

# ENVIRONMENTAL PRODUCT DECLARATION



THE INTERNATIONAL EPD® SYSTEM



ENVIRONMENTAL PRODUCT DECLARATIONS



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for

**GRP Pipes**  
from  
**SUPERLIT Pipe Industries**



<b>Programme:</b>	EPD Turkey, a fully aligned regional programme <a href="http://www.epdturkey.org">www.epdturkey.org</a>	The International EPD® System <a href="http://www.environdec.com">www.environdec.com</a>
<b>Programme operator:</b>	EPD Turkey, managed and run by: SÜRATAM Süratam Sustainability Services, <a href="http://www.suratam.org">www.suratam.org</a> NEF 09 B Blok No: 7/15 34415 Kağıthane/İstanbul <a href="http://www.epdturkey.org">www.epdturkey.org</a>	EPD International AB
<b>EPD registration number:</b>	S-P-01994	
<b>Date of publication:</b>	2020-12-14	<b>Geographical scope :</b> Global
<b>Date of revision:</b>	2023-02-03	
<b>Date of validity:</b>	2025-12-13	

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com).

# Programme Information

Programme	EPD Turkey, a fully aligned regional programme	The International EPD® System
	SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15 34415 Kağıthane-Istanbul/TURKEY  www.epdturkey.org info@epdturkey.org	EPD International AB Box 210 60 SE-100 31 Stockholm/SWEDEN  www.environdec.com info@environdec.com

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)

Product category rules (PCR):

PCR 2019:14 Version 1.1. 2020-09-14 Construction Products and Construction Services,  
EN 15804:2012 + A2:2019 Sustainability of Construction Works

---

PCR review was conducted by:

The Technical Committee of the International EPD® System. See [www.environdec.com/TC](http://www.environdec.com/TC) for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile

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

EPD process certification

EPD verification



---

**Third party verifier:** Vladimír Kočí, PhD

**Approved by:** The International EPD® System Technical Committee, supported by the Secretariat

---

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.



# Company Information

SUPERLIT, the first company of KARAMANCI HOLDING that has a prominent role in the Turkish industrial sector, was established in 1961.

SUPERLIT manufactures and sells pressure and non-pressure GRP (Glassfiber Reinforced Polyester) pipes in compliance with international standards, has become a favored brand on 5 continents worldwide, thanks to a wide range of products, its reliable quality and before-sales and after-sales technical / consultancy services it renders. With regards to installed capacity, SUPERLIT is one of the leading establishments in the GRP pipe sector worldwide.

The pipes, manufactured in factories located in Düzce and Malatya in Turkey and Buzau in Romania, in compliance with local and international standards such as EN, ISO, ASTM and AWWA, with a diameter range of DN300 mm to DN4000 mm, with a stiffness of 2500- 5000- 10000 (and over by special design), and a pressure resistance between 1- 32 bars (up to 40 bars by special design), are used in the following applications:

- Clean water and potable water
- Irrigation
- Hydroelectric power plants
- Sewer system
- Stormwater
- Water treatment
- Seawater intake and discharge
- Water storage systems
- Trenchless technologies

SUPERLIT is the sole pipe manufacturer in Turkey that can produce Glassfiber Reinforced Polyester (GRP) pipes by means of “Continuous Filament Winding” technology as well as “Centrifugal Casting” technology. Integrated Management Systems Certificates (ISO 9001, ISO 14001 & OHSAS 18001) have been granted by the internationally recognized and reputable independent organizations.

Being one of the world’s leading manufacturers in the pipe industry with an experience of more than half a century, SUPERLIT supplies pipes for projects in many regions of the world from Europe to Africa and from America to Asia and Australia.



# Product Information

This EPD is an average EPD consists of Superlit's following GRP pipes:

- **DN800 - PN6 - SN10000**
- **DN700 - PN6 - SN10000**
- **DN600 - PN6 - SN10000**

This EPD includes LCA results for Superlit's GRP pipe with a diameter of 800mm. (DN800 - PN6- SN10000). LCA results and product composition is given for this product. In addition, Superlit's 700 mm diameter (DN700 - PN6 - SN10000) and 600 mm diameter (DN600 - PN6- SN10000) GRP pipes are also examined. The environmental performance difference of these pipes have found less than 10%.

Product name:	GRP Pipe	
Product identification:	Glass fiber reinforced polyester pipe	
UN CPC code:	53251	
Geographical scope:	Global	
	<u>For 1 tonne of GRP pipe</u>	
Product composition and packaging:	-57.0% Sand -24.4% Polyester Resin -18.0% Glass Fiber <1% Minor additives	<u>For 1 tonne of coupling</u> - 36% Polyester Resin - 64% Glass Fiber

## Technical Properties

Properties	Unit	GRP Pipe
Flow Velocity (max)	m/s	4
Flow Coefficient		150
Hazen–William flow coefficient (C)	-	0.009
Manning coefficient (n)	-	0.029 (for the pipes manufactured by the continuous filament winding method)
Colebrook- White (k)	mm	0.012 (for the pipes manufactured by the centrifugal casting method)
UV Resistance	-	Performance of GRP pipes is not negatively affected by UV rays
Poisson Ratio	-	0.22-0.29
Temperature	° C	-40 to +80
Thermal Coefficient	mm/mm/ °C	24-30x10 <sup>-6</sup>





# Continuous Filament Winding (FW) Method

The Continuous Filament Winding Process is the manufacturing of GRP pipes from continuously flowing glass fiber by winding it on an automatic machine. The wall of the pipe is constructed by pressing glass fiber and resin together, and filling material (sand) is then added. As a result of reinforcing a high ratio of polyester by glass fiber, the pipe become extremely robust against chemicals and it satisfies the design conditions.

# Centrifugal Casting (CC) Method

In SUPERLIT GRP pipes manufactured by the Centrifugal Casting method, glass fiber, polyester resin, and silica sand are used. SUPERLIT GRP pipes, in this completely automatic and electronically controlled process, are manufactured by feeding the raw materials into the rotating mold, beginning from the outer surface of the pipe until reaching a predefined wall thickness.

# GRP Full-face Coupling

Jointing element of GRP pipe is manufactured by using glass fiber and resin. The inner surface is coated with an EPDM rubber seal which is factory integrated. It ensures the leak tightness by the special design of gasket profile.

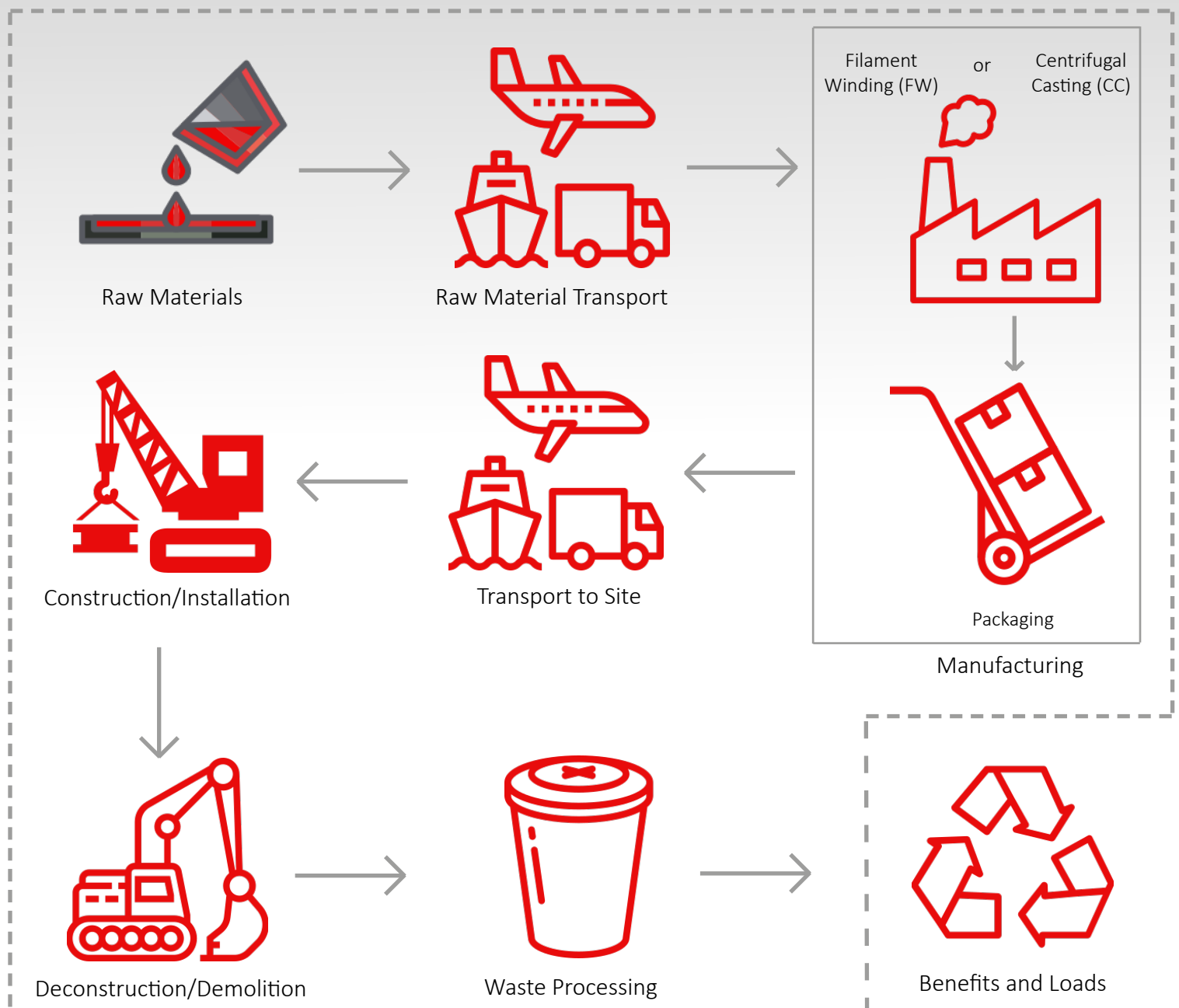


# LCA Information

Declared Unit	1 tonne of GRP pipe with coupling for DN800 - PN6- SN10000
Time Representativeness	Average data for 2017,2018, 2019 and first six months of 2020
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 average production figures for GRP pipes (together with coupling) by SUPERLIT production plants in Düzce, Turkey for the time period of 2017, 2018, 2019 and first six months of 2020.

## System Boundary



# Description of System Boundary

This EPD's system boundary has been defined as cradle to gate with options, modules C1-C4 and module D. Besides, A4: Transport to Plant and A5: Construction / Installation stages were added as optional.

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefits and Loads
	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
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	TR	TR	TR	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific Data Used	>90%	>90%	>90%	>90%	>90%	-	-	-	-	-	-	-	-	-	-	-	-
Variation-products	<10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation-Sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

X = Declared, ND = Not Declared

## A1: Raw Material

Production starts with raw materials. Raw material stage includes raw material extraction/preparation and pre-treatment processes before production.

## A2: Raw Material Transport

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. Transport of raw materials to production site is taken as the weight average values for transport from raw materials supplier for 2017, 2018, 2019 and first six months of 2020.

## A3: Manufacturing

GRP pipes can be produced with 2 production technology as filament winding and centrifugal casting method. Both processes starts with the preparation of resin and fibers. After the preparation of the resin mix, composite pipe production starts. Then, the final products are quality checked and packaged for delivery. The packaging materials are timber, steel circle, and sandbag. The environmental impacts of these packaging materials are included in the analysis.

## A4: Transport to Site

Transport of final product to construction site is taken as the weight average values for transport to plant for 2017, 2018, 2019 and first six months of 2020.

#### A5: Construction / Installation

This stage includes the installation of GRP pipes in the construction site. For installing 1 tonne GRP pipe, (average length is assumed as 7 m for the pipes produced by FW method, and 12 m for the ones which produced by CC method), 20 minutes installation time is assumed by using a mobile crane which consumes 18 L of diesel per hour. The depth which pipes were installed was assumed as 3.5 m, and the required area was assumed to be digged in 1 hour by a mobile crane which consumes 15 L diesel per hour.

#### C1 : Deconstruction / Demolition

For demolition 1 tonne GRP pipe, (average length is assumed as 7 m for the pipes produced by FW method, and 12 m for the ones which produced by CC method), 20 minutes installation time is assumed by using a mobile crane which consumes 18 L of diesel per hour. The depth which pipes were installed was assumed as 3.5 m, and the required area was assumed to be digged in 1 hour by a mobile crane which consumes 15 L diesel per hour.

#### C2 : Transport to Disposal Site

This stage includes the transportation of the discarded pipes to final disposal. Average distance from demolition site to waste processing site for final disposal is assumed to be 100 km.

#### C3 : Waste Processing

As the waste is going to landfill, there is no need for any waste process.

#### C4 : Disposal

Disposal is the final stage of product life. Composite pipes may dispose with any disposal scenario after construction and demolition as their final fate and modelled as such for this EPD. It is assumed that 25% of the waste is used as inert filler, and the rest of the waste is send to the landfill.

#### D : Benefits and Loads

In this stage, benefits from the inert filler specified in the disposal stage were calculated.

## More Information

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is

There are no co-products in the production. Hence, there is no need for co-product allocation.

Energy consumption and transport datasets were allocated based on the average production figures for 2017, 2018, 2019 and first six months of 2020, and weighted average of environmental impacts for the GRP pipes were presented.

Accordingly, hazardous and non-hazardous waste amounts were also allocated based on the average waste arisings for the period of 2017, 2018, 2019 and first six months of 2020.

GRP pipes are theoretically outlasting/lifetime products. However, when they are scrapped or discarded, they are disposed as per Waste Management Plan of SUPERLIT in accordance with Turkish laws and regulations.

The amount of the substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulation is 0.4% in the final product (peroxide).

## Differences Versus Previous Version

This EPD has been revised and the changes made are listed below.

- GHG-GWP results are added in the LCA results.
- Missing packaging information is given in page 7 and its environmental impact on biogenic carbon content is included.
- Included product range have been narrowed to fit the 10% difference rule.





**LCA Results**



## Environmental Impacts for 1 tonne of GRP Pipes with Coupling

Impact Category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- Fossil	kg CO <sub>2</sub> eq	1836	169	71.7	71.7	21.5	0	45.5	-9.38
GWP- Biogenic	kg CO <sub>2</sub> eq	-75.4	0.090	0.020	0.020	0.011	0	351	-0.007
GWP- Luluc	kg CO <sub>2</sub> eq	1.72	0.116	0.006	0.006	0.009	0	0.008	-0.005
GWP- Total	kg CO <sub>2</sub> eq	1763	170	71.8	71.8	21.5	0	396	-9.40
ODP	kg CFC-11 eq	242E-6	34.6E-6	15.5E-6	15.5E-6	4.75E-6	0	2.35E-6	-1.82E-6
AP	mol H+ eq	11.65	2.25	0.750	0.750	0.086	0	0.092	-0.091
*EP- Freshwater	kg P eq	0.559	0.017	0.003	0.003	0.002	0	0.007	-0.001
EP- Freshwater	kg (PO <sub>4</sub> ) eq	1.71	0.053	0.008	0.008	0.006	0	0.020	-0.004
EP- Marine	kg N eq	2.33	0.580	0.332	0.332	0.025	0	1.10	-0.028
EP- Terrestrial	mol N eq	24.8	6.41	3.63	3.63	0.273	0	0.278	-0.304
POCP	kg NMVOC	10.9	1.76	1.00	1.00	0.084	0	0.167	-0.085
ADPE	kg Sb eq	0.143	0.002	110E-6	110E-6	772E-6	0	78.9E-6	-227E-6
ADPF	MJ	34817	2383	987	987	320	0	200	-133
WDP	m <sup>3</sup> depriv.	750	8.76	1.32	1.32	0.982	0	4.90	-11.6
PM	disease inc.	96.5E-6	11.5E-6	19.9E-6	19.9E-6	1.32E-6	0	1.27E-6	-893E-9
IR	kBq U-235 eq	139	12.5	4.48	4.48	1.70	0	1.25	-0.690
ETP- FW	CTUe	54431	2019	595	595	270	0	2107	-139
HTTP- C	CTUh	2.71E-6	92.0E-9	20.8E-9	20.8E-9	8.41E-9	0	13.9E-9	-6.82E-9
HTTP- NC	CTUh	65.8E-6	2.07E-6	513E-9	513E-9	286E-9	0	649.1E-9	-143E-9
SQP	Pt	10184	1689	126	126	190	0	400	-283
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change- biogenic, GWP-luluc: Climate change- land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.								
Legend	A1: Raw Material, A2: Raw Material Transport, A3: Manufacturing, A4: Transport to Site, A5: Construction/Installation, C1: Deconstruction/ Demolition, C2: Transport to Disposal Site, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.								
Disclaimer 1	This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								
Disclaimer 2	The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
*Disclaimer 3	EP-freshwater: This indicator is calculated both in kg PO <sub>4</sub> eq and kg P eq as required in the characterization model. (EUTREND model, Struijs et al, 2009b, as implemented in ReCiPe; <a href="http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml">http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml</a> )								

## Climate impact according to PCR2019:14 for 1 tonne of GRP pipe with coupling

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
*GHG-GWP	kg CO <sub>2</sub> eq	1792	168	71	71	21.3	0	264	-9.28

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology

\* The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013



### Resource Use for 1 tonne of GRP Pipes with Coupling

Impact Category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2208	45.5	5.34	5.34	5.44	0	8.11	-2.73
PERM	MJ	0	0	0	0	0	0	0	0
PERT	MJ	2208	45.5	5.34	5.34	5.44	0	8.11	-2.73
PENRE	MJ	34816	2383	987	987	320	0	200	-133
PENRM	MJ	0	0	0	0	0	0	0	0
PENRT	MJ	34816	2383	987	987	320	0	200	-133
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m³	56201	0.464	0.087	0.087	0.056	0	0.199	-0.882

### Waste & Output Flows for 1 tonne of GRP Pipes with Coupling

Impact Category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	29.7	0	0	0	0	0	0	0
NHWD	kg	15.2	0	0	0	0	0	0	0
RWD	kg	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding resources used as raw materials, PENRM: Use of non-renewable primary energy resources used as raw materials, PENRT: Total use of non-renewable primary energy, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.								
Legend	A1: Raw Material, A2: Raw Material Transport, A3: Manufacturing, A4: Transport to Site, A5: Construction/Installation, C1: Deconstruction/Demolition, C2: Transport to Disposal Site, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.								

### Result per declared functional unit

Biogenic Carbon Content	Unit	A1-A3
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	-20.37



# References

GPI/ General Programme Instructions of the International EPD® System. Version 3.01.

ISO 14020:2000/ Environmental labels and declarations — General principles

EN 15804:2012+A2:2019/ Sustainability of construction works- Environmental Product Declarations — Core rules for the product category of construction products

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, 2019:14 Version 1.1 DATE 2019-12-20

The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. [www.environdec.com](http://www.environdec.com)

Ecoinvent / Ecoinvent Centre, [www.ecoinvent.org](http://www.ecoinvent.org)

SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, [www.pre-sustainability.com](http://www.pre-sustainability.com)

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

# Contact Information

## Programme

EPD registered through fully aligned regional programme:  
EPD Turkey  
[www.epdturkey.org](http://www.epdturkey.org)



The International EPD® System  
[www.environdec.com](http://www.environdec.com)



## Programme operator

EPD Turkey:  
SÜRATAM – Turkish Centre for Sustainable Production Research & Design  
Nef 09 B Blok No:7/15,  
34415 Kağıthane- Istanbul / TURKEY  
  
[www.epdturkey.org](http://www.epdturkey.org)  
[info@epdturkey.org](mailto:info@epdturkey.org)

EPD International AB Box 210 60  
SE-100 31 Stockholm / Sweden

[www.environdec.com](http://www.environdec.com)

[info@environdec.com](mailto:info@environdec.com)

## Owner of the declaration



Superlit Boru San. A.Ş  
Cumhuriyet Cad. No 155/3 Harbiye  
34367 Istanbul / TURKEY

Contact: Hasan Güner  
Design and R&D Leader  
Phone: (+90) 212 315 31 31  
Fax: (+90) 312 231 49 51

[www.superlit.com](http://www.superlit.com)  
[sales@superlit.com](mailto:sales@superlit.com)

## LCA practitioner



Türkiye:  
NEF 09 B Blok No:7/46-47  
34415 Kağıthane/Istanbul/Türkiye  
+90 212 281 13 33

The United Kingdom:  
4 Clear Water Place  
Oxford OX2 7NL, UK  
0 800 722 0185

[www.metsims.com](http://www.metsims.com)  
[info@metsims.com](mailto:info@metsims.com)

## 3<sup>rd</sup> party verifier



Vladimír Kocí, PhD  
LCA Studio  
Šárecká 5, 16000  
Prague 6- Czech Republic  
[www.lcastudio.cz](http://www.lcastudio.cz)



## PIPE INDUSTRIES

### İstanbul Headquarter

Cumhuriyet Cad. No  
155/3 Harbiye 34367  
İstanbul / TURKEY

Tel: +90 (212) 315 31 31  
Fax: +90 (212) 231 49 51

### Düzce Factory

Karaçalı Mah. Düzce Cd.  
No:60/60A  
Kaynaşlı-Düzce / TURKEY

Tel: +90 (380) 544 44 00  
Fax: +90 (380) 544 44 05

### Malatya Factory

2.Organize Sanayi Bölgesi  
2.Kısım 9.Cadde No:14  
Malatya / TURKEY

Tel: +90 (422) 244 02 88  
Fax: +90 (422) 244 0299

### Romania Headquarter

13 September Way, No:90  
5.01 Building, 5th District  
Bucharest / ROMANIA

Tel: +40 21 310 40 81 / 82  
Fax +40 21 311 07 57

### Romania Buzau Factory

Sos. Brailei, Nr. 15, Loc.  
Buzau,  
Jud. Buzau / ROMANIA

Tel: +40 0238 402 240 / 242  
Fax: +40 0238 712 266

[www.superlit.com](http://www.superlit.com)  
[sales@superlit.com](mailto:sales@superlit.com)