EcoLeaf
Type III Environmental Declaration (EPD)
Registration number： JR-AJ-23001E-A

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

Sheet Piles

Functional unit

1 t

System boundary

☐ final products ■intermediate products

Production Stage and optional supplementary infomation

Main specifications of the product

Production Site：East Nippon Works_Kashima Area, Kansai Works_Wakayama Area(Sakai), Kyushu Works_Yawata Area
Main product models：Hat-type sheet piles,U-type sheet piles,Straight web-type sheet piles,Corner joint-type sheet piles,NS-SP-J
Main standards：JIS A 5523,JIS A 5528,EN10248,ASTM,KS F4604
※The other available product models and standards 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-23001E-A
PCR number	PA-180000-AJ-06
PCR name	Steel products for construction
Publication date	4/7/2023
Verification date	1/19/2024
Verification method	Product-by-product
Verification#	JV-AJ-24021
Expiration date	1/18/2029

PCR review was conducted by:

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

Third party verifier*

Tomoko Fuchigami

Independent verification of data & declaration in accordance with ISO14025 and ISO 21930.

☐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	1100	2300	kg-CO_2eq
Acidification	-0.38	1.5	kg-SO_2eq
Photochemical ozone	-0.25	0.014	kg-C_2H_4eq

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	2.3E+03	4.6E+02	1.2E+02	1.8E+03		-1.2E+03
Ozone layer destruction	kg-CFC-11eq	4.2E-07	1.3E-07	7.8E-10	2.9E-07		-2.2E-07
Acidification	kg-SO_2eq	1.5E+00	4.9E-01	6.4E-02	9.7E-01		-1.9E+00
Photochemical ozone	kg-C_2H_4eq	1.4E-02	4.5E-03	1.1E-03	8.4E-03		-2.7E-01
Eutrophication	kg-PO_4^{3-}eq	3.7E-02	2.8E-03	7.1E-13	3.4E-02		-2.3E-02

2. Life cycle inventory analysis (LCI)

Parameter		Unit
Non-renewable material resources	7.7E+02	kg
Non-renewable energy resources	2.6E+04	MJ
Renewable material resources	9.5E+02	kg
Renewable primary energy	-3.1E+02	MJ
Consumption of freshwater	4.5E+00	m^3

3. Material composition

Material		Unit
iron [Fe]	≧96.6	%
carbon [C]	≦0.24	%
silicon [Si]	≦1.60	%
manganese [Mn]	≦1.50	%
phosphorus [P]	≦0.05	%
sulfur [S]	≦0.05	%
nitrogen [N]	≦0.01	%

4. Waste to disposal

Parameter		Unit
Hazardous waste	0.0E+00	kg
Non-hazardous waste.	1.7E+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) at table.1 . Recycling rate (RR) used in this calculation is 93.0%(calculated based on JIS Q 20915 and using Japan data in 2018 from Japan Iron and Steel Federation and Japan Steel Can Recycling Association).
2. Scenarios of transport to site follow the PCR.
3. Each item (expect 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 96.6%, and the contents of other components are adjusted.
4. Primary data collected in 2018. The source of the unit power consumption is the average of 10 electric power suppliers of Japan in 2014.
5. 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

Each production site 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
nitrogen [N]	7727-37-9	Industrial Safety and Health Act

7. Assumptions of secondary data used

We use the IDEA2.1.3 database.

8. Remarks

Additional information

Following Product models and Steel grade standards are available in addition to what are listed on page 1:

1. Product models: ※Examples are shown in ( )
 - Hat-type sheet piles（NS-SP-10H,NS-SP-25H,NS-SP-45H,NS-SP-50H）
 - U-type sheet piles（NS-SP-Ⅱ,NS-SP-III,NS-SP-IV,NS-SP-ⅤL,NS-SP-VIL,NS-SP-Ⅱw,NS-SP-IIIw,NS-SP-IVw）
 - Corner joint-type sheet piles（NS-SP-CIII,NS-SP-CIV）
 - Straight web-type sheet piles（NS-SP-FL,NS-SP-FXL）
 - NS-SP-J（NS-SP-J）

2. Steel grade standards: ※Examples are shown in ( )
 - JIS A 5523（SYW295,SYW390,SYW430）
 - JIS A 5528（SY295,SY390）
 - EN10248（S355GP,S430GP）
 - ASTM（A572 Gr.50,A992 Gr.50）
 - KS 4604（SY300）

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

- 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/)