

SOKAN

SOKAN Inc.

Highly Durable PCaPC Posttension Girder & Beam ($F_c=60\text{N/mm}^2$)



Registration number	Verification date	Publication date	Expiration date	EPD type
SuMPO-EPD-2512-21-1	2025/12/18	2025/12/26	2030/12/17	Multiple Products EPD
* First publication date				
Additional standards in conformance	EPD can be updated or withdrawn during the validity period.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:			
ISO21930:2017	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	Core-PCR for Construction products v2.0.1
PCR registration number	SuMPO-PCR-01000-2-0-1
PCR publication date	2025/03/31
PCR review panel chair	President, Japan Sustainable Housing and Building SDGs Promotion Center (General Incorporated Foundation); Professor Emeritus, Keio University — Toshiharu Ikaga
PCR valid until	2030/03/30
PCR issuer	Sustainable Management Promotion Organization (SuMPO)

> Verification

Verification Type	Third-party verification in conformance with ISO14025 and ISO21930:2017		
	☐ Internal	☒ External	
	☐ Third-party verification by individual verifier	☒ Third-party verification by verification body	☐ Third-party verification by system certification
Verification body	KAKEN TEST CENTER General Incorporated Foundation — Shohei Ui		

> 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.	Sokan Inc. Seki Plant
Address	970 Okugome, Hiraga, Seki-city, Gifu, Japan
Contact	+81-575-22-890
LCA practitioner	Woonerf Inc.
Company description	Sokan, as a collaborative partner of Kurosawa Construction, receives technical support and manufactures precast and prestressed concrete structural products.

●Product Information

Product name		Highly Durable PCaPC Posttension Girder & Beam (Fc=60N/mm ²)	
Product /model number		SOKAN-Post-PG-PB-60	
Product specification	Function	Structural beam for buildings (reinforced concrete product)	
	Mass	2,598kg	Conversion factor 2,598kg/m ³
	Applications	Beam member for buildings using the Prestressed Concrete (PC) construction method	
	TS*	PC members certified by the Prefabricated Building Association in accordance with JASS 10	
Service life	Service life	200 years	
	In-use conditions	Seismic-isolated buildings and buildings with precast, prestressed concrete structures	
	reference	Verification of the validity of the calculation report on the service life of building structural frames (Confirmation Result Report dated May 25, 2020)	
Manufacturing site(s)		Sokan Inc. Seki Plant (Seki-city, Gifu, Japan)	
Product description		This product was developed as a structural beam using high-strength concrete. By introducing prestress through tensioning of PC steel strands after the concrete has achieved its design strength, it prevents cracks that could lead to deterioration, suppresses the penetration of degradation factors such as carbonation, and mitigates long-term deterioration caused by aging.	
Website		-	

* TS: technical specifications,

●Product Content

Product components	Proportion (%)	Mass (unit)	
Cement	17.7	459.79	kg
Admixtures	0.2	4.28	kg
Aggregates	76.9	1998.52	kg
Reinforcing steel and PC steel tendons	4.7	123.04	kg
Other raw materials (sheaths, spacers, etc.)	0.5	12.22	kg
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		The raw materials used per 1 m ³ for each product are identical, and all products are manufactured at the same site in Japan. Furthermore, primary data on all raw material inputs and energy consumption have been collected and used for calculation and evaluation, ensuring representativeness.		
Description of variation for multiple-products/sites EPD		All products are produced at the same site under identical conditions for material inputs (excluding reinforcing steel and PC steel tendons) and energy consumption per declared unit of 1 m ³ . Differences in the quantity of reinforcing steel and PC steel tendons per 1 m ³ result in calculation variations that remain within ±10% for the relevant disclosure items.		
Description of products covered in the multiple products EPD		The EPD is disclosed based on conversion to 1 m ³ for both large and small beam products manufactured using the same site, materials, and processes.		

> LCA Information

Declared unit		Per 1 m ³ of the product		
Mass per declared unit (Conversion factor to mass)		Per 1 m ³ of the product: 2,598 kg/m ³ (Calculated value based on production during the reference period)		
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 ver1.2.1.5		
LCI database		IDEA v3.4		
Characterization model		GWP IPCC2021 with LULUCF 100a、LIME2		
Use of other background data		-		
Secondary data quality		The calculation was performed using secondary data that meets the data quality requirements specified in the GPI. Data quality assessment was conducted in accordance with ISO 14044:2006 (Environmental management — Life cycle assessment — Requirements and guidelines), section 4.2.3.6.		
Primary data collection sites		Seki Plant (Seki-city, Gifu, Japan)		
Primary data collection period		April 2024 – March 2025		
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	Use									
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

In this calculation, process subdivision and allocation were considered according to the procedures described in the GPI. For the allocation of fuel, electricity, and steam in the manufacturing process, production volume (physical quantity) was used as the basis, since there is no variation in processes or time between the target products and non-target products due to the nature of the products. Similarly, for other raw materials with difficult usage tracking (such as rust inhibitors, sheath joints, spacers, and resin joints), allocation was also performed based on production volume (physical quantity), as there is no difference in usage between target and non-target products.

> Cut-off rules

Processes with negligible environmental impact and for which data collection was difficult were cut off by applying the 5% cutoff criterion specified in the PCR.

> System Boundary

The system boundary was established in accordance with the PCR. The calculation scope covers Cradle-to-Gate stages A1, A2, and A3. The temporal system boundary is 100 years.

The following processes were excluded from the calculation scope as outside the system boundary, based on PCR section 4.4.5:

- Processes related to employee work activities and transportation
- Processes related to research and development or administrative tasks
- Processes for the production and construction of capital goods such as manufacturing facilities and equipment (excluding power plants and power generation equipment)
- Processes for the manufacturing of transportation vehicles such as trucks and ships
- Processes related to general-purpose materials (e.g., work clothes, gloves) that are also used outside the production of the assessed product

> Scenario

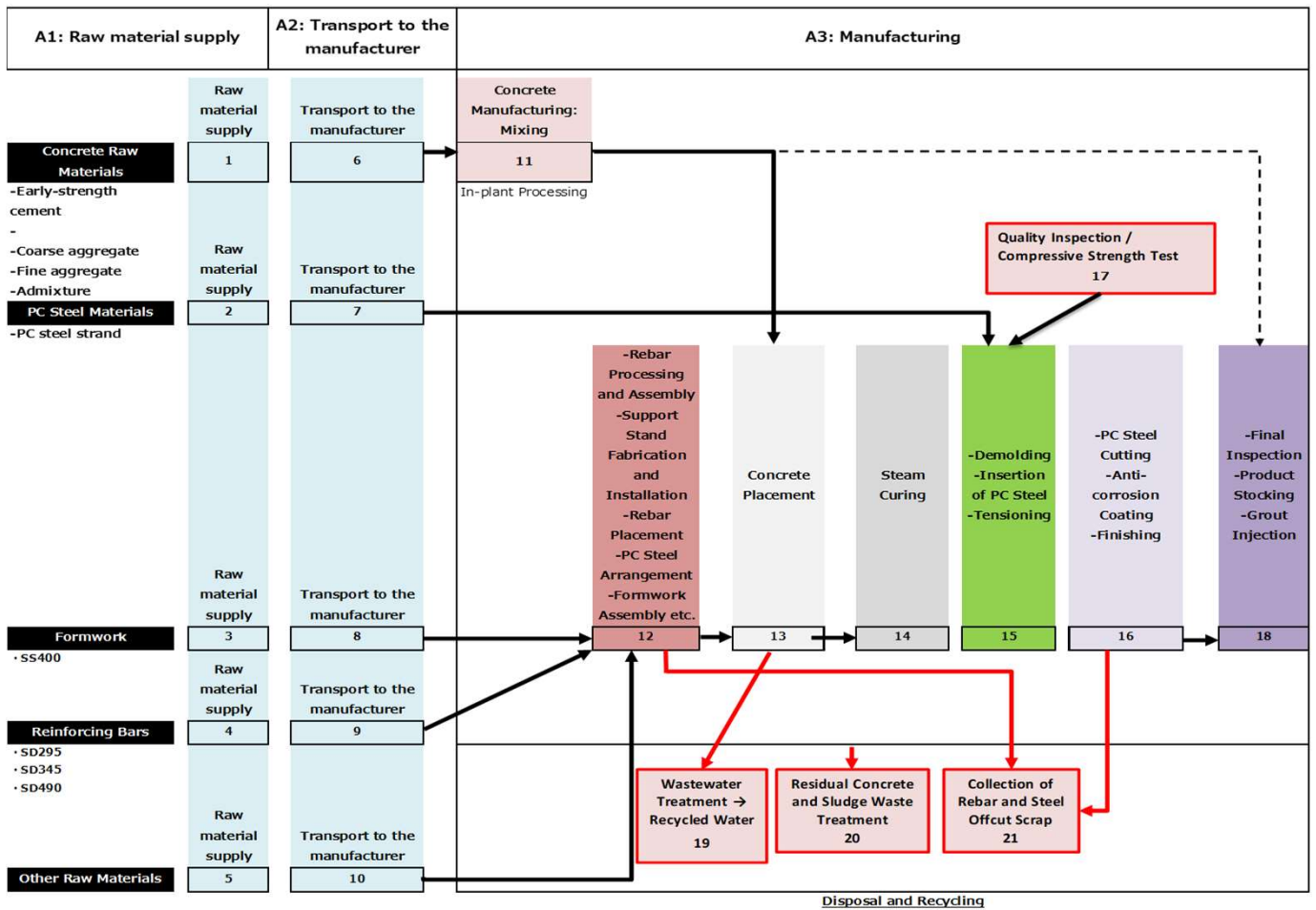
Modules	Description
A2	The vehicle type and loading rate during transportation were applied according to the PCR scenario. For PC steel tendons procured from overseas, primary data for the land route from the overseas factory to the port was difficult to obtain; therefore, the PCR scenario of 500 km was applied.
A3	The vehicle type and loading rate during transportation were applied according to the PCR scenario.

> Electricity Modelling

For all life cycle stages considered, the calculation was performed using data for the Japanese average grid electricity in 2021.

Environmental Product Declaration for Highly Durable PCaPC Posttension Girder & Beam ($F_c=60\text{N/mm}^2$)

> Life Cycle System Diagram



[illegible][illegible]

> LCI- Secondary Resources Use

[illegible][illegible]

> Waste Indicators

[illegible]

> Output Flow Indicators

[illegible]

> Description of LCA Results

This declaration covers the manufacturing stage (A1: raw material supply, A2: transportation of raw materials, A3: product manufacturing).

Residual concrete generated during production is reused as recycled roadbed material by the receiving party.

Sludge (dewatered cake) is reused as recycled civil engineering material.

Wash water from residual concrete processing is stored in a pool after sludge (dewatered cake) separation and reused as recycled water; therefore, no external discharge occurs.

The calculation results for the target products may vary depending on the year of data collection, as the quantity of products ordered is not constant.

● Additional Environmental Information

> Additional Environmental Information not related to LCA

This factory is certified with "N Certification" by the Japan Prefabricated Construction Association.

The grout admixture used in this product contains trace amounts (less than 0.01% by mass) of glyoxal (CAS No. 107-22-2) and glycolic acid (CAS No. 79-14-1)

> Information on Hazardous Substances

Hazardous materials name	CAS No.	Standards or regulations
Glyoxal	CAS No. 107-22-2	Chemical Substances Control Law Industrial Safety and Health Act
Glycolic Acid	CAS No. 79-14-1	Chemical Substances Control Law

Release of dangerous substances from construction products

NA

● Definitions of Terms

NA

● 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
- ISO21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

● Version History

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