

**NIPPON STEEL | NIPPON STEEL CORPORATION**

## Sheet Piles



### Functional unit

1 t

### System boundary

final products       intermediate products

Production Stage and optional supplementary information

### 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>

<b>Registration#</b>	JR-AJ-23001E-B
<b>PCR number</b>	PA-180000-AJ-06
<b>PCR name</b>	Steel products for construction
<b>Publication date</b>	4/7/2023
<b>Verification date</b>	1/19/2024
<b>Verification method</b>	Product-by-product
<b>Verification#</b>	JV-AJ-24021
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<b>PCR review was conducted by:</b>	
<b>Approval date</b>	5/10/2023
<b>PCR review panel chair</b>	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.

## 1. Results of life cycle impact assessment (LCIA)

Parameter	Stage	[A1~A3] + [D]	[A1~A3]	Unit
Global warming IPCC2013 GWP100a		1100	2300	kg-CO <sub>2</sub> eq
Acidification		-0.38	1.5	kg-SO <sub>2</sub> eq
Photochemical ozone		-0.25	0.014	kg-C <sub>2</sub> H <sub>4</sub> eq

Be sure to refer to "6-1. Supplementary environmental information" for Scope 3 and carbon footprint calculations.

### 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 <sub>2</sub> eq	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 <sub>2</sub> eq	1.5E+00	4.9E-01	6.4E-02	9.7E-01	-1.9E+00
Photochemical ozone		kg-C <sub>2</sub> H <sub>4</sub> eq	1.4E-02	4.5E-03	1.1E-03	8.4E-03	-2.7E-01
Eutrophication		kg-PO <sub>4</sub> <sup>3-</sup> 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 <sup>3</sup>

## 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

- 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).
- 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 96.6%, and the contents of other components are adjusted.
- Primary data collected in 2018. 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

Each production site is certified to ISO 14001.

Note on Global warming IPCC2013 GWP100a: When purchasers of this product calculate GHG emissions under GHG Protocol Scope 3, Category 1 for their organization, or when calculating the carbon footprint of products manufactured using this product, they must check the following URL:

<https://www.nipponsteel.com/en/product/cfp/certificate.html>

(The content of the above URL is not subject to EPD verification.)

## 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-V L,NS-SP-VIL,NS-SP-Ⅱ w,NS-SP-Ⅲ w,NS-SP-Ⅳ w)
- 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
- April 2026; Additional explanatory notes added to "6-1. Supplementary environmental information".

- 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/>)