

KOBE STEEL, LTD.

Kobe Steel, Ltd.

Wire Rod for Construction (Products in Kobe Wire Rod & Bar Plant)



Registration number

SuMPO-EPD-2606-184-1

Verification date

2026/06/23

Publication date

2026/07/27

Expiration date

2031/6/22

EPD type

Multiple Products EPD

* First publication date

Additional standards in conformance

ISO21930:2007

EPD can be updated or withdrawn during the validity period. To confirm the validity of this EPD, check the following website:
<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.2.1.1
PCR name	Steel Products for construction use
PCR registration number	PA-180000-AJ-08
PCR publication date	2025/4/1
PCR review panel chair	Yasunari Matsuno (Chiba University)
PCR valid until	2030/3/31
PCR issuer	Sustainable Management Promotion Organization (SuMPO)

> Verification

Verification Type	Third-party verification in conformance with ISO14025 and ISO21930:2007		
	☐ Internal	☒ External	
	☒ Third-party verification by individual verifier	☐ Third-party verification by verification body	☐ Third-party verification by system certification
Verifier	Kyosuke Hiyama		

> Standards

Standards in conformance with;	☒ ISO14040:2006	☒ ISO14044:2006	☐ ISO14067:2018
	☒ ISO14025:2006	☒ 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.	Planning Group Wire Rod & Bar Products Technical Marketing Department, Steel & Aluminum Business, KOBE STEEL, LTD.
Address	22-1, Takanawa 2-chome, Minato-ku, TOKYO, 108-8688 JAPAN
Contact	Main telephone number : +81-3-5739-6000
LCA practitioner	Yoshino Hatsumi, Kobelco Business Partners Co., Ltd.
Company description	Our business activities include the manufacturing and sales of steel, non-ferrous metals and their alloys, as well as cast iron products, cast and forged steel products, and cast and forged non-ferrous alloy products.

● Product Information

Product name		Wire Rod for Construction (Products in Kobe Wire Rod & Bar Plant)	
Product /model number		Primarily SS, SWRM, SWRH, SWRS, and SWRCH	
Product specification	Function	Possess mechanical properties and formability that meet the specifications required for construction materials and similar applications	
	Mass	2 t	Conversion factor 2
	Applications	Primarily used for components and products for construction materials	
	TS*	Has chemical compositions and mechanical properties compliant with the relevant JIS standards for each product category, such as JIS G 3101, JIS G 3505, JIS G 3506, JIS G 3502, and JIS G 3507	
Service life	Service life	56 years	
	In-use conditions	Reinforced concrete office buildings	
	reference	The service life was assumed to be equivalent to that of RC office buildings. Note: Since the service life varies depending on usage conditions, this figure does not uniformly indicate the service life of the product itself. Source: Ministry of Land, Infrastructure, Transport and Tourism (MLIT), "Derivation of Expected Service Life and Value Enhancement through Renewal of Interior/Exterior and Facilities" (August 2013)	
Manufacturing site(s)		Kakogawa Works, Kobe Wire Rod & Bar Plant, and Kakogawa Plant (Kansai Coke and Chemicals Co., Ltd.)	
Product description		Steel wire rods used as materials for building material parts and products.	
Website		https://www.kobelco.co.jp/english/products/steel-aluminum/wirerod/	

* TS: technical specifications,

● Product Content

Product components	Proportion (%)	Mass (unit)
Iron [Fe]	≧ 93.0	≧ 1860 kg
Carbon [C]	≧ 1.00	≧ 20.0 kg
Silicon [Si]	≧ 1.50	≧ 30.0 kg
Manganese [Mn]	≧ 2.20	≧ 44.0 kg
Phosphorus [P]	≧ 0.05	≧ 1.00 kg
Sulfur [S]	≧ 0.05	≧ 1.00 kg
Other elements		
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	
	Value	☐ Specific	☒ Average	☐ Representative ☐ Worst case
Geographical coverage		Global		
Description of representativeness for multiple-products/sites EPD		All products are manufactured at the same site and through the same processes, and the calculation is based on primary data collected for raw materials, auxiliary materials, energy consumption, and emissions per unit mass during manufacturing. Therefore, the representativeness of the data is considered to be ensured.		
Description of variation for multiple-products/sites EPD		All products are manufactured at the same site and through the same processes, and the amounts of raw materials, auxiliary materials, energy consumption, and emissions per unit mass during manufacturing are identical. Therefore, there is no upper or lower range.		
Description of products covered in the multiple products EPD		Products of different diameters and lengths manufactured at the same site and through the same processes were converted to a per-tonne basis.		

> LCA Information

Declared unit		1 t		
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		MiLCA for EPD v.3.2.0.0		
LCI database		LCI database IDEA v.3.1		
Characterization model		Climate change: IPCC Fifth Assessment Report (IPCC, 2013); other impact categories: LIME2		
Use of other background data		Iron scrap inventory data provided by the Japan Iron and Steel Federation		
Secondary data quality		The calculation was conducted using data that satisfy the secondary data quality requirements specified in the GPI.		
Primary data collection sites		Kakogawa Works, Kobe Wire Rod & Bar Plant, and Kakogawa Plant (Kansai Coke and Chemicals Co., Ltd.)		
Primary data collection period		From January to December 2022, for some data from April 2022 to March 2023		
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	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

Because crude steel produced up to the continuous casting process is further processed into multiple products, the consumption of raw materials, energy, and other inputs, as well as emissions at each process, is allocated based on the input requirements per tonne of wire rod in the intermediate products produced at that process. As for waste generation and emission of toxic substances, only data of whole site is available. So data of Kakogawa Works and Kakogawa Plant (Kansai Coke and Chemicals Co., Ltd.) are allocated based on crude steel input per tonne of wire rod, and data of Kobe Wire Rod & Bar Plant are allocated based on production amount of wire rod.

For co-products such as slag generated in the blast furnace, it is difficult to avoid allocation by subdividing the manufacturing processes. According to the international standard for life cycle inventory calculation of steel products, ISO 20915:2018, the application of system expansion is recommended in such cases. Therefore, system expansion was adopted for these co-products.

> Cut-off rules

Since the input amount of iron ore, the main raw material, is 9.65×10^6 t, raw materials and auxiliary materials with an input amount of 10^4 t or less were cut off, as they were considered to account for 1% or less by mass. Total mass of raw materials and auxiliary materials subject to cut-off is confirmed to be less than 1%. However, ferroalloys, metals, carbon-containing materials, and gases were included in the assessment, as they are considered to have relatively high environmental impacts per unit mass.

Transportation from the Kakogawa Works to the Kobe Wire Rod & Bar Plant was excluded from the system boundary, as inter-site transportation is designated as a cut-off item in the PCR.

> System Boundary

The settings were established in accordance with the PCR. The temporal system boundary is 100 years.

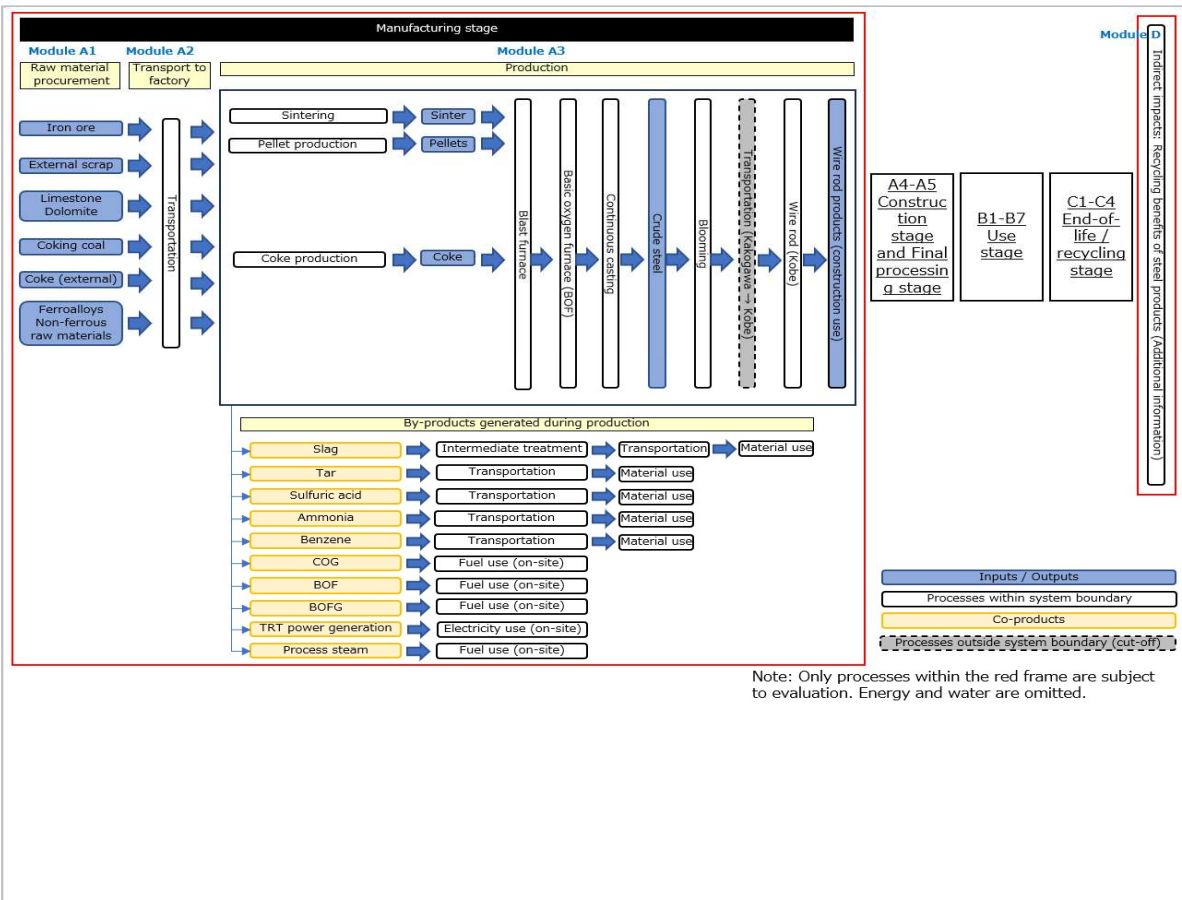
> Scenario

Modules	Description
A2	For the transportation of raw materials other than coking coal, iron ore, and ferrochrome, the scenarios specified in the PCR were applied. For coking coal and iron ore, transportation was set to zero, as the IDEA v.3.1 datasets include transportation to Japan. Ferrochrome is procured from Kazakhstan; therefore, it was assumed to be transported by land from Kazakhstan to Tianjin, China, and then by container ship from Tianjin Port to Kakogawa Port.
A3	Transportation of co-products to their use destinations included in the production stage was modeled using the scenarios specified in the PCR.
D	For indirect impacts, the collection amount of "scrap from end-of-life steel products" was determined in accordance with the PCR, using estimated values provided by the Japan Iron and Steel Federation, and a recycling rate of 93.7% was applied.

> Electricity Modelling

At the manufacturing site, electricity from multiple sources is used and multiple products are manufactured, making it impossible to disaggregate the electricity inventory within the boundary of each product by power generation source. Therefore, secondary data representing the average grid electricity were used as the environmental intensity data for captive power generation. As the secondary data, the LCI database IDEA v.3.1 dataset "Electricity, Japan average, FY2018" was applied.

> Life Cycle System Diagram



● LCA Result

> LCIA Indicators

		Production stage					Suppl. Info
		A1	A2	A3	-	-	D
GWP	kg-CO ₂ eq	5.35E+02	3.86E+01	2.30E+03	-	-	-1.25E+03
Ozone layer depletion	kg-CFC-11eq	5.44E-06	4.83E-10	3.25E-04	-	-	-2.26E-07
Acidification	kg-SO ₂ eq	5.12E-01	8.93E-02	1.43E+00	-	-	-1.92E+00
Photochemical oxidants	kg-C ₂ H ₄ eq	2.38E-03	2.11E-04	4.91E-04	-	-	1.66E-02
Eutrophication	kg-PO ₄ ³⁻ eq	3.99E-05	3.93E-10	1.15E-01	-	-	-2.30E-02

> LCI

		Production stage					Suppl. Info
		A1	A2	A3	-	-	D
Use of non-renewable resources	kg	1.34E+03	3.61E-05	-3.49E+02	-	-	-6.48E+03
Use of non-renewable energy	kg	9.82E+02	1.18E+01	-1.36E+01	-	-	-5.19E+02
Use of non-renewable energy	MJ	2.99E+04	5.32E+02	2.66E+03	-	-	-9.72E+03
Use of renewable resources	kg	1.06E+01	9.22E-06	1.02E+03	-	-	3.58E+01
Use of renewable energy	MJ	2.24E+02	1.25E-02	3.16E+03	-	-	0.00E+00
Consumption of freshwater resources	m ³	1.80E-01	7.33E-04	4.07E+00	-	-	0.00E+00

> Waste Indicators

		Production stage					Suppl. Info
		A1	A2	A3	-	-	D
hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	-	-	-
non-hazardous waste disposed	kg	9.01E-01	3.13E-07	1.87E+01	-	-	-
Municipal waste, landfill	kg	3.63E-11	5.15E-16	7.32E-10	-	-	-
Industrial waste, landfill	kg	9.01E-01	3.13E-07	1.87E+01	-	-	-

*It indicates the amount of waste generated throughout the lifecycle.

> Output Flow Indicators

		Production stage					Suppl. Info
		A1	A2	A3	-	-	D
Components for reuse	kg	-	-	-	-	-	-
Materials for recycling	kg	-	-	-	-	-	-
Material for energy recovery	kg	-	-	-	-	-	-
Exported energy from waste (energy recovery efficiency ≥ 60%)	MJ	-	-	-	-	-	-
Incineration of waste (energy recovery efficiency < 60%)	Waste disposed	kg	-	-	-	-	-
	Recovered energy	MJ	-	-	-	-	-
Waste disposed in landfill and energy recovered from landfill gas	Waste disposed	kg	-	-	-	-	-
	Recovered energy	MJ	-	-	-	-	-

> Description of LCA Results

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● Additional Environmental Information

> Additional Environmental Information not related to LCA

Kakogawa Works and Kobe Wire Rod & Bar Plant are ISO 14001 certified.

> Information on Hazardous Substances

Hazardous materials name	CAS No.	Standards or regulations
Manganese [Mn]	7439-96-5	Industrial Safety and Health Act, PRTR Act
Nickel [Ni]	7440-02-0	Industrial Safety and Health Act, PRTR Act
Chromium [Cr]	7440-47-3	Industrial Safety and Health Act, PRTR Act
Molybdenum [Mo]	7439-98-7	Industrial Safety and Health Act, PRTR Act
Copper [Cu]	7440-50-8	Industrial Safety and Health Act
Aluminum (Aluminium) [Al]	7429-90-5	Industrial Safety and Health Act

Release of dangerous substances from construction products

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● Definitions of Terms

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● 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
- ISO 21930:2007 Sustainability in building construction — Environmental declaration of building products
- ISO 20915:2018 Life cycle inventory calculation methodology for steel products
- JIS Q 20915:2019 Life cycle inventory calculation methodology for steel products
- Scrap LCI data provided by the Japan Iron and Steel Federation

● Version History

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