EcoLeaf
Type III Environmental Declaration (EPD)
Registration number： JR-AW-23024E

Japan EPD Program by SuMPO
Sustainable Management Promotion Organization
14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo Japan
https://ecoleaf-label.jp/

JFE Steel Corporation

# Bar, Bar in Coil and Wire Rod (Products in Kurashiki)

## Functional unit

1 metric ton

## System boundary

☐ final products ■intermediate products

Production Stage (Raw material acquisition and Transportation to factory, manufucturing) and Indirect effect

## Main specifications of the product

Production Site: West Japan Works (Kurashiki)
Representative Standards:
SC, SCR, SCM, SWRCH, SWRH, SWRS
Shape: Bar, Bar in Coil and Wire Rod
Size range (mm):
Bar: φ16 - φ90
Bar in Coil: φ16 - φ38
Wire Rod: φ4.2 - φ19

## Company Information

JFE Steel Corporation
Planning & Marketing Dept.,
Steel Bar & Wire Rod Division
About us: https://www.jfe-steel.co.jp/en/index.html
Contact us: https://www.jfe-steel.co.jp/en/contact.html

| | |
|---|---|
| Registration# | JR-AW-23024E |
| PCR number | PA-180000-AW-05 |
| PCR name | Steel products (except for construction use) |
| Publication date | 1/15/2024 |
| Verification date | 11/21/2023 |
| Verification method | Product-by-product |
| Verification# | JV-AW-23024 |
| Expiration date | 11/20/2028 |

**PCR review was conducted by:**

| | |
|---|---|
| Approval date | 5/10/2023 |
| PCR review panel chair | Yasunari Matsuno (Chiba University) |

**Third party verifier***

Takahiro Atoh

Independent verification of data & declaration in accordance with ISO14025

☐internal ■external

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

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## 1. Results of life cycle impact assessment (LCIA)

| Parameter \ stage | [A1, A3]+[D][1)] | [A1, A3][2)] | Unit |
|---|---|---|---|
| Global warming IPCC2013 GWP100a | 1.2E+03 | 2.2E+03 | kg-$CO_2$eq |
| Acidification | -1.7E+00 | -5.2E-02 | kg-$SO_2$eq |
| Eutrophication | 1.9E-02 | 3.9E-02 | kg-$PO_4^{3-}$eq |

1)[A1,A3]+[D]:sum of [A1],[A3] and [D]
2)[A1,A3]:sum of [A1] and [A3]

| Parameter \ stage | Unit | Total | [A1] Raw material acquisition and Transportation to factory | [A3] Manufacturing | | [D] Indirect effect |
|---|---|---|---|---|---|---|
| Global warming IPCC2013 GWP100a | kg-$CO_2$eq | 2.2E+03 | 8.1E+02 | 1.4E+03 | - | -1.0E+03 |
| Ozone layer destruction | kg-CFC-11eq | -7.4E-07 | 2.0E-07 | -9.4E-07 | - | -1.9E-07 |
| Acidification | kg-$SO_2$eq | -5.2E-02 | 4.5E-01 | -5.0E-01 | - | -1.6E+00 |
| Photochemical ozone | kg-$C_2H_4$eq | 1.3E-02 | 7.3E-03 | 6.0E-03 | - | -2.2E-01 |
| Eutrophication | kg-$PO_4^{3-}$eq | 3.9E-02 | 1.2E-05 | 3.8E-02 | - | -1.9E-02 |

## 2. Life cycle inventory analysis (LCI)

| Parameter | | Unit |
|---|---|---|
| Non-renewable material resources | 8.3E+02 | kg |
| Non-renewable energy resources | 3.3E+04 | MJ |
| Renewable material resources | 9.4E+02 | kg |
| Renewable primary energy | 2.2E+02 | MJ |
| Consumption of freshwater | 8.3E-01 | $m^3$ |

## 3. Material composition

| Material | | Unit |
|---|---|---|
| Iron [Fe] | 86.5 | wt% |
| Carbon [C] | 1.10 | wt% |
| Silicon [Si] | 2.50 | wt% |
| Manganese [Mn] | 2.50 | wt% |
| Phosphorus [P] | 0.05 | wt% |
| Sulfur [S] | 0.40 | wt% |
| Copper [Cu] | 0.50 | wt% |
| Nickel [Ni] | 3.00 | wt% |
| Chromium [Cr] | 2.50 | wt% |
| Molybdenum [Mo] | 1.00 | wt% |

## 4. Waste to disposal

| Parameter | | Unit |
|---|---|---|
| Hazardous waste | 0.0E+00 | kg |
| Non-hazardous waste. | 1.8E+00 | kg |

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

## 5. Additional explanation

・The indirect effect (scrap recycling potential) is calculated based on ISO 20915/JIS Q 20915 and shown as [D]Iindirect effect in table "1. Results of life cycle impact assessment (LCIA)" .
The indirect effect is added to the total value ( sum of [A1], [A3] ) in tables.
・Recycling ratio used in this calculation is 93.0% (calculated based on ISO 20915/JIS Q 20915 and using FY 2018 data from The Japan Iron and Steel Federatin, The Japan Steel Can recycling Association and The Japan ferrous raw materials
association).
・The source of unit power consumption is the average of 10 electric power suppliers of Japan in 2014.
・Primary data collected in 2021.

・Each item (except iron) in table 3 is the maximum value of all product standards covered by this EPD.

## 6-1. Supplementary environmental information

The production site is certified to ISO 14001.

## 6-2. Regulated hazardous substances

| Substance | CAS No. | Reference to standards or regulations |
|---|---|---|
| Copper [Cu] | 7440-50-8 | ・Industrial Safety and Health Act |
| Manganese [Mn] | 7439-96-5 | ・Industrial Safety and Health Act.<br>・Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement |
| Nickel [Ni] | 7440-02-0 | |
| Chromium [Cr] | 7440-47-3 | |
| Molybdenum [Mo] | 7439-98-7 | |

## 7. Assumptions of secondary data used

IDEA v2.1.3 database is used. Steel scrap data (JP-AJ-0001) from the Japan Iron and Steel Federation are used.

## 8. Remarks

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- 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/)