SuMPO EPD Japan

Third party verified

Environmental Product Declaration

In conformance with

ISO14025 | ISO14040 | ISO14044

KOBE STEEL, LTD.

Kobe Steel, Ltd.

Wire Rod (Products in Kakogawa Works)

Registration number	Verificartion date	Publication date	Expiration date	EPD type
SuMPO-EPD-2606-186-1	2026/06/23	2026/07/27 * First publication date	2031/6/22	Multiple Products EPD

Additional standards in conformance

EPD can be updated or withdrawn during the validity period.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 except for construction use
PCR registration number	PA-180000-AW-07
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		
	☐ 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 this document, use the same sub-PCR where applicable, include all relevant information and are based on equivalent scenarios. 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 (Products in Kakogawa Works)		
Product /model number		Primarily SC, SCR, SCM, and SWRCH		
Product sepcification	Mass	2t	Conversion factor	2
	Function	Primarily possess mechanical properties and formability that meet the specifications required for automotive components and similar applications		
	Applications	Primarily used for components and products for automobiles and industrial machinery		
	TS*	Has chemical compositions and mechanical properties compliant with the relevant JIS standards for each product category, such as JIS G 4051, JIS G 3509, JIS G 4052, JIS G 4053, and JIS G 3507		
Service life	Service life	13 years		
	In-use conditions	Automotive application (passenger vehicles)		
	reference	The average service life of passenger vehicles, which represent a typical non-building-material application of our products, was referenced. Since the service life varies depending on usage conditions, this figure does not uniformly indicate the service life of the product itself. Source: Automobile Inspection & Registration Information Association, “Average Service Life of Automobiles (as of the end of March 2025)” Note: The service life of steel materials for automotive applications depends not on the material itself but on the service life of the end-use product, i.e., the automobile. Therefore, the average service life published by the Automobile Inspection & Registration Information Association (approximately 13 years) was adopted as the basis.		
Manufacturing site(s)		Kakogawa Works, and Kakogawa Plant (Kansai Coke and Chemicals Co., Ltd.)		
Product description		Steel wire rods used as materials for automobile and industrial machinery parts.		
Website		https://www.kobelco.co.jp/english/products/steel-aluminum/wirerod/		

* TS: technical specifications,

●Product Content

Product components	Propotion (%)	Mass (unit)	
Iron [Fe]	≧93.0	≧1860	kg
Carbon [C]	≦1.10	≦22.0	kg
Silicon [Si]	≦3.00	≦60.0	kg
Manganese [Mn]	≦2.00	≦40.0	kg
Phosphorus [P]	≦0.05	≦1.00	kg
Sulfur [S]	≦0.50	≦10.0	kg
Other elements			
Packaging materials	Propotion (%)	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		1t	
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, 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	-	

＞Life Cycle Stages

Raw materials acquisition stage	Production stage	Distribution stage	Use stage	End of life stage	Suppl. info
■	■	–	–	–	■

■ : declared stage　　– : stage 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 they are allocated based on crude steel input per tonne 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.

＞System Boundary

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

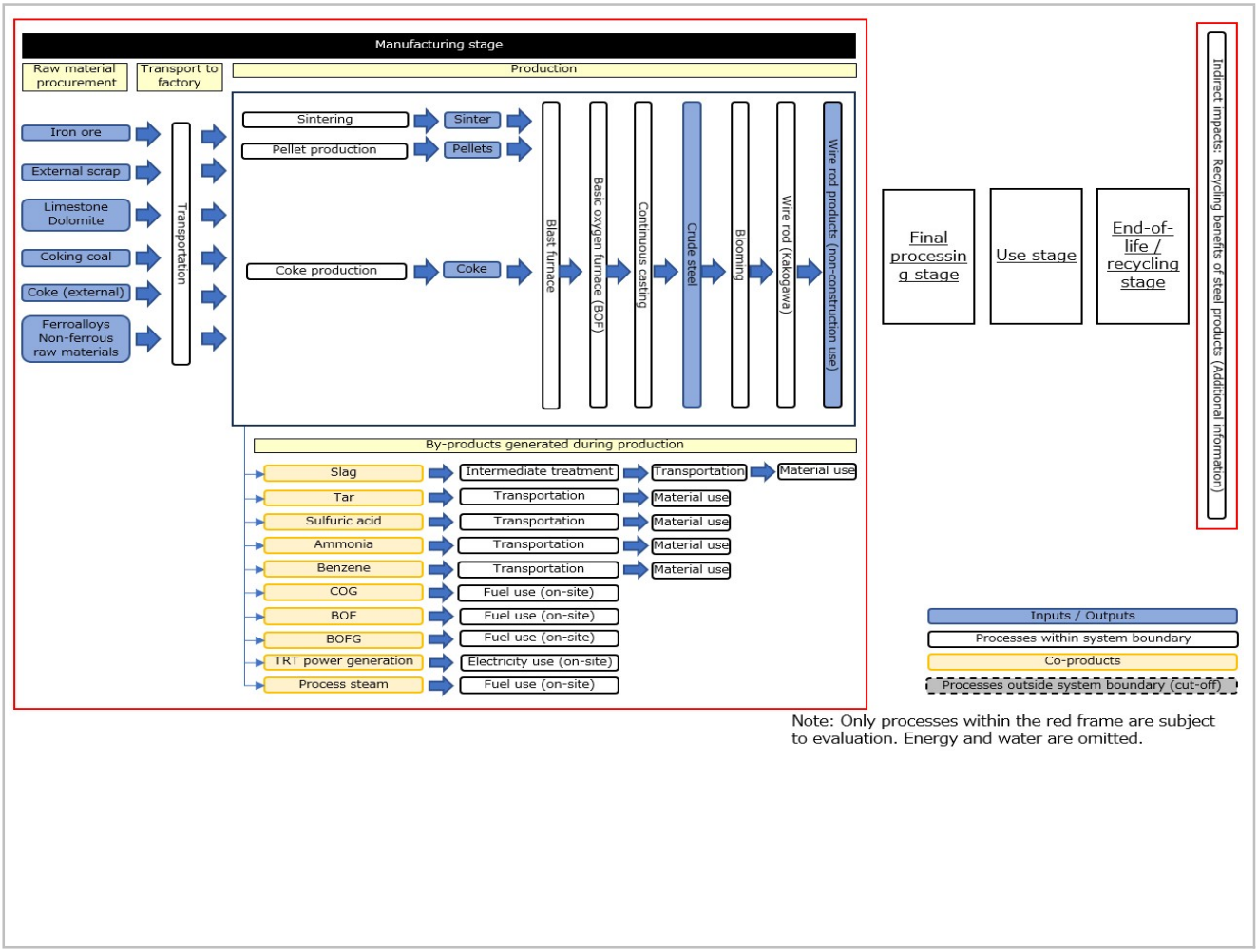
＞Scenario

For the transportation of raw materials other than coking coal, iron ore, and ferrochrome in the "Transport to factory", 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.
Transportation of co-products to their use destinations in "Co-products generated during manufactureing" was modeled using the scenarios specified in the PCR.
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 Sytem Diagram



Note: Only processes within the red frame are subject to evaluation. Energy and water are omitted.

●LCA Result

＞LCIA Indicators

		Raw materials acquisition stage	Production stage	-	-	-	Supple. Info
GWP	kg-CO_2eq	5.75E+02	2.26E+03	-	-	-	-1.25E+03
Ozone layer depletion	kg-CFC-11eq	5.45E-06	1.62E-04	-	-	-	-2.26E-07
Acidification	kg-SO_2eq	6.04E-01	1.53E+00	-	-	-	-1.92E+00
Photochemical oxidants	kg-C_2H_4eq	2.60E-03	4.67E-03	-	-	-	1.66E-02
Eutrophication	kg-PO_4^{3-}eq	4.00E-05	1.15E-01	-	-	-	-2.30E-02

＞LCI

		Raw materials acquisition stage	Production stage	-	-	-	Supple. Info
Use of non-renewable resources	kg	1.35E+03	-3.50E+02	-	-	-	-6.48E+03
Use of non-renewable energy	kg	9.96E+02	-3.21E+01	-	-	-	-5.19E+02
Use of non-renewable energy	MJ	3.05E+04	1.79E+03	-	-	-	-9.72E+03
Use of renewable resources	kg	1.06E+01	1.02E+03	-	-	-	3.58E+01
Use of renewable energy	MJ	2.24E+02	3.02E+03	-	-	-	0.00E+00
Consumption of freshwater resources	m^3	1.82E-01	2.62E+00	-	-	-	0.00E+00

＞Waste Indicators

		Raw materials acquisition stage	Production stage	-	-	-	Supple. Info
hazardous waste disposed	kg	0.00E+00	0.00E+00	-	-	-	-
non-hazardous waste disposed	kg	9.04E-01	1.86E+01	-	-	-	-
Municipal waste, landfill	kg	3.64E-11	7.34E-10	-	-	-	-
Industrial waste, landfill	kg	9.04E-01	1.86E+01	-	-	-	-

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

＞Output Flow Indicators

			Raw materials acquisition stage	Production stage	-	-	-	Supple. Info
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 recoved 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 is 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

●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 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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