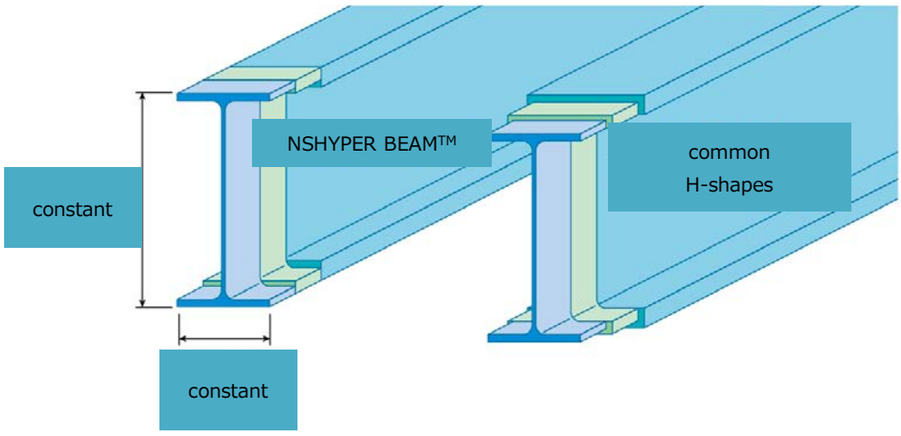
SuMPO EPD
Type III Environmental Declaration (EPD)
Registration number： JR-AJ-19003E-D

Japan EPD Program by SuMPO
Sustainable Management Promotion Organization
14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo Japan
https://ecoleaf-label.jp/

NIPPON STEEL | NIPPON STEEL CORPORATION

NSHYPER BEAM™



Functional unit

1 t

System boundary

☐ final products ■intermediate products

Production Stage and optional supplementary infomation

Main specifications of the product

Production sites : Kashima and Wakayama Works

Main standards :

SN400A,SN400B,SN490B,SM400A,SM400B,SM490A,SM490B, SM490YA,SM490YB,SS400,NSYP345B,NSYP385B

Type : H-shape

Main sizes(unit:㎜,t:thickness)

H400(t 9)×B200(t12)~H1,200(t22)×B500(t40)

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

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

Registration#	JR-AJ-19003E-D
PCR number	PA-180000-AJ-06
PCR name	Steel products for construction
Publication date	12/6/2019
Verification date	01/12/2024
Verification method	Product-by-product
Verification#	JV-AJ-24002
Expiration date	01/11/2029

PCR review was conducted by:

Approval date	05/10/2023
PCR review panel chair	Yasunari Matsuno Chiba University

Third party verifier*

Yasuo Koseki

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

☐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】+【D】	【A1~A3】	Unit
Global warming IPCC2013 GWP100a	1400	2600	kg-CO2eq
Acidification	0.10	1.8	kg-SO2eq
Photochemical ozone	0.65	0.89	kg-C2H4eq

Table Legend
【A1】: Raw mterial 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_2eq	2.6E+03	6.3E+02	1.2E+02	1.8E+03		-1.1E+03
Ozone layer destruction	kg-CFC-11eq	2.3E-06	1.7E-07	7.9E-10	2.2E-06		-2.0E-07
Acidification	kg-SO_2eq	1.8E+00	5.3E-01	6.7E-02	1.2E+00		-1.7E+00
Photochemical ozone	kg-C_2H_4eq	8.9E-01	4.8E-03	1.0E-03	8.8E+00		-2.4E-01
Eutrophication	kg-PO_4^{3-}eq	4.1E-02	3.7E-05	7.1E-13	4.1E-02		-2.1E-02

2. Life cycle inventory analysis (LCI)

Parameter		Unit
Non-renewable material resources	9.0E+02	kg
Non-renewable energy resources	3.0E+04	MJ
Renewable material resources	8.9E+02	kg
Renewable primary energy	9.7E+02	MJ
Consumption of freshwater	3.9E+00	m^3

3. Material composition

Material		Unit
iron [Fe]	≧95.51	%
carbon [C]	≦0.26	%
silicon [Si]	≦0.55	%
manganese [Mn]	≦1.65	%
phosphorus [P]	≦0.05	%
sulfur [S]	≦0.05	%
copper [Cu]	≦0.60	%
chrominium [Cr]	≦0.36	%
nickel [Ni]	≦0.50	%
molybdenum [Mo]	≦0.15	%
niobium [Nb]	≦0.05	%
vanadium [V]	≦0.15	%
titanium [Ti]	≦0.04	%
nitrogen [N]	≦0.02	%
aluminium [Al]	≦0.06	%

4. Waste to disposal

Parameter		Unit
Hazardous waste	0.00E+00	kg
Non-hazardous waste.	2.03E+00	kg

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

5. Additional explanation

1. Each LCI includes allocation for scrap recycling as an optional supplementary information [D]. Recycling rate (RR) used in this calculation is 93.1% (calculated based on ISO 20915/JIS Q 20915 and using Japan data from Japan Iron and Steel Federation and Japan Steel Can Recycling Association).
2. Scenarios of transport to site follow the PCR.
3. Each item (except iron) in table 3 is the maximum value of the standards of the products.
4. The average grid power supply of 10 electric power suppliers of Japan in 2014 is used in the LCI calculation for grid electricity.

6-1. Supplementary environmental information

Kashima Works and Wakayama Works are 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 data and steel scrap data from The Japan Iron and Steel Federation (JISF).

8. Remarks

1. Additional information

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

1) In Japan

・Steel grade standards: SN400C,SN490C,SMA400AW,SMA400BW,SMA490AW,SMA490BW

2) Other than Japan

・Steel grade standards: ASTM A36, A572 Gr50, A992, EN10025-2 S235JR/J0/J2, S275JR/J0/J2, S355JR/J0/J2/K2, EN10225-2 S355MLO

2. Change log

・3/17/2020 The spec of main sizes has been changed by adding larger sizes(MEGA NSHYPER BEAM™)

・Addition of overseas steel grade standards and dimensional standards and updated information on Material composition(table 3) and Regulated hazardous substances(table 6-2).(March 31, 2022)

・January 2024; Modification about allocation method of by-product gases

・May 2024; Correction of overseas steel grade standards. Addition Japanese steel grade NSYP385B.

- 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/)