



EcoLeaf

Type III Environmental Declaration (EPD)

Registration number : JR-AX-23005E-A

Japan EPD Program by SuMPO

Sustainable Management Promotion Organization

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

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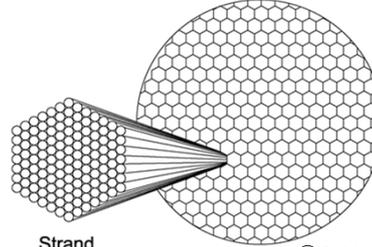
TOKYO ROPE MFG. CO., LTD.  
東京製綱株式会社

## Pre-fabricated Parallel Wire Strands (Strand)

①Pre-fabricated Parallel Wire Strands (Strand) are produced by bundling many galvanized wires at the plant.



Galvanized Wire



Strand

Cable

②Cables (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 II  
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.  
tokyoropeco.jp

Registration#	JR-AX-23005E-A
PCR number	PA-180000-AX-05
PCR name	Steel products with secondary processing for construction
Publication date	9/19/2023
Verification date	4/15/2024
Verification method	Product-by-product
Verification#	JV-AX-24003
Expiration date	4/14/2029

### 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		2400	3700	kg-CO <sub>2</sub> eq
Acidification		0.39	2.40	kg-SO <sub>2</sub> eq
Eutrophication		-0.0057	0.018	kg-PO <sub>4</sub> <sup>3-</sup> eq

Table Legend

【A1】: Raw mterial 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	3.7E+03	2.5E+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 <sub>2</sub> eq	2.4E+00	1.6E+00	2.9E-02	7.8E-01	-2.0E+00
Photochemical ozone		kg-C <sub>2</sub> H <sub>4</sub> eq	4.2E-02	1.7E-02	5.2E-05	2.4E-02	-2.8E-01
Eutrophication		kg-PO <sub>4</sub> <sup>3-</sup> 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 <sup>3</sup>

### 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	0.0E+00	kg
Non-hazardous waste.	7.0E+00	kg

### 5. Additional explanation

- 1) This base material is Wire rod made by Nippon Steel(Ecoleaf registration No.:JR-AJ-21009E-A).
- 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.

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



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### 6-1. Supplementary environmental information

Tsuchiura Plant 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
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

4/19/2024; Modification about Ecoleaf registration No. of the base material (Wire rod made by Nippon Steel)

- 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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