



EcoLeaf

Type III Environmental Declaration (EPD)

Registration number : JR-AW-23022E

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization  
14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo Japan  
<https://ecoleaf-label.jp/>



## Wire Rod (Products in Sendai)



### Functional unit

1 metric ton

### System boundary

final products       intermediate products

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

### Main specifications of the product

Production Site: Sendai Works  
Representative Standards:  
SC, SCR, SCM, SGD, SUM, SWRCH, SWRH, SWRS  
Shape: Wire Rod  
Size range (mm):  
φ5.5 - φ18

### 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-23022E
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-23022
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]	Unit
Global warming IPCC2013 GWP100a		1.0E+03	kg-CO <sub>2</sub> eq
Acidification		5.8E-01	kg-SO <sub>2</sub> eq
Eutrophication		3.3E-03	kg-PO <sub>4</sub> <sup>3-</sup> eq

Parameter	stage	Unit	Total	[A1] Raw material acquisition and Transportation to factory	[A3] Manufacturing		[D] Indirect effect
Global warming IPCC2013 GWP100a		kg-CO <sub>2</sub> eq	1.0E+03	2.4E+02	7.6E+02	-	3.4E+02
Ozone layer destruction		kg-CFC-11eq	2.2E-07	1.7E-07	5.7E-08	-	6.1E-08
Acidification		kg-SO <sub>2</sub> eq	5.8E-01	2.6E-01	3.2E-01	-	5.2E-01
Photochemical ozone		kg-C <sub>2</sub> H <sub>4</sub> eq	1.6E-02	1.7E-03	1.5E-02	-	7.3E-02
Eutrophication		kg-PO <sub>4</sub> <sup>3-</sup> eq	3.3E-03	4.9E-06	3.3E-03	-	6.2E-03

**2. Life cycle inventory analysis (LCI)**

Parameter		Unit
Non-renewable material resources	2.3E+01	kg
Non-renewable energy resources	1.6E+04	MJ
Renewable material resources	1.3E+01	kg
Renewable primary energy	2.9E+02	MJ
Consumption of freshwater	1.7E+00	m <sup>3</sup>

**3. Material composition**

Material		Unit
Iron [Fe]	84.2	wt%
Carbon [C]	1.10	wt%
Silicon [Si]	3.00	wt%
Manganese [Mn]	3.00	wt%
Phosphorus [P]	0.15	wt%
Sulfur [S]	0.45	wt%
Copper [Cu]	0.60	wt%
Nickel [Ni]	4.00	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.	8.4E-01	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]Indirect 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
Nickel [Ni]	7440-02-0	• Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement
Chromium [Cr]	7440-47-3	
Molybdenum [Mo]	7439-98-7	
Lead [Pb]	7439-92-1	

**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/>)