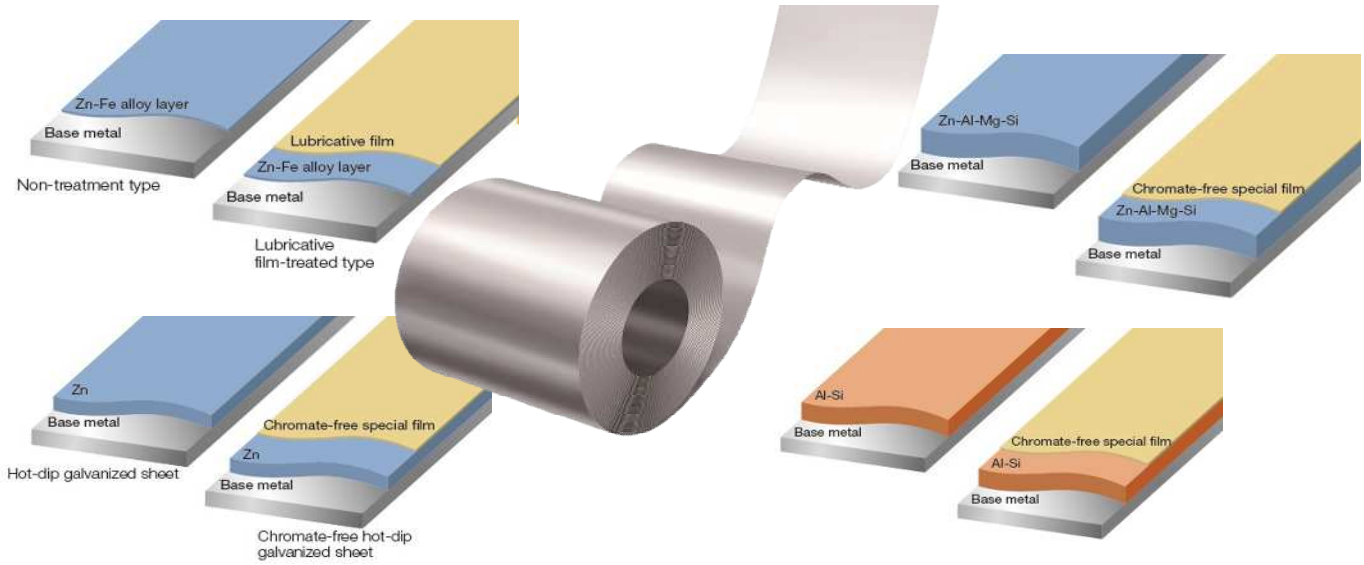
EcoLeaf
Type III Environmental Declaration (EPD)
Registration number： JR-AW-22004E-A

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

NIPPON STEEL

Hot-dip galvanized and aluminium alloy coated sheets



Functional unit

1 t

System boundary

☐ final products ■intermediate products

Main specifications of the product

Production sites:

East Nippon Works, Nagoya Works

Setouchi Works, Kyushu Works

Main standards:

JIS(Japanese Industrial Standards),

NIPPON STEEL standards

For details, please refer to "8. Remarks" in EL sheet 2.

Shape: Coil and sheet

Main thickness (unit: mm, t:=thickness) : t =0.27～9.0

Company Information

NIPPON STEEL CORPORATION

Flat Products Unit Flat Products Planning Dept.

https://www.nipponsteel.com/

Registration#	JR-AW-22004E-A
PCR number	PA-180000-AW-05
PCR name	Steel products (except for construction use)
Publication date	4/21/2022
Verification date	1/19/2024
Verification method	Product-by-product
Verification#	JV-AW-24013
Expiration date	3/17/2027

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

☐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)

Domain of influence	Manufacturing + Indirect impact*1	Manufacturing only*2	Unit
Global warming IPCC2013 GWP100a	**1500**	**2700**	kg-CO_2eq
Acidification	**-0.064**	**1.8**	kg-SO_2eq
Eutrophication	**0.020**	**0.043**	kg-PO_4^{3-}eq

*1:the total of (1) to (3), *2:the total of (1) to (2)

Parameter \ stage	Unit	the total of (1)to (2)	(1)raw material procurement	(2)product manufacture			(3)indirect impacts
Global warming IPCC2013 GWP100a	kg-CO_2eq	2.7E+03	6.2E+02	2.1E+03			-1.2E+03
Ozone layer destruction	kg-CFC-11eq	2.8E-07	1.3E-07	1.5E-07			-2.2E-07
Acidification	kg-SO_2eq	1.8E+00	6.2E-01	1.2E+00			-1.9E+00
Photochemical ozone	kg-C_2H_4eq	1.8E-02	5.9E-03	1.2E-02			-2.6E-01
Eutrophication	kg-PO_4^{3-}eq	4.3E-02	4.9E-03	3.8E-02			-2.2E-02

2. Life cycle inventory analysis (LCI)

Item		Unit
Non-renewable material resources	7.5E+02	**kg**
Non-renewable energy resources	3.1E+04	MJ
Renewable material resources	1.1E+03	**kg**
Renewable primary energy	3.4E+02	MJ
Consumption of freshwater	3.7E+00	**m^3**

3. Material composition

Material		Unit
iron [Fe]	**≧84.0**	**%**
carbon [C]	**≦1.10**	**%**
silicon [Si]	**≦3.00**	**%**
manganese [Mn]	**≦3.00**	**%**
phosphorus [P]	**≦0.050**	**%**
sulfur [S]	**≦0.050**	**%**
zinc [Zn]	**≦15.00**	**%**
aluminum [Al]	**≦4.00**	**%**

4. Waste to disposal

Parameter		Unit
Hazardous waste	**-**	**kg**
Non-hazardous waste.	**2.3E+00**	**kg**
Treated MSW for landfill	**0.0E+00**	**kg**
Treated industrial waste for landfill	**2.3E+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 [End-of-Life].
The indirect effect is added to the total value in Tables [Raw material acquisition], [Production] and [Distribution].
Recyclingrate (RR) used in this calculation is 93.0%
(calculated based on ISO 20915/JIS Q 20915 standards and using FY 2018 data from Japan Steel Can Recycling Association and Tetsugen Association).
② Material transport scenariois based on 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 84%, 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 in Tables [Raw material acquisition] and [Distribution] due to the characteristics of the consumption rate database on which this estimation is based.
⑥ Each value of the results shown in this sheet is the mean value for Hot-dip Galvanized and Aluminized Steel Sheets.

6-1. Supplementary environmental information

East Nippon Works, Nagoya Works, Setouchi Works, Kyushu Works have ISO 14001 certificates.

6-2. Regulated hazardous substances

Substance	CAS No.	Reference to standards or regulations
manganese [Mn]	7439-96-5	Industrial Safety and Health Act

7. Assumptions of secondary data used

We use the IDEA v2.1.3 data and steel scrap data(JP-AJ-0001) from the Japan Iron and Steel Federation.

8. Remarks

Typical Type of JIS :

- JIS G 3302 Hot-dip galvanized steel sheet and strip/Hot-dip galvannealed steel sheet and strip :
  Commercial（e.g.:SGCC,SGHC）, Drawing(e.g.:SGCD1),Structural(e.g.:SGC340,SGH340）,
  Commercial,Hard（e.g.:SGCH), Deep drawing(e.g.:SPCE)
- JIS G 3323 Hot-dip zinc-aluminum-magnesium-silicon alloy-coated steel sheet and strip :
  For general use（e.g:SGMCC,SGMHC), For hard class general use（e.g.:SGMCH）,
  For drawing use（e.g.:SGMCD1）,For high-strength general use（e.g.:SGMC340,SGMH340)
- JIS G 3314 Hot-dip aluminum-coated steel sheet and strip : Heat resistance（e.g.:SA1C)

Typical Type of NIPPON STEEL standards :

- Hot-dip galvanized steel sheet and strip/Hot-dip galvannealed steel sheet and strip :
  Commercial (e.g.:NSGCC,NSACC,NSGHC,NSAHC), Commercial automotive use (e.g.:NSAH270C),
  Drawing（e.g.:NSGC270D, NSAC270E,NSGH270D, NSAH270D),Structural (e.g.:NSGC340,NSGH340)
  Drawing,high-strength (e.g.:NSGC340R , NSAC340R) ,Deep drawing,high-strength (e.g.:NSGC340E,
  NSAC340E), Commercial,Hard（e.g.:NSAC340, NSAH340),Automotive,high strength（e.g.:NSAC590N)
  High burring,high strength（e.g.:NSAC440B,NSAH440B）,Low yield ratio,high strength
  （e.g.:NSAC590D）, High formability high strength（e.g.:NSAC590T）,Hot Stamping（e.g.:NSSQA1500）,
  For use in steel pipes（e.g.:NSGHT270,NSAHT270）,Commercial automotive,high strength
  （e.g.:NSAH310N）,Automotive,drawing,high strength（e.g.:NSAH490R)
- Hot-dip zinc-aluminum-magnesium-silicon alloy-coated steel sheet and strip :
  For general uses (e.g.:NSDCC,NSDHC,MSMCC,MSMHC）,For drawing use（e.g.:NSDCD１, NSDHP1,
  MSMCD,MSMHD）,For structural use (e.g.:NSDC340, NSDH340, MSMCK370, MSMHK370）,
  For architecture structural use（e.g:MSMCK400K,MSMHK400K)
- Hot-dip aluminum-coated steel sheet and strip : Heat resistance（e.g.:NSA1C）,
  Colorfastness at high temperature (e.g.:NSA1D-P),High strength(TS=440 class) (e.g.:NSA440R),
  Hot stamp (e.g.:NSSQAS1500)

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

- 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/)