



EcoLeaf

Type III Environmental Declaration (EPD)

Registration number : JR-AX-23005E

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization

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

<https://ecoleaf-label.jp/>

TOKYO ROPE MFG. CO., LTD.

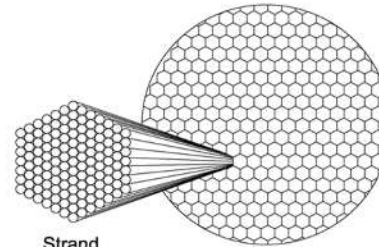
東京製綱株式会社

Pre-fabricated Parallel Wire Strands (Strand)

Pre-fabricated Parallel Wire Strands (Strand) are produced by bundling many galvanized wires at the plant.



Galvanized Wire



Strand

Cable

Cables (final product: main cables) are produced by bundling Pre-fabricated Parallel Wire Strands at the bridge construction site.



main cable

Pre-fabricated Parallel Wire Strands (Strand)

Functional unit

1t

System boundary

final products intermediate products
Production Stage and optional supplementary information

Main specifications of the product

Production site : Tsuchiura Plant
Main standards : JIS G3571, JSS ISO 19203, ISO 19427
Galvanized wire diameter :
5mm (min. 4.5mm) ~ 7mm (max. 7.5mm)
Number of wires per strand : 19 ~ 127wires
Type : Coil

Company Information

TOKYO ROPE MFG. CO., LTD.
tokyorope.co.jp

Registration #	JR-AX-23005E
PCR number	PA-180000-AX-05
PCR name	Steel products with secondary processing for construction
Publication date	9/19/2023
Verification date	8/22/2023
Verification method	Product-by-product
Verification #	JV-AX-23005
Expiration date	8/21/2028
PCR review was conducted by:	
Approval date	5/10/2023
PCR review panel chair	Yasunari Matsuno Chiba University

Third party verifier*

Yuki Sakamoto

Independent verification of data & declaration in accordance with ISO14025 and ISO21930.

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		1800	3100	kg-CO ₂ eq
Acidification		0.81	2.80	kg-SO ₂ eq
Eutrophication		-0.006	0.018	kg-PO ₄ ³⁻ eq

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 ₂ eq	3.1E+03	1.9E+03	1.1E+01	1.2E+03	-1.3E+03
Ozone layer destruction		kg-CFC-11eq	4.1E-04	1.5E-07	9.1E-11	4.0E-04	-2.4E-07
Acidification		kg-SO ₂ eq	2.8E+00	2.0E+00	2.9E-02	7.8E-01	-2.0E+00
Photochemical ozone		kg-C ₂ H ₄ eq	4.2E-02	1.7E-02	5.2E-05	2.4E-02	-2.8E-01
Eutrophication		kg-PO ₄ ³⁻ eq	1.8E-02	1.8E-02	7.7E-14	1.0E-04	-2.4E-02

2. Life cycle inventory analysis (LCI)

Parameter		Unit
Non-renewable material resources	9.4E+02	kg
Non-renewable energy resources	4.3E+04	MJ
Renewable material resources	1.2E+03	kg
Renewable primary energy	-4.2E+02	MJ
Consumption of freshwater	3.3E+00	m ³

3. Material composition

Material		Unit
iron [Fe]	93.0	%
carbon [C]	1.00	%
silicon [Si]	3.00	%
manganese [Mn]	3.00	%
phosphorus [P]	0.050	%
sulfur [S]	0.050	%
zinc [Zn]	2.50	%
aluminum [Al]	0.13	%

4. Waste to disposal

Parameter		Unit
Hazardous waste	0.00E+00	kg
Non-hazardous waste.	7.0E+00	kg

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

5. Additional explanation

- 1) This base material is Wire rod made by Nippon Steel(Ecoleaf registration No.:JR-AJ-21009E).
- 2) Because this product is secondary processing product,the indirect effect is evaluated about the base material.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 ISO 20915/JIS Q20915 and using Japan data in 2018 from Japan Iron and Steel Federation and Japan Steel Can Recycling Association).
- 3) Transport distance between Nippon Steel (East Nippon Works Kimitsu Area) and Tokyo Rope Mfg. Co., Ltd. (Tsuchiura Plant) is measured by geographic software.
- 4) 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 93.0%, and the contents of other components are adjusted.
- 5) Primary data was collected for one year within 2018-2020.The source of the unit power consumption is the average of 10 electric power suppliers of Japan in 2014.

6-1. Supplementary environmental information

Tsuchiura Plant has ISO 14001 certificate.



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6-2. Regulated hazardous substances

Substance	CAS No.	Reference to standards or regulations
manganese [Mn]	7439-96-5	Industrial Safety and Health Act
copper [Cu]	7440-50-8	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

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- 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/>)

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