------------|
| Global warming IPCC2013 GWP100a | | 5200 | 6400 | kg-CO ₂ eq |
| Acidification | | 3.00 | 4.9 | kg-SO ₂ eq |
| Eutrophication | | 0.034 | 0.057 | kg-PO ₄ ³⁻ eq |

Table Legend

【A1】: Raw mterial supply
 【A2】: Transport to factory
 【A3】: Manufacturing
 【D】: Recycling potential
 【A1~A3】: sum of 【A1】、【A2】and【A3】 (cradle to gate)
 【A1~A3】+【D】: sum of 【A1】、【A2】、【A3】 and 【D】 (cradle to gate with allocation for scrap recycling)

Be sure to refer to “6-1. Supplementary environmental information” for Scope 3 and carbon footprint calculations.

| Parameter | stage | Unit | [A1~A3] | [A1] | [A2] | [A3] | [D] |
|---------------------------------|-------|------------------------|---------|---------|---------|---------|----------|
| Global warming IPCC2013 GWP100a | | kg-CO eq | 6.4E+03 | 8.1E+02 | 1.9E+02 | 5.4E+03 | -1.2E+03 |
| Ozone layer destruction | | kg-CFC-11eq | 6.1E-06 | 3.2E-06 | 1.2E-09 | 2.9E-06 | -2.2E-07 |
| Acidification | | kg-SO eq | 4.9E+00 | 7.9E-01 | 1.0E-01 | 4.0E+00 | -1.9E+00 |
| Photochemical ozone | | kg-C H eq | 9.9E-02 | 9.6E-03 | 1.7E-03 | 8.8E-02 | -2.6E-01 |
| Eutrophication | | kg-PO ³⁻ eq | 5.7E-02 | 4.0E-04 | 1.1E-12 | 5.6E-02 | -2.3E-02 |

2. Life cycle inventory analysis (LCI)

| Parameter | Unit |
|----------------------------------|------------------------|
| Non-renewable material resources | 9.5E+02 kg |
| Non-renewable energy resources | 8.7E+04 MJ |
| Renewable material resources | 1.6E+03 kg |
| Renewable primary energy | 7.0E+02 MJ |
| Consumption of freshwater | 7.0E+01 m ³ |

4. Waste to disposal

| Parameter | Unit |
|----------------------|------------|
| Hazardous waste | 0.0E+00 kg |
| Non-hazardous waste. | 1.4E+01 kg |

*Data derived from LCA and not assigned to the impact categories of LCIA

3. Material composition

| Material | Unit |
|----------|-------------|
| Fe | ≥96.2 % |
| C | 0.20-0.56 % |
| Si | 0.15-0.55 % |
| Mn | 0.60-1.45 % |
| P | ≤0.30 % |
| S | ≤0.035 % |
| T-Al | ≤0.045 % |
| Cu | ≤0.30 % |
| Ni | ≤0.15 % |
| Cr | ≤0.20 % |
| Nb | ≤0.065 % |
| V | ≤0.054 % |
| T-Ti | ≤0.030 % |

5. Additional explanation

- Each LCI includes allocation for scrap recycling as an optional supplementary information(D) at table.1 . Recycling rate (RR) used in this calculation is 93.8% (calculated based on ISO 20915/JIS Q20915 and using Japan data in 2022 from Japan Iron and Steel Federation and Japan Steel Can Recycling Association).
- Scenarios of transport to site follow the PCR. However, the loading rate for scrap transport uses the default value. For the inter-factory transportation for intermediate products, distances were measured using mapping software.
- Each item (except iron) in table 3 is the maximum value of all product standards covered by this EPD. However, the iron content in each product is never less than 96.2%, and the contents of other components are adjusted.
- Primary data collected in 2022. The source of the unit power consumption is the average of 10 electric power suppliers of Japan in 2014.
- For the transport of metallurgical coal, the amount is double counted due to the characteristics of the



SuMPO EPD

Type III Environmental Declaration (EPD)

Registration number : JR-AJ-24041E-A

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization

14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo Japan

<https://ecoleaf-label.jp>

6-1. Supplementary environmental information

Kyushu Works has ISO 14001 certificate.

Note on Global warming IPCC2013 GWP100a: When purchasers of this product calculate GHG emissions under GHG Protocol Scope 3, Category 1 for their organization, or when calculating the carbon footprint of products manufactured using this product, they must check the following URL:

<https://www.nipponsteel.com/en/product/cfp/certificate.html>

(The content of the above URL is not subject to EPD verification.)

6-2. Regulated hazardous substances

| Substance | CAS No. | Reference to standards or regulations |
|----------------|-----------|---------------------------------------|
| Manganese [Mn] | 7439-96-5 | Industrial Safety and Health Act |
| Copper[Cu] | 7440-50-8 | Industrial Safety and Health Act |
| Chromium[Cr] | 7440-47-3 | Industrial Safety and Health Act |
| Nickel[Ni] | 7440-02-0 | Industrial Safety and Health Act |

7. Assumptions of secondary data used

The IDEA2.1.3 data and steel scrap data(JP-AJ-0001) from the Japan Iron and Steel Federation are used.

8. Remarks

1 April 2026; Additional explanatory notes added to "6-1. Supplementary environmental information".

- For data quantification, please refer to PCR and Rules on quantification and declaration.
- Comparative assertion is permitted only when Rules on quantification and declaration are satisfied.
(Reference URL : <https://ecoleaf-label.jp/regulation/>)

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