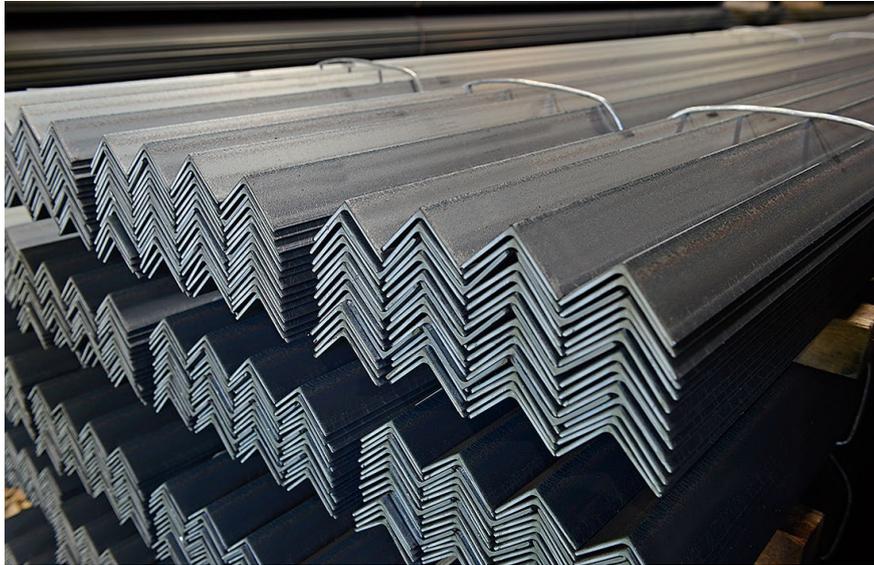




## Angles



### 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,  
Nishi-Nippon Kumamoto Works

Main standards :

JIS G 3101 (SS400, SS540)

JIS G 3106 (SM400A, SM400B, SM490A, SM490B)

JIS G 3136 (SN400A, SN400B, SN490B)

Shapes : Angles

Sizes (mm) :

L20×20×3~L150×150×15 [Equal angles]

L90×75×9~L150×100×15 [Unequal angles]

### Company Information

OSAKA STEEL CO., LTD.

Production&Technical Control Div. Technical Control Group

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

Registration#	JR-AJ-23025E-B
PCR number	PA-180000-AJ-06
PCR name	Steel products for construction use
Publication date	12/25/2023
Verification date	11/21/2023
Verification method	Product-by-product
Verification#	JV-AJ-23025
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\*

Wataru Kawamura

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		930	760	kg-CO <sub>2</sub> eq
Acidification		0.69	0.43	kg-SO <sub>2</sub> eq
Eutrophication		0.0039	0.00079	kg-PO <sub>4</sub> 3-eq

Table Legend

[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)

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



■ [A1]Raw mterial supply ■ [A2]Transport to factory

■ [A3]Manufacturing

Parameter	stage	Unit	[A1~A3]	[A1]Raw mterial supply	[A2] Transport to factory	[A3] Manufacturing	[D] Recycling potential
Global warming IPCC2013 GWP100a		kg-CO <sub>2</sub> eq	7.6E+02	2.2E+02	2.3E+01	5.2E+02	1.7E+02
Ozone layer destruction		kg-CFC-11eq	2.2E-06	2.1E-06	1.9E-10	3.6E-08	3.1E-08
Acidification		kg-SO <sub>2</sub> eq	4.3E-01	1.7E-01	7.2E-02	1.8E-01	2.6E-01
Photochemical ozone		kg-C <sub>2</sub> H <sub>4</sub> eq	1.3E-02	1.9E-03	1.3E-04	1.1E-02	3.7E-02
Eutrophication		kg-PO <sub>4</sub> <sup>3-</sup> eq	7.9E-04	2.3E-06	1.6E-13	7.9E-04	3.1E-03

## 2. Life cycle inventory analysis (LCI)

Parameter	Unit
Non-renewable material resources	3.1E+01 kg
Non-renewable energy resources	1.2E+04 MJ
Renewable material resources	2.1E+02 kg
Renewable primary energy	2.6E+02 MJ
Consumption of freshwater	5.9E-01 m <sup>3</sup>

## 3. Material composition

Material	Unit
iron [Fe]	≥96.0 %
carbon [C]	≤0.30 %
silicon [Si]	≤0.55 %
manganese [Mn]	≤1.65 %
phosphorus [P]	≤0.050 %
sulfur [S]	≤0.050 %

## 4. Waste to disposal

Parameter	Unit
Hazardous waste	0.0E+00 kg
Non-hazardous waste.	1.2E+02 kg

## 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 93.0% (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 2021. The source of the unit power consumption is the average of 10 electric power suppliers of Japan in 2014.



Registration number : JR-AJ-23025E-B

### 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

#### 1. Additional information

Follpwing Steel grade standards are available in addition to thw standards listed on page 1:

#### 1) Other than Japan

• Steel grade standards: BS EN 10025-2(2019) S235JR/J0/J2, S275JR/J0/J2, S355JR/J0/J2, MS EN 10025-2(2011) S235JR/J0/J2, S275JR/J0/J2, S355JR/J0/J2, AS/NZS 3679.1:2016 Grade 300, OSC standard SS400/A36-M, ASTM A36、ASTM A572M Gr50

#### 2. Change log

- 2025/02/14 from the EcoLeaf mark to the SuMPO EPD mark.
- 2025/08/18 Addition of overseas steel grade standards.
- 2026/03/6 Added 'ASTM A36' and 'ASTM A572M Gr50' to overseas steel standards.

- 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-AJ-23025E-B