



## Rails



### Functional unit

1 t

### System boundary

- final products     intermediate products  
Production Stage and optional supplementary information

### Main specifications of the product

Production sites : Sakai Works

Main standards :

JIS E 1101 (30kg rail)

JIS E 1103 (6kg rail, 9kg rail, 10kg rail,  
12kg rail, 15kg rail, 22kg rail)

Shapes : Rails

Main cross-sectional shapes : R6KG, R9KG,  
R10KG, R12KG, R15KG, R22KG, R30KG

### Company Information

OSAKA STEEL CO., LTD.

Production&Technical Control Div. Technical Control Group

TEL: +81-6-6204-0300 <https://www.osaka-seitetu.co.jp/en/contact/>

Registration#	JR-AW-23025E
PCR number	PA-180000-AW-05
PCR name	Steel products except for construction use
Publication date	12/25/2023
Verification date	11/21/2023
Verification method	Product-by-product
Verification#	JV-AW-23025
Expiration date	11/20/2028
<b>PCR review was conducted by:</b>	
Approval date	5/10/2023
PCR review panel chair	Yasunari Matsuno Chiba University

### Third party verifier\*

Wataru Kawamura

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	(1)+(2)+(3)	(1)+(2)	Unit
Global warming IPCC2013 GWP100a		2300	1600	kg-CO <sub>2</sub> eq
Acidification		1.9	0.76	kg-SO <sub>2</sub> eq
Eutrophication		0.015	0.0013	kg-PO <sub>4</sub> -eq

0% 20% 40% 60% 80% 100%

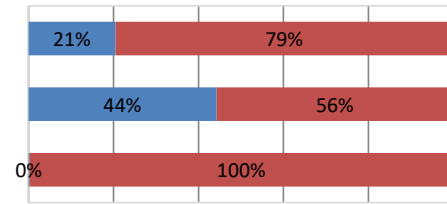


Table Legend

(1)+(2):sum of (1)and(2) (cradle to gate)

(1)+(2)+(3): sum of (1),(2)and(3) (cradle to gate with allocation for scrap recycling)

■ (1)Raw material supply ■ (2)Production

Parameter	stage	Unit	(1)+(2)	(1)Raw material supply	(2)Production	(3)Recycling potential
Global warming IPCC2013 GWP100a		kg-CO <sub>2</sub> eq	1.6E+03	3.3E+02	1.3E+03	7.5E+02
Ozone layer destruction		kg-CFC-11eq	3.4E-06	3.4E-06	7.6E-08	1.4E-07
Acidification		kg-SO <sub>2</sub> eq	7.6E-01	3.3E-01	4.2E-01	1.2E+00
Photochemical ozone		kg-C <sub>2</sub> H <sub>4</sub> eq	2.9E-02	2.8E-03	2.6E-02	1.6E-01
Eutrophication		kg-PO <sub>4</sub> <sup>3-</sup> eq	1.3E-03	2.9E-06	1.3E-03	1.4E-02

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

Parameter	Unit
Non-renewable material resources	4.6E+01 kg
Non-renewable energy resources	2.6E+04 MJ
Renewable material resources	4.0E+02 kg
Renewable primary energy	5.4E+02 MJ
Consumption of freshwater	1.2E+00 m <sup>3</sup>

### 3. Material composition

Material	Unit
iron [Fe]	≥96.0 %
carbon [C]	≤0.70 %
silicon [Si]	≤0.40 %
manganese [Mn]	≤0.90 %
phosphorus [P]	≤0.045 %
sulfur [S]	≤0.050 %

### 4. Waste to disposal

Parameter	Unit
Hazardous waste	0.0E+00 kg
Non-hazardous waste.	2.0E+02 kg

### 5. Additional explanation

- Each LCI includes allocation for scrap recycling as an optional supplementary information (3) at table.1 . Recycling rate (RR) used in this calculation is 93.0% (calculated based on ISO 20915/JIS Q20915 and using Japan data in 2018 from Japan Iron and Steel Federation and Japan Steel Can Recycling Association).
- Scenarios of transport to site follow the PCR.
- 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 96.0%, 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.



SuMPO EPD  
Type III Environmental Declaration  
(EPD)

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization  
14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo  
Japan

<https://ecoleaf-label.jp/>

Registration number : JR-AW-23025E

**6-1. Supplementary environmental information**

Each production site is certified to ISO 14001. (Certification Number E729)

**6-2. Regulated hazardous substances**

Substance	CAS No.	Reference to standards or regulations
manganese [Mn]	7439-96-5	Industrial Safety and Health Act

**7. Assumptions of secondary data used**

We use the IDEA v2.1.3 data and steel scrap data(JP-AJ-0001) from the Japan Iron and Steel Federation.

**8. Remarks**

Date of change 2025/02/14 from the EcoLeaf mark to the SuMPO EPD mark.

- 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/>)

Registration number : JR-AW-23025E