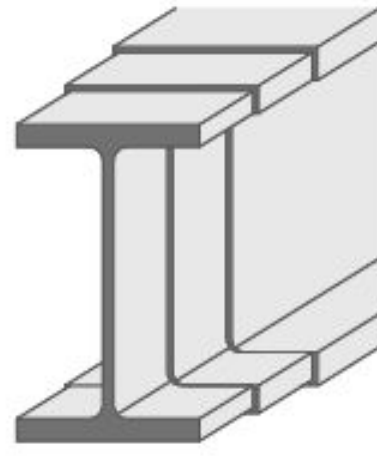


NIPPON STEEL | NIPPON STEEL CORPORATION

Wide flange shapes



Functional unit

1 t

System boundary

final products intermediate products

Production Stage and optional supplementary information

Main specifications of the product

Production Site: Kansai Works_Wakayama Area(Sakai)

Main product models: Wide flange shapes

Main standards: JIS G 3192

※The other available standards are listed on page 3 (8.Remarks).

Shape: H

Registration#	JR-AJ-24049E
PCR number	PA-180000-AJ-06
PCR name	Steel products for construction
Publication date	11/29/2024
Verification date	11/7/2024
Verification method	Product-by-product
Verification#	JV-AJ-24049
Expiration date	11/28/2024

PCR review was conducted by:

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

Third party verifier*

Daisuke Matsui

Independent verification of data & declaration in accordance with ISO14025 and ISO21930.

internal external

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

Company Information

NIPPON STEEL CORPORATION

About Us:

<https://www.nipponsteel.com/en/index.html>

Contact Us:

<https://www.nipponsteel.com/en/product/contact/structuralsteel.html>

1. Results of life cycle impact assessment (LCIA)

Parameter	Stage	【A1~A3】 + 【D】	【A1~A3】	Unit
Global warming IPCC2013 GWP100a		1500	2700	kg-CO ₂ eq
Acidification		0.70	2.5	kg-SO ₂ eq
Photochemical ozone		-0.24	0.016	kg-C ₂ H ₄ eq

Table Legend

【A1】: Raw material supply
【A2】: Transport to factory
【A3】: Manufacturing
【D】: Recycling potential
【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)

Parameter	stage	Unit	【A1~A3】	【A1】	【A2】	【A3】	【D】
Global warming IPCC2013 GWP100a		kg-CO ₂ eq	2.7E+03	5.0E+02	1.5E+02	2.1E+03	-1.2E+03
Ozone layer destruction		kg-CFC-11eq	5.5E-06	1.6E-07	1.0E-09	5.3E-06	-2.2E-07
Acidification		kg-SO ₂ eq	2.5E+00	5.7E-01	9.2E-02	1.9E+00	-1.8E+00
Photochemical ozone		kg-C ₂ H ₄ eq	1.6E-02	5.6E-03	1.5E-03	9.3E-03	-2.6E-01
Eutrophication		kg-PO ₄ ³⁻ eq	5.2E-02	1.2E-05	9.1E-13	5.2E-02	-2.2E-02

2. Life cycle inventory analysis (LCI)

Parameter		Unit
Non-renewable material resources	8.9E+02	kg
Non-renewable energy resources	3.0E+04	MJ
Renewable material resources	1.4E+03	kg
Renewable primary energy	-9.5E+02	MJ
Consumption of freshwater	3.9E+00	m ³

3. Material composition

Material		Unit
iron [Fe]	≥94.96	%
carbon [C]	≤0.26	%
silicon [Si]	≤0.65	%
manganese [Mn]	≤1.70	%
phosphorus [P]	≤0.05	%
sulfur [S]	≤0.05	%
copper [Cu]	≤0.60	%
chrominium [Cr]	≤0.75	%
nickel [Ni]	≤0.50	%
molybdenum [Mo]	≤0.15	%
niobium [Nb]	≤0.05	%
vanadium [V]	≤0.15	%
titanium [Ti]	≤0.04	%
nitrogen [N]	≤0.03	%
aluminium [Al]	≤0.06	%

4. Waste to disposal

Parameter		Unit
Hazardous waste	0.00E+00	kg
Non-hazardous waste.	1.10E+00	kg

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

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 93.7%(calculated based on JIS Q 20915 and using Japan data in 2022 from Japan Iron and Steel Federation and Japan Steel Can Recycling Association).
- The transportation scenario for raw materials follows 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 94.96%, 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.
- For the transport of metallurgical coal, the amount is double counted due to the characteristics of the inventory database on which this estimation is based.

6-1. Supplementary environmental information

Kansai Works_Wakayama Area is certified to ISO 14001.

6-2. Regulated hazardous substances

Substance	CAS No.	Reference to standards or regulations
manganese [Mn]	7439-96-5	Industrial Safety and Health Act
copper [Cu]	7440-50-8	Industrial Safety and Health Act
chrominium [Cr]	7440-47-3	Industrial Safety and Health Act
nickel [Ni]	7440-02-0	Industrial Safety and Health Act
molybdenum [Mo]	7439-98-7	Industrial Safety and Health Act
niobium [Nb]	7440-03-1	Industrial Safety and Health Act
vanadium [V]	7440-62-2	Industrial Safety and Health Act
titanium [Ti]	7440-32-6	Industrial Safety and Health Act
nitrogen [N]	7727-37-9	Industrial Safety and Health Act
aluminium [Al]	7429-90-5	Industrial Safety and Health Act

7. Assumptions of secondary data used

We use the IDEA2.1.3 database. Additionally, scrap primary units (Scrap LCI) are based on the primary unit registration number: JP-AJ-0001.

8. Remarks

1. Additional information

Following Steel grade standards and Dimensional standards are available in addition to the standards listed on page 1:

1) In Japan

- Steel grade standards:
JIS G 3136 (SN400A, SN400B, SN400C, SN490B, SN490C)
JIS G 3106 (SM400A, SM490A, SM490B)
JIS G 3101 (SS400)

2) Other than Japan

- Steel grade standards:
ASTM A36, A572 Gr50, A992, EN10025-2 S235JR/J0/J2, S275JR/J0/J2, S355JR/J0/J2/K2, S460J0, EN10225-2 S355MLO
- dimensional standards:
ASTM:H152.1(t5.84)XB152.1(t6.6)~H1091.9(t77.98)XB454.4(t124.71)
BS:UB:H203.2(t5.4)XB101.8(t9.3)~H1055.9(t35.9)X420.5(t64.0)
BS:UC:H152.4(t5.8)XB152.2(t6.8)~H474.6(t47.6)X424.0(t77.0)
HE · IPE:H200(t5.6)XB100(t8.5)~H1008(t21.0)X307(t40.0)

- For data quantification, please refer to the PCR and the Rules on Quantification and Declaration.
- Comparative assertion is permitted only when the Rules on Quantification and Declaration are satisfied.
(Reference URL : <https://ecoleaf-label.jp/regulation/>)