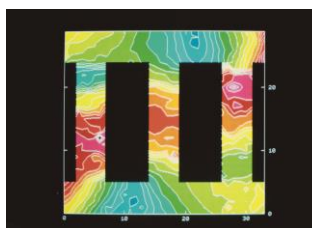


**NIPPON STEEL | NIPPON STEEL CORPORATION**

## Grain-Oriented Electrical Steel Sheets



### Functional unit

1 t

### System boundary

final products       intermediate products

Production Stage and optional supplementary information

### Main specifications of the product

Production sites : Setouchi Works, Kyushu Works

Main standards :

NIPPON STEEL Grade (ZH,ZDKH etc.)

See Table 8.Remarks for details.

Type : Coil, Hoop, Sheet

Main sizes (unit: mm, t: thickness)

t=0.15~0.35

### Company Information

**NIPPON STEEL CORPORATION**

<https://www.nipponsteel.com/en/product/sheet/list/>

<b>Registration#</b>	JR-AW-22020E-A
<b>PCR number</b>	PA-180000-AW-05
<b>PCR name</b>	Steel products except for construction use
<b>Publication date</b>	11/25/2022
<b>Verification date</b>	01/10/2024
<b>Verification method</b>	Product-by-product
<b>Verification#</b>	JV-AW-24004
<b>Expiration date</b>	10/24/2027
<b>PCR review was conducted by:</b>	
<b>Approval date</b>	05/10/2023
<b>PCR review panel chair</b>	Yasunari Matsuno (Chiba University)

### Third party verifier\*

Tetsuya Okuyama

Independent verification of data & declaration in accordance with ISO14025

internal       external

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

Registration number : JR-AW-22020E-A

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

Parameter	Stage	(1)+(2)+(3)	(1)+(2)	Unit
Global warming IPCC2013 GWP100a		2800	3800	kg-CO <sub>2</sub> eq
Acidification		0.77	2.4	kg-SO <sub>2</sub> eq
Eutrophication		0.062	0.081	kg-PO <sub>4</sub> <sup>3-</sup> eq

Table Legend  
 (1)Raw material supply  
 (2)Production  
 (3)Recycling potential

Parameter	stage	Unit	(1)+(2)	(1)	(2)	(3)
Global warming IPCC2013 GWP100a		kg-CO <sub>2</sub> eq	3.8E+03	9.3E+02	2.9E+03	-1.0E+03
Ozone layer destruction		kg-CFC-11eq	1.1E-06	1.9E-07	9.3E-07	-1.9E-07
Acidification		kg-SO <sub>2</sub> eq	2.4E+00	9.0E-01	1.5E+00	-1.6E+00
Photochemical oxidant		kg-C <sub>2</sub> H <sub>4</sub> eq	3.4E-02	1.1E-02	2.3E-02	-2.2E-01
Eutrophication		kg-PO <sub>4</sub> <sup>3-</sup> eq	8.1E-02	7.8E-04	8.0E-02	-1.9E-02

### 2. Life cycle inventory analysis (LCI)

Parameter	Unit
Non-renewable material resources	5.8E+02 kg
Renewable material resources	2.1E+03 kg
Non-renewable energy resources	4.7E+04 MJ
Renewable energy resources	8.0E+02 MJ
Consumption of freshwater	1.6E+01 m <sup>3</sup>

### 4. Waste to disposal

Parameter	Unit
Hazardous waste	- kg
Non-hazardous waste.	2.1E+00 kg

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

### 3. Material composition

Material	Unit
Fe	≥90 %
C	≤0.1 %
Si	≤5 %
Mn	≤4 %
P	≤0.05 %
S	≤0.05 %
Al	≤3 %
Ni	≤4 %
Sn	≤1 %
Cu	≤2 %
Cr	≤0.2 %

### 5. Additional explanation

- Each LCI includes allocation for scrap recycling as an optional supplementary information(3) at table.1 . Recycling rate (RR) used in this calculation is 93.0% (calculated based on ISO 20915/JIS Q20915 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 90%, 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.



SuMPO EPD

Type III Environmental Declaration (EPD)

Registration number : JR-AW-22020E-A

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization

14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo Japan

KANDA SQUARE GATE

<https://ecoleaf-label.jp>

### 6-1. Supplementary environmental information

Each production area has ISO 14001 certificate.

### 6-2. Regulated hazardous substances

Substance	CAS No.	Reference to standards or regulations
Manganese [Mn]	7439-96-5	Industrial Safety and Health Act
Nickel [Ni]	7440-02-0	Industrial Safety and Health Act
Chromium [Cr]	7440-47-3	Industrial Safety and Health Act
Copper [Cu]	7440-50-8	Industrial Safety and Health Act
Tin [Sn]	7440-31-5	Industrial Safety and Health Act

### 7. Assumptions of secondary data used

The IDEA2.1.3 data and steel scrap data (JP-AJ-0001) from the Japan Iron and Steel Federation are used.

### 8. Remarks

NIPPON STEEL Grade

ORIENTCORE (e.g. 30Z120, 35Z135) , ORIENTCORE·HI-B<sup>TM</sup> (e.g. 23ZH85, 27ZH95) ,

ORIENTCORE·HI-B<sup>TM</sup>·LS (e.g. 20ZDKH75, 23ZDKH85) , ORIENTCORE·HI-B<sup>TM</sup>·PM (e.g. 23ZDMH85)

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

\*November 2024: Change of EcoLeaf mark to SuMPO EPD mark

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

Registration number : JR-AW-22020E-A