

ENVIRONMENTAL PRODUCT DECLARATION



ENVIRONMENTAL PRODUCT DECLARATIONS

In accordance with ISO 14025 and EN 15804 for:

Coated Spiral Welded Steel Pipe

from

Emek Boru



Emek Boru
Spiral Welded Steel Pipe

Programme:

EPD Turkey, a fully aligned regional
programme www.epdturkey.org

The International EPD® System
www.environdec.com

Programme operator:

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Programme Information

Programme	EPD Turkey, a fully aligned regional programme	The International EPD® System
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Product Category Rules (PCR): The International EPD® System's PCR 2012:01 Construction Products and Construction Services, Version 2.3, 2018-11-15

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifier: Marcus Wendin- Miljögraff AB

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.



Emek Boru

Spiral Welded Steel Pipe



Company Information



Emek Boru was established in 1981 with the title of EMEK Hydraulic Machinery Industry and Trade Company Incorporated and started manufacturing hydraulic benches and agricultural equipments. Based on the increasing demands of steel pipes in Turkey in the following years, Emek Boru has changed its main field of activity to the production of spiral welded steel pipes and designed and manufactured the first pipe production line in 1983 and started manufacturing spiral weld pipes with outside diameters from \varnothing 219.1 mm to \varnothing 508.0 mm. By means of two more pipe production lines manufactured and commissioned in 1985 and 1990, Emek Boru has reached the capability of producing pipes with outside diameters up to \varnothing 2540 mm and annual production capacity of 82 000 tons. In order to have a part in the gas and oil pipeline projects for developing in accordance with increasing energy demands in Turkey, Emek Boru has purchased two new spiral pipe production lines in 1999 and 2001 and reached an annual capacity of 459 573 tons for the production of Spiral Weld Pipes in the diameter range from \varnothing 219.1 mm to \varnothing 3048 mm with wall thicknesses from 4 mm to 25.4 mm.

Having regard to the requirements and expectations of customers, a quality system complying with ISO 9001 Quality Systems has been established and certified in 1997, thus implementation and continuity of quality-related activities have been ensured. Based on the developing needs and requirements for the environment, health and safety, Environmental Management System and Occupational Health and Safety Management System have been established in Emek Boru in accordance with the requirements of ISO 14001 and OHSAS 18001 and certified in 2003.

Depending on the purpose of use and customer requirements, the manufacture and coating of pipelines for natural gas and petroleum industry, water pipes, general purpose pipes and piling pipes are performed in accordance with API, ASTM, AWWA, DIN, BS and TS Standards in the modern production facilities established on an area of 70 000 m² in the Industrial Zone of Ankara. Depending on several factors like environmental conditions, type of fluids conveyed, service temperatures, purpose of use and customer requirements, outer surfaces of spiral weld pipes are coated with 3 layer polyethylene, epoxy and polyurethane paints, while inner surfaces are lined with solvent-free epoxy and cement mortar in the modern coating facilities of Emek Boru.

Emek Boru has been increasing its products variety and market share by following the latest technologies and current standards and supplying high quality spiral weld steel pipes to the global market.

Product Information

Product name	Coated Spiral Welded Steel Pipe
Product identification	Spiral Welded Steel Pipe with coating by Emek Boru
Product description	Coated Spiral Welded Pipes are made of various types of alloyed steels and are used in various industries such as chemical industries, water treatment plants, oil industries and petrochemical industries. They can include internal/external epoxy, external polyethylene and internal concrete coatings.
UN CPC code	41285
Geographical scope	Global

Product Specifications

Annual Production	460 000 tons
Pipe Length	Standard 6 m - 20 m (Special Production up to 50 m)
Outer Diameter	219.1 - 3048.0 mm
Wall Thickness	4.0 - 25.4 mm
Raw Material	Hot rolled steel coil
Welding Process	External and Internal Submerged Arc Welding (SAW)
Material Quality	API 5L 2018(46 th Edition) GrB - X80M PSL2 EN 10025 - 2:2004 S235JR - S355K2
Conversion Factor(Avg.)	1 meter Polyethylene Coated Spiral Welded Steel Pipe = 0.184 tons 1 meter Epoxy Coated Spiral Welded Steel Pipe = 0.354 tons 1 meter Concrete Coated Spiral Welded Steel Pipe = 0.323 tons

Production Standards

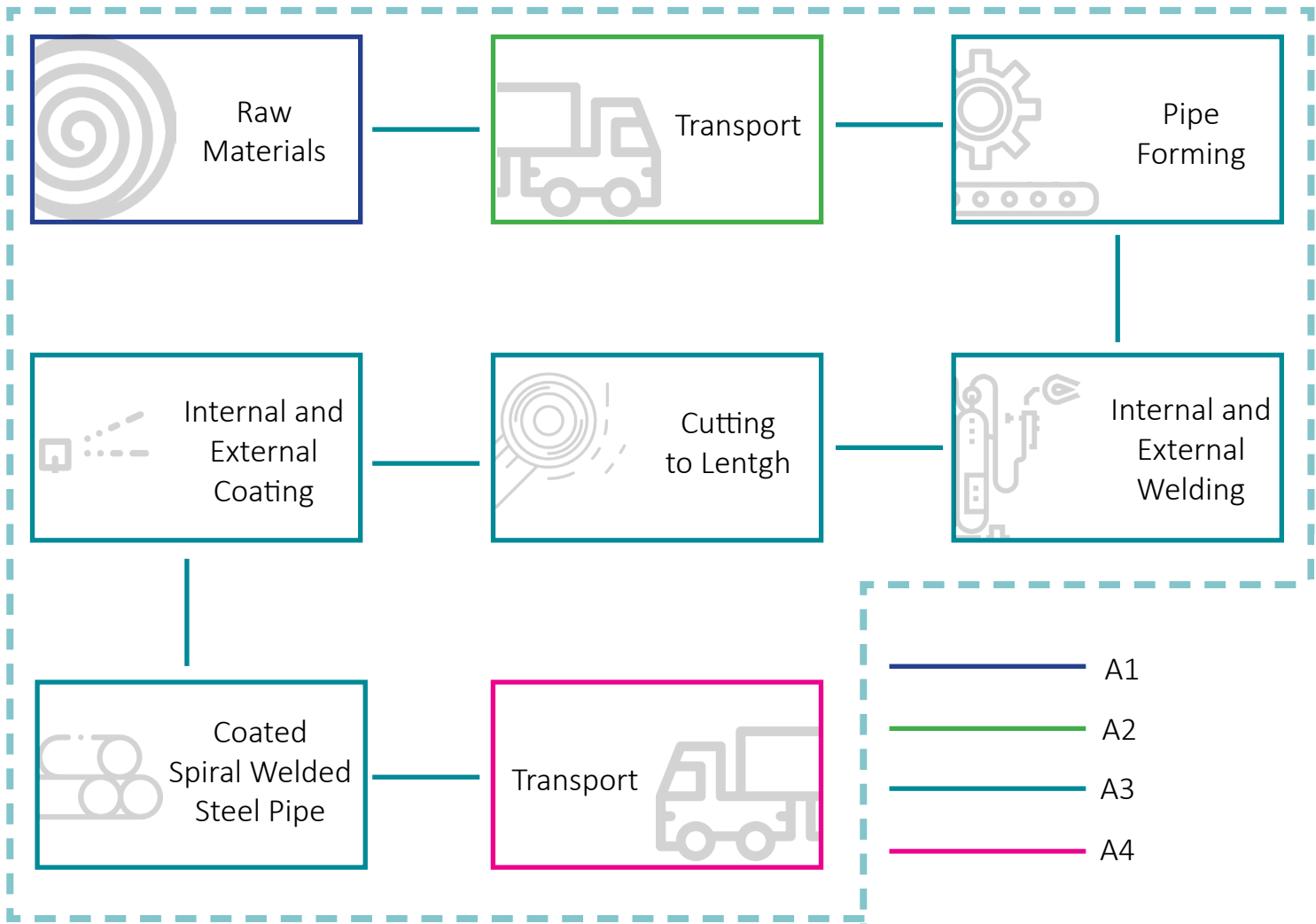
Oil and Natural Gas Pipelines:	API 5L, ISO 3183
Water and Waste Water Pipes:	AWWA C 200, BS 534, TS EN 10217-1, TS 9341 EN 10224
General Purpose Pipes	ASTM A 53
Piling Pipes	ASTM A 252 EN 10219-1
External Polyethylene Coating :	AWWA C 215, DIN 30670, TS5139, NF A 49-710, EN ISO 21809-1
External Polypropylene Coating:	AWWA C 215, DIN 30678, EN ISO 21809-1, NF A 49-711
Internal Cement Mortar Lining:	AWWA C 205, DIN 2614, EN 10298
Internal-External Epoxy Paint Coating:	API RP 5L2, AWWA C 210, TS EN 10289, NF A 49-709
Internal-External Polyurethane Coating:	EN 10290

LCA Information

Declared unit	1 ton of Coated Spiral Welded Steel Pipe
Time Representativeness	2018
Database(s) and LCA Software Used	TLCID ver. 1.0 (Turkish Lifecycle Inventory Database), Ecoinvent 3.5, SimaPro 9.0

The inventory for the LCA study is based on the 2018 production figures for Coated Spiral Welded Steel Pipe by Emek Boru production plant.

System Diagram



--- System Boundary

Description of System Boundary

The system boundary covers A1- A3 product stages and A4 (Transport to customers) construction site.

Upstream	Core		Downstream													Other Environmental Information
Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction, demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Description of the system boundary (X = Included in LCA, MND= Module Not Declerated)

A1: Raw Material Supply

Production starts with locally sourced raw materials. Raw material supply includes raw material extraction and pre-treatment processes before production.

A2: Transportation

Transport is relevant for delivery of raw materials and other auxiliary materials to the plant and the transport of materials within the plant.

A3: Manufacturing

Manufacturing starts with coil to pipe forming. Formed pipe continue with internal and external welding. The formed pipe is transferred to the coating plant for coating. The end products are then quality controlled to be delivery.

A4: Transport From the Gate to the Site

Transport of final product to construction site is taken as the weight average values for transport to customers in 2018.

More Information

Life cycle assessment calculations required for this EPD were done using SimaPro 9.0 LCA Software, a life cycle assessment program. Energy calculations were obtained using Cumulative Energy Demand (LHV) v 1.00. Global Warming Potential (GWP), Eutrophication (EP), Abiotic Depletion Fossil Fuels (ADPF), Abiotic Depletion Elements (ADPE), Ozone Layer Depletion (ODP) and Acidification (AP) were calculated using the CML-IA baseline method ; Photochemical Oxidation (POCP) is using ReciPe 2008 and finally, Water Scarcity (WSI) were calculated using AWARE methodology.

Different coating options were allocated based on the production figures in 2018 and weighted averaged of environmental impacts for the coated spiral welded steel pipes were presented.

Accordingly, hazardous and non-hazardous waste amounts were also allocated from 2018 total waste amounts.

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in Coated Spiral Welded Steel Pipes, either above the threshold for registration with the European Chemicals Agency or above 0.1 % (wt/wt).

Content Declaration

Materials	Unit	%
Alloyed Steel	ton	77-93
Auxiliary Materials	ton	0.6-0.7
Coating Materials (Polythene, Epoxy or Concrete)	ton	12-23



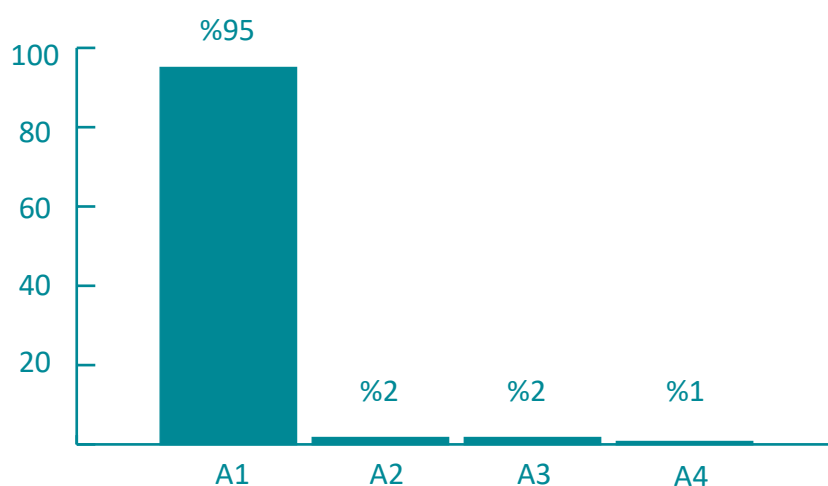
Environmental Performance

POTENTIAL ENVIRONMENTAL IMPACTS, 1 ton Coated Spiral Welded Steel Pipe

Parameter		Unit	A1	A2	A3	A4	Total
GWP	Fossil	kg CO ² eq	2289	45.6	50.0	24.8	2410
	Biogenic	kg CO ² eq	1.37	0.003	0.084	0.001	1.46
	Land use and land transformation	kg CO ² eq	0.834	0.001	0.430	0.001	1.27
	GWP Total	kg CO ² eq	2292	45.6	50.5	24.8	2413
Ozone Layer Depletion (ODP)		kg CFC-11 eq	119x10 ⁻⁶	8.66x10 ⁻⁶	2.05x10 ⁻⁶	4.76x10 ⁻⁶	134x10 ⁻⁶
Acidification Potantial (AP)		kg SO ² eq	9.87	0.143	0.259	0.118	10.49
Eutrophication Potantial (EP)		kg PO ⁴ --- eq	8.13	0.017	0.154	0.012	8.31
Photochemical oxidation (POCP)		kg C ² H ⁴ eq	1.35	0.007	0.009	0.005	1.37
Abiotic Depletion Potantial, elements (ADPE)		kg Sb eq	0.031	144x10 ⁻⁹	5.20x10 ⁻⁶	54.2x10 ⁻⁹	0.031
Abiotic Depletion Potantial, fossil fuels (ADPF)		MJ	24956	673	571	370	26569
Water scarcity (WSI)		m ³ eq	832	2.87	26.1	1.58	863



Global Warming
Potantial



USE OF RESOURCES, 1 ton Coated Spiral Welded Steel Pipe

Parameter		Unit	A1	A2	A3	A4	Total
Primary Energy Resources – Renewable	Use as energy carrier	MJ	1997	1.15	102	0.632	2100
	Used as raw materials	MJ	0	0	0	0	0
	TOTAL	MJ	1997	1.15	102	0.632	2100
Primary Energy Resources – Non-renewable	Use as energy carrier	MJ	26184	674	579	370	27808
	Used as raw materials	MJ	0	0	0	0	0
	TOTAL	MJ	26184	674	579	370	27808
Secondary Material		kg	56.0	0	0	0	56.0
Renewable Secondary Fuels		MJ	0	0	0	0	0
Non-Renewable Secondary Fuels		MJ	0	0	0	0	0
Net Use of Fresh Water		kg	15.1	0.038	0.383	0.021	15.6

WASTE GENERATIONS, 1 ton Coated Spiral Welded Steel Pipe

Parameter		Unit	A1	A2	A3	A4	Total
Hazardous Waste Disposed		kg	0	0	1.39	0	1.39
Non-hazardous Waste Disposed		kg	0	0	38.6	0	38.6
Radioactive Waste Disposed		kg	0	0	0	0	0

OUTPUT FLOWS, 1 ton Coated Spiral Welded Steel Pipe

Parameter		Unit	A1	A2	A3	A4	Total
Components for reuse		kg	0	0	0	0	0
Materials for Recycling		kg	0	0	0	0	0
Materials for Energy Recover		kg	0	0	0	0	0
Exported Energy, Electricity		MJ	0	0	0	0	0
Exported Energy, thermal		MJ	0	0	0	0	0

Additional Information

For the Norwegian market, an additional scenario for transport to Oslo was provided for module A4. 1 ton of coated spiral welded steel pipe from Emek Boru Ankara plant in Turkey to a central warehouse in Oslo, Norway was modelled.

Parameter	Unit	A4
Global Warming Potential (GWP)	kg CO ² eq	83.1
Ozone Layer Depletion (ODP)	kg CFC-11 eq	15.7x10 ⁻⁶
Acidification Potential (AP)	kg SO ² eq	1.60
Eutrophication Potential (EP)	kg PO ⁴ --- eq	0.14
Photochemical oxidation (PO)	kg kg C ² H ⁴ eq	0.051
Abiotic Depletion Potantial, elements (ADPE)	kg Sb eq	172x10 ⁻⁹
Abiotic Depletion Potantial, fossil fuels (ADPF)	MJ	1219
Water scarcity (WSI)	m ³ eq	4.94



References

/Tuncer, D. Integrated Management Systems Representative, Emek Boru, Tel : +90 312 267 02 25,
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/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations- Type III environmental declarations — Principles and procedures

/ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management- Life cycle assessment- Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

/PCR for Construction Products and CPC 54 Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2012:01 Version 2.3, DATE 2018-11-15






/The International EPD® System/ The International EPD®
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www.environdec.com

/Ecoinvent / Ecoinvent Centre, www.Eco-invent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands,
www.pre-sustainability.com

/TLCID/ Turkish Life Cycle Inventory Database, Turkish Center for Sustainable Production Research and Design (SURATAM), www.suratam.org

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