



JFE Steel Corporation

Rails



Functional unit

1 metric ton

System boundary

final products intermediate products

Production stage (Raw material acquisition, Manufacturing) and Recycling potential

Main specifications of the product

Production Site: West Japan Works (Fukuyama)

Representative Standards:

Standard/Head hardened Rails for Railway Rails and Standard/Head hardened rails for Industrial use (e.g. Crane Rails)

※Mainly use for Passenger/Freight Railway

•Specifications shall be decided through discussion with customers, based on international standards.

Shape: Flat bottom Rail

Company Information

JFE Steel Corporation Planning & Marketing Dept., Construction Materials & Services Business Division

<https://www.jfe-steel.co.jp/en/index.html>

Registration#	JR-AW-24050E
PCR number	PA-180000-AW-05
PCR name	Steel products (except for construction use)
Publication date	21 March 2025
Verification date	13 February 2025
Verification method	Product-by-product
Verification#	JV-AW-24050
Expiration date	12 February 2030
PCR review was conducted by:	
Approval date	10 May 2023
PCR review panel chair	Yasunari Matsuno (Chiba University)

Third party verifier*

Yuki Sakamoto

Independent verification of data & declaration in accordance with ISO14025

internal external

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

1. Results of life cycle impact assessment (LCIA)

Parameter \ Stage	Production stage and Recycling potential [A1],[A2],[A3] and [D]	Production stage (cradle to gate) [A1],[A2] and [A3]	Unit
Global warming IPCC2013 GWP100a	1.6E+03	2.7E+03	kg-CO ₂ eq
Acidification	-9.6E-01	6.4E-01	kg-SO ₂ eq
Photochemical ozone	3.1E-02	5.0E-02	kg-PO ₄ ³⁻ eq

Parameter \ Stage	Unit	Total	[A1][A2] Raw material acquisition	[A3] Manufacturing	[D] Recycling potential
Global warming IPCC2013 GWP100a	kg-CO ₂ eq	2.7E+03	6.9E+02	2.0E+03	-1.0E+03
Ozone layer destruction	kg-CFC-11eq	1.3E-06	1.5E-07	1.2E-06	-1.9E-07
Acidification	kg-SO ₂ eq	6.4E-01	3.5E-01	2.9E-01	-1.6E+00
Photochemical ozone	kg-C ₂ H ₄ eq	7.8E-03	6.6E-03	1.2E-03	-2.2E-01
Eutrophication	kg-PO ₄ ³⁻ eq	5.0E-02	9.3E-06	5.0E-02	-1.9E-02

2. Life cycle inventory analysis (LCI)

Parameter	Value	Unit
Non-renewable material resources	1.4E+03	kg
Non-renewable energy resources	3.3E+04	MJ
Renewable material resources	1.1E+03	kg
Renewable primary energy	9.8E+01	MJ
Consumption of freshwater	2.1E+00	m ³

3. Material composition

Material	Value	Unit
iron [Fe]	≥93.0	wt%
carbon [C]	≤0.9	wt%
silicon [Si]	≤1.5	wt%
manganese [Mn]	≤1.5	wt%
phosphorus [P]	≤0.05	wt%
sulfur [S]	≤0.05	wt%
chromium [Cr]	≤3	wt%

4. Waste to disposal

Parameter	Value	Unit
Hazardous waste	0.0E+00	kg
Non-hazardous waste.	1.6E+00	kg

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

5. Additional explanation

- This EPD shows the results calculated without applying system extensions.
- Scrap recycling potential is calculated based on ISO 20915/JIS Q 20915 and shown as [D] in table 1. Recycling ratio used in this calculation is 93.0%. (Using data is 2018FY from The Japan Iron and Steel Federation, The Japan ferrous raw materials association and The Japan Steel Can recycling Association).
- The environmental impact of self-generated electricity was calculated as primary data of fuel and the basic unit data of grid power consumption is the average of 10 electric power suppliers of Japan in 2014FY.
- Each item (except iron) in table 3 is the maximum value of all product standards covered by this EPD.
- Primary data in 2021 is used.



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
manganese[Mn]	7349-96-5	• Industrial Safety and Health Act
nickel [Ni]	7440-02-0	• Industrial Safety and Health Act
chromium [Cr]	7440-47-3	• Industrial Safety and Health Act
molybdenum [Mo]	7439-98-7	• Industrial Safety and Health Act
copper [Cu]	7440-50-8	• Industrial Safety and Health Act
cobalt [Co]	7440-48-4	• Industrial Safety and Health Act

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/>)