



✓ Third party verified
Environmental Product Declaration

In conformance with
ISO14025 | ISO14040 | ISO14044



NIPPON STEEL CORPORATION

Steel Plates for Building Structures



Steel Plates for Building Structures

Registration number	Verification date	Publication date	Expiration date	EPD type
SuMPO-EPD-2608-224-1	2026/8/20	2026/8/27	2031/8/19	Multiple Products EPD
* First publication date				
Additional standards in conformance	EPD can be updated or withdrawn during the validity period. To confirm the validity of this EPD, check the following website:			
ISO21930:2007, ISO14067:2018	https://ecoleaf-label.jp/epd/search			

● General Information

> Programme

Programme name	SuMPO EPD Japan
Programme operator	Sustainable Management Promotion Organization (SuMPO)
Address	KANDA SQUARE GATE 4F, 14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo, 101-0047, Japan
Website	https://ecoleaf-label.jp

> GPI and PCR

GPI	SuMPO EPD Japan General Program Instructions v.2.2.0
PCR name	Steel products for construction
PCR registration number	PA-180000-AJ-08
PCR publication date	2025/4/1
PCR review panel chair	Yasunari Matsuno (Chiba University)
PCR valid until	2030/4/1
PCR issuer	Sustainable Management Promotion Organization (SuMPO)

> Verification

Verification Type	Third-party verification in conformance with ISO14025 and ISO21930:2017		
	☐ Internal	☒ External	
	☒ Third-party verification by individual verifier	☐ Third-party verification by verification body	☐ Third-party verification by system certification
Verifier	Kazuo Naito		

> Standards

Standards in conformance with;	☒ ISO14040:2006	☒ ISO14044:2006	☒ ISO14067:2018
	☒ ISO14025:2008	☒ ISO21930:2007	☐ ISO21930:2017
	☐ EN15804+A2	☐ EN50693:2019	☐ ISO/IEC63366:2025

EPD owner is responsible for the information contained in the EPD and for environmental claims related to the information. For any inquiries or requests regarding the content of the EPD, please contact the EPD owner.

EPDs are comparable only if they comply with the same standards, use the same sub-PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works. Comparability of EPDs is limited to those applying a functional unit.

The LCIA results are relative expressions and do not predict impacts on category endpoints, the exceedance of thresholds, safety margins or risks.

When using weighted averages for calculation, the life cycle impact assessment results, life cycle inventory analysis-related information, waste-related information, and environmental information on output flows do not correspond to information about a specific product.

● EPD Owner's Information

Name of company and dept.	NIPPON STEEL CORPORATION
Address	2-6-1 Marunouchi, Chiyoda-ku, Tokyo 100-8071, Japan
Contact	+81-3-6867-4932
LCA practitioner	NIPPON STEEL TECHNOLOGY Co.,Ltd.
Company description	Steelmaking and steel fabrication / Engineering / Chemicals / New materials / System solutions

●Product Information

Product name		Steel Plates for Building Structures	
Product /model number		SS400,SM400A,SM400B,SM400C,SM490A,SM490B,SM490C,SM490YA,SM490YB,SM520B,SM520C,SM570,SN400A,SN400B,SN400C,SN490B,SN490C	
Product specification	Function	Steel plates used for civil engineering and building construction applications.	
	Mass	1t	Conversion factor -
	Applications	Civil engineering and building construction components.	
	TS*	Excellent weather resistance, high strength and toughness, as well as good weldability and workability, contributing to the safety and constructability of building structures.	
Service life	Service life	15–50 years	
	In-use conditions	Applications as building materials.	
	reference	The service life varies depending on the use conditions and service environment; therefore, the above period should not be interpreted as the actual service life of this product. Source: National Tax Agency of Japan, “Useful Life Table for Depreciable Assets” (2022).	
Manufacturing site(s)		Nippon Steel Corporation, East Nippon Works (Kimitsu Area) Nippon Steel Corporation, Kyushu Works (Oita Area)	
Product description		Steel plates for building structures.	
Website		https://www.nipponsteel.com/product/plate/	

* TS: technical specifications,

●Product Content

Product components	Proportion (%)	Mass (unit)	
Fe	≧ 96.5	≧ 965	kg
C	≦ 0.25	≦ 2.5	kg
Si	≦ 0.65	≦ 6.5	kg
Mn	≦ 1.70	≦ 1.7	kg
P	≦ 0.05	≦ 0.5	kg
S	≦ 0.05	≦ 0.5	kg
Others	≦ 0.8	≦ 8.0	kg
Packaging materials	Proportion (%)	Mass (unit)	
-	-	-	-

●Biogenic Carbon Content

Item	Content (kg-C)	Content (kg-CO ₂ eq)
Biogenic carbon content per product	-	-
Biogenic carbon content in packaging	-	-

● LCA-related Information

> EPD Type Information

EPD type	Product type	☐ Single product EPD	☒ Multiple products EPD	☐ Industry-wide EPD
	Site type	☐ Single site	☒ Multiple sites	
Geographical coverage		Global		
Description of representativeness for multiple-products/sites EPD		The declared products are steel plates manufactured at multiple production sites. The products are manufactured using the same production processes, raw material composition, and quality management standards. Therefore, the representativeness of the calculation and assessment results is considered to be sufficiently ensured, and the products are treated as a substantially identical product group.		
Description of variation for multiple-products/sites EPD		As the product group is manufactured using essentially the same production processes and material composition, it is evident that the differences in the life cycle impact assessment results are within 10% for all impact categories.		
Description of products covered in the multiple products EPD		This EPD covers heavy steel plates manufactured using the same production process at a specific production site and reports the results on a per-tonne basis.		

> LCA Information

Declared unit		1t		
Mass per declared unit		-		
(Conversion factor to mass)		-		
Reference flow (number of products required to fulfil the function)		-		
System boundary		☒ Cradle-to-Gate	☐ Cradle-to-Gate with options	☐ Cradle-to-Grave
LCA software		Cloud MiLCA		
LCI database		AIST-IDEA ver3.5.1		
Characterization model		Climate Change: IPCC Fifth Assessment Report (IPCC, 2021), Other Impact Areas: LIME2		
Use of other background data		worldsteel Life Cycle Inventory Methodology Report Steel scrap LCI data published by the Japan Iron and Steel Federation (JISF)		
Secondary data quality		Calculations were performed using data that comply with the secondary data quality requirements specified in the GPI. Data quality assessment was conducted in accordance with ISO 14044:2006, Section 4.2.3.6.		
Primary data collection sites		Nippon Steel Corporation, East Nippon Works (Kimitsu Area) Nippon Steel Corporation, Kyushu Works (Oita Area)		
Primary data collection period		From 2024 April to 2025 March		
Biogenic carbon		☐ 0/0 approach	☒ -1/+1 approach	
Information about electricity	Use	☒ Average consumption mix		☐ Others
	Type	-		
	Purchase date	-		
	Issuing body	-		

> Modules

Production stage			Construction stage		Use stage							End-of-life stage				Suppl. info
A1	A2	A3			Use					Operation						
			A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Extraction and upstream production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / Demolition	Transport to waste processing or disposal	Waste processing	Disposal of waste	Potential net benefits
■	■	■	—	—	—	—	—	—	—	—	—	—	—	—	—	■

■ : declared module - : module not declared

> Allocation

In this manufacturing process, co-products (by-products) are generated during production. The treatment of co-products was determined in accordance with Annex D (Table D1) of PCR PA-180000-AJ-08 "Steel Products for Construction (Intermediate Goods)", and system expansion was applied depending on the generation characteristics and utilization of each by-product.

Steel slag is generated as a co-product in the steel production process. Allocation avoidance through process subdivision was assessed in accordance with the GPI; however, such subdivision was not considered feasible. Given the substantial differences in function and economic value between steel products and steel slag, economic allocation was applied.

> Cut-off rules

The cut-off criteria specified in Section 5-3 of PCR PA-180000-AJ-08 "Steel Products for Construction (Intermediate Goods)" were applied to each module (i.e., less than 5% of material and energy inputs, less than 5% of material emissions and waste generation, and less than 5% contribution to each environmental impact category).

Cut-off Items

(1) Transportation

Transportation processes already accounted for in the IDEA datasets were excluded to avoid double counting.

In addition, transportation processes contributing less than 5.0% to the GWP of the A2 module (transport to the manufacturing site) were excluded according to the cut-off criteria.

Material	tkm/t-steel	GWP kg-CO ₂ eq	contribution rate to A2	contribution rate to Total LCA
Magnesium	4.4E-06	0.000	0.0%	0.0%
Aluminium	5.838	1.133	1.0%	0.1%
Nickel	0.844	0.164	0.1%	0.0%
Copper	0.605	0.117	0.1%	0.0%
Manganese	28.063	0.302	0.3%	0.0%
Ferro molybdenium	0.196	0.038	0.0%	0.0%
Ferro boron	0.046	0.009	0.0%	0.0%
Ferro chromium	0.655	0.127	0.1%	0.0%
Ferro manganese	13.978	2.713	2.3%	0.1%
Ferro niobium	0.208	0.040	0.0%	0.0%
Ferro phosphorous	0.052	0.010	0.0%	0.0%
Ferro titanium	0.377	0.073	0.1%	0.0%
Ferro vanadium	0.054	0.011	0.0%	0.0%
Silico manganese	8.392	1.629	1.4%	0.1%
Silicon calcium	0.220	0.043	0.0%	0.0%
Ferro silicium	25.830	0.278	0.2%	0.0%
Ferro nickel (29%)	0.055	0.011	0.0%	0.0%
Plastic (for coke making)	2.041	0.396	0.3%	0.0%
Hot metal (from external supply)	0.010	0.002	0.0%	0.0%
Ferrous sulphate (FeSO ₄)	0.047	0.009	0.0%	0.0%
Fluorspar	0.182	0.035	0.0%	0.0%
Liquefied petroleum gas	1.625	0.315	0.3%	0.0%
Natural gas	2.594	0.503	0.4%	0.0%
Grease	0.000	0.000	0.0%	0.0%
Carbon dioxide	6.431	1.248	1.1%	0.1%
Electrode (C)	1.868	0.363	0.3%	0.0%

> System Boundary

In accordance with PCR PA-180000-AJ-08 "Steel Products for Construction (Intermediate Goods)", the assessment covered the manufacturing stage (Modules A1, A2, and A3) as specified in the GPI and PCR, as well as Module D (recycling benefits of steel products) as an indirect impact.

Co-products (by-products) are generated during the manufacturing process of the product. For these co-products, physical or process-based separation from the declared product was not feasible, even when the manufacturing process was subdivided. Therefore, allocation was avoided through the application of system expansion.

However, for steel slag, the inputs and outputs of the relevant process were allocated between steel products and steel slag products based on the published economic allocation ratio for steel slag products.

In accordance with PCR Section 12-7 and GPI Annex A.9, details of the allocation approach are provided in the section "Allocation".

In accordance with GPI A.9.2, waste was considered to cease being waste when the final treatment process, such as incineration or landfill disposal, had been completed.

The temporal system boundary was set to 100 years.

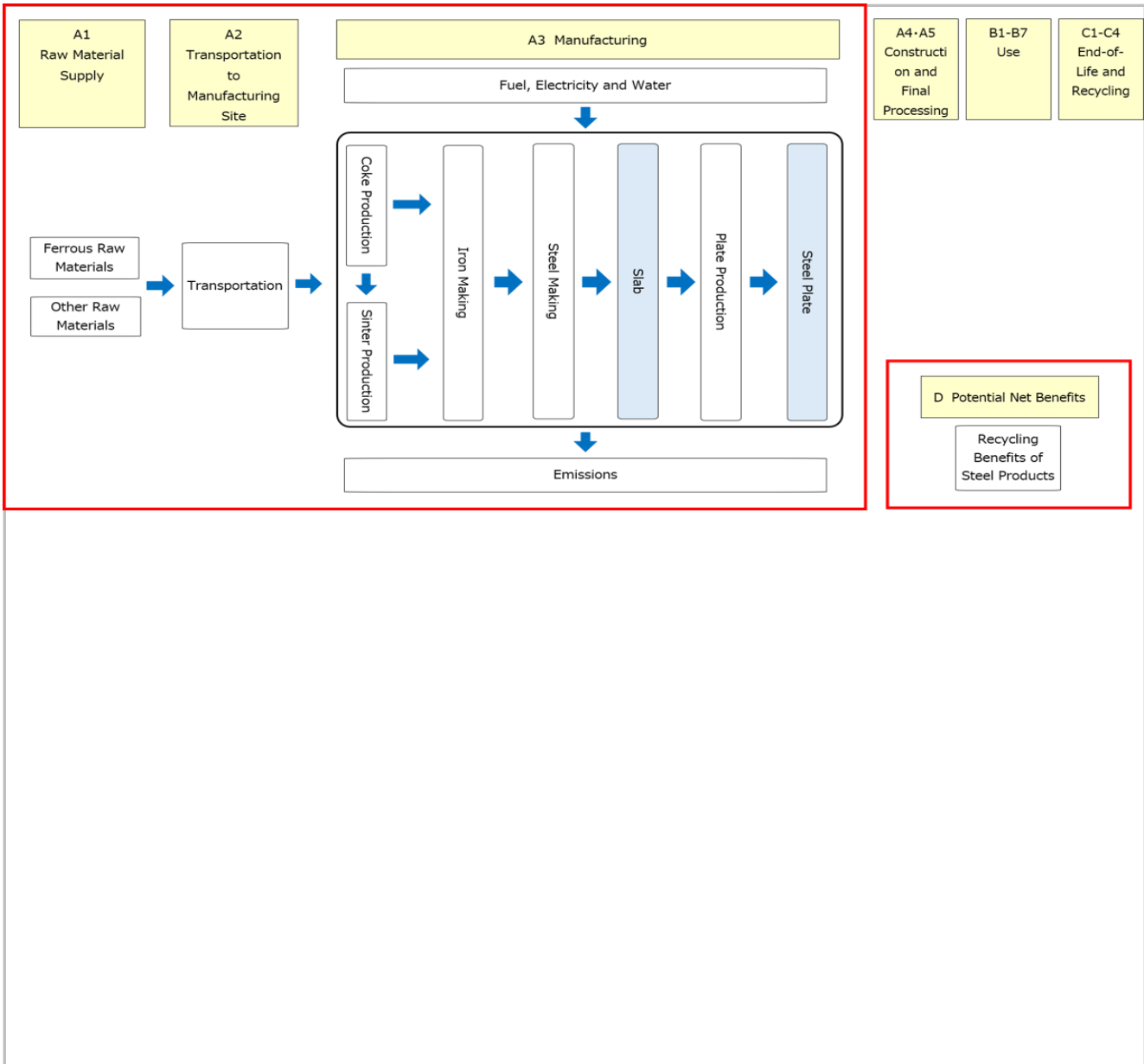
> Scenario

Modules	Description
A2	For scrap, the following transportation scenario specified in the PCR was applied: - Transportation distance: 200 km by road - Mode of transportation: 10-ton truck using the AIST-IDEA dataset with the default load factor ("Load factor_Default")
A2	For other auxiliary raw materials and procured materials, the following transportation scenario specified in the PCR was applied: - Transportation distance: 500 km for transportation that may involve inter-prefectural transport - Mode of transportation: 10-ton truck using the AIST-IDEA dataset with the default load factor ("Load factor_Default")
A2	For products imported from overseas, the following transportation scenario specified in the PCR was applied: - Transportation distance: Port to port, based on the sailing distance between the relevant ports in each country - Mode of transportation: Ship, such as a coal carrier, iron ore carrier, container ship, or bulk carrier

> Electricity Modelling

Electricity is supplied from a combination of purchased electricity, jointly generated power, and on-site coal-fired power generation. Because electricity from these sources is physically mixed within the site and cannot be distinguished at the product level, average grid electricity data were used in accordance with PCR Sections 6-1 and 12-7. The dataset "331131022pJPN Electricity, Japan Average, FY2022, JPN" was applied. No environmental attributes associated with electricity consumption have been sold externally; therefore, double counting does not occur.

> Life Cycle Sytem Diagram



[illegible][illegible]

> LCI- Secondary Resources Use

[illegible][illegible]

> Waste Indicators

[illegible]

> Output Flow Indicators

[illegible]

> **Description of LCA Results**

① Product Composition

For constituent elements other than iron, the maximum value among the specified upper limits of the applicable steel grade standards is shown. However, for all products, the iron content does not fall below the specified standard value, and the proportions of the other constituent elements are adjusted accordingly.

② Primary Data Collection Period

The primary data collection period was FY2024.

③ Electricity Consumption

At the steelworks, electricity is supplied from multiple sources, including purchased electricity and on-site power generation. In addition, multiple products are manufactured in parallel on the same production lines. Therefore, electricity consumption attributable to each product within the system boundary cannot be separately identified by electricity source. As a result, average grid electricity data were applied to all electricity consumption, and the assessment results therefore contain a degree of uncertainty.

④ Note on Climate Change Impact Assessment

Purchasers of this product shall review the information provided at the following website when:

- calculating Scope 3 Category 1 GHG emissions for their organization; or
- calculating the carbon footprint of products manufactured using this product.

Nippon Steel Carbon Footprint Information: <https://www.nipponsteel.com/product/cfp/certificate.html>
 (The content of the above website is not subject to EPD verification.)

● **Additional Environmental Information**> **Additional Environmental Information not related to LCA**

Manufactured at production facilities certified to ISO 14001.

> **Information on Hazardous Substances**

Hazardous materials name	CAS No.	Standards or regulations
Mn	7439-96-5	Industrial Safety and Health Act
Cu	7440-50-8	Industrial Safety and Health Act
Cr	7440-47-3	Industrial Safety and Health Act
Ni	7440-02-0	Industrial Safety and Health Act

Release of dangerous substances from construction products

None

● **Definitions of Terms**

None

●References

- ISO14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- ISO14040:2006 Environmental management - Life Cycle Assessment - Principles and framework
- ISO14044:2006 Environmental management - Life Cycle Assessment - Requirements and guidelines
- ISO14067:2018 Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification
- ISO21930:2007 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services
- Nippon Steel Corporation. Energy Conservation Act Periodic Report Disclosure Sheet (FY2024 Submission; FY2023 Results).
- The Japan Iron and Steel Federation (JISF). Recycling Rate of Steel Products (estimated based on the FY2022 steel can recycling rate reported by the Steel Can Recycling Association and FY2022 steel processing yield estimates derived from data provided by the Japan Ferrous Raw Materials Association).

●Version History

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