TOSYALI ALGERIE Fer et Acier

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021 for:

Spiral Welded Steel Pipe

EAF Routed Steel

from

Tosyalı Algeria

Programme	The International EPD® System
Programme operator	EPD International, EPD MENA
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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

Programme Information

TOSYALI ALGERIE Fer et Acier

Programme Information

Programme
International EPD® System

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EPD International, EPD MENA

LCA Study & EPD Design Conducted by
Semtrio Sustainability Consulting
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SEMTRIO

Information about verification and reference PCR

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR)
PCR 2019:14 Construction products (EN 15804:2012+A2:2019/AC:2021) Version 1.2.5

PCR review was conducted by
The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

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

☐ EPD process verification ☑ EPD verification

Third party verifier
Sunil Kumar
SIPL Pvt Ltd, New Delhi, India

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

Tosyalı Algeria 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. For further information about comparability, see EN 15804 and ISO 14025.

Company Information

TOSYALI ALGERIE Fer et Acier

Owner of the EPD
TOSYALI ALGERIA
BP 175, 31230 Bethioua Wilaya d'Oran / Algérie
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With the experience of 60 years in Iron and Steel industry, TOSYALI HOLDING is moving confidently towards the objectives of 2023, which marks the 100th anniversary of the Republic of Turkey. TOSYALI HOLDING, establishing its leadership in Iron and Steel Industry in Turkey, has become an international brand with its new foreign investments..

Tosyalı Holding with its head office in Hatay İskenderun, has many productions facilities in Osmaniye, Istanbul, Izmir, Algeria, and Serbia. For all its employees in these different points of the world, it aims to offer a transparent work environment which supports creativity and team spirit, facilitates personal development, where company goals have been internalized at every level and opinions are freely shared.

Tosyalı Holding have great successes from the past to the present; through his technology, his corporate identity ready to integrate to the global market, his knowhow and his professional staff take his place within the esteemed companies of Turkey.

The group's main philosophy is growing up together with his customers and suppliers with earning them permanent appreciations through his corporate management system, his reliability and his customer focused working principal.

In 2013 the first investment was dedicated to the creation of units for the production of reinforcing bar. An investment is made for the construction of a wire rod production unit in 2015. The 3rd stage of the project aimed to drastically increase the production capacity of reinforcing bars by 2 newly built reinforcing bars rolling mills in 2018.

To complete the integration of iron ore into the finished product, Tosyali Algeria sets up a pellet production unit. It transforms iron ore into pellets with a production capacity of 4 million tons per year. This product powers the largest direct reduction unit in the world. This unit reduces agglomerated iron ore (pellet) for use in arc furnaces. At the same time, a manufacturing unit for spiral pipes intended for the transport of gas, hydrocarbons and water and also intended for construction is launched in 2018.

The annual production capacity of the spiral pipe factory is 200,000 tons/year. The pipes that has diameter starting from 406mm up to 3048mm and wall thickness staring from 4mm up to 26mm can be produced. It can be produced in the facility as pipes with a length of 55 meters for special purposes.

The produced pipes can be coated with polyethylene, polypropylene and epoxy according to customer demand in the coating facility which is located in the same area. The pipe factory has API 5L oil and gas pipe production and API Q1 quality management system certification. It also has ISO 9001 and ISO 29001 quality management systems, ISO 14001 Environmental management system and ISO 45001 Occupational health and safety management system certificates.

In addition, there are many production conformity certificates that comply with production standards.

Company Information

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Production Ranges

Production range of outside diameter from 16” (406,4mm) up to 120” (3048mm) with wall thickness up to 26mm..

Production Standards

The company manufactures spiral welded steel pipes in compliance with API, ISO, EN and DIN standards. The pipe production is certificated by several internationally well-known certification bodies.

Company’s manufacturing facilities are periodically certified by third parties and have official certification such as API Spec 5L, ISO 3183, EN 10217-1, EN 10224, EN 10219 and other international and national production standards.

Raw materials are recieved with vendor certification demonstrating their compliance with **Tosyali Algeria** quality requirements. In addition, all raw materials are qualified and tested prior to their use. These tests ensure that the raw materials comply with the specifications as stated.

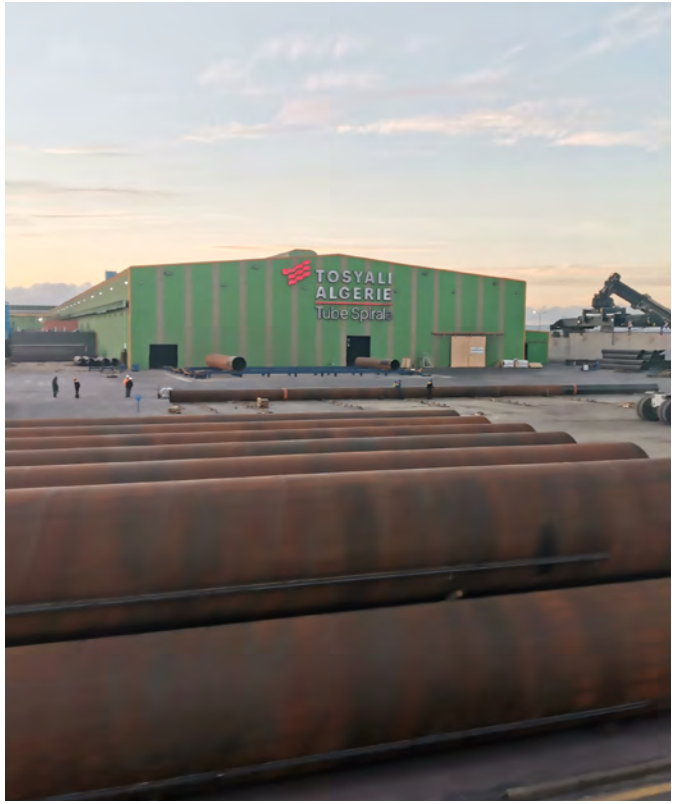
Quality Control/Assurance

Tosyali Algeria has been certified and fulfuills all requirements of quality management systems such as ISO 9001, API Spec Q1, ISO 29001. Tosyali Algeria manages quality and management process from production to quality with understanding of quality management system.

Through each phase of production, starting from acceptance quality control of raw materials until the delivery of the materials to the Clients, Tosyali Algeria Quality Department thoroughly tests, inspects and verifies the compliance of products in accordance with EN 10217, EN 10224, EN 10219, API 5L, ISO 3183 as well as project specific techinal requirements.

Production Sites

Algeria Spiral Pipe Mill and Coating Facility:
TOSYALI ALGERIA
BP 175, 31230 Bethioua Wilaya d’Oran / Algérie



Product Information

Product Name:

Spiral Welded Steel Pipes

Spiral steel pipe or spiral welded pipe are other terms for the spiral pipe. Steel strip coil is used as the raw material, then formed at room temperature and welded using an automatic double wire double-sided submerged arc welding technique. It can be widely used in the production of large diameter steel pipes

Spiral-welded pipe is produced from coils of steel that are unwound and flattened. The flattened strip is formed by angled rollers into a cylinder of the desired diameter. Interior and exterior SAW seal the spiral seam. At the end of the coil, a new coil is butt-welded to the trailing edge of the pipe, forming a cross seam. The pipe is cut to length and the ends are beveled if required. The bare pipes do not have any internal or external protective coating.

Water Pipes

It is generally used in the transmission and distribution of water. It is used in applications such as water installation lines, drinking water transmission, fire safety lines, water well lines, irrigation systems.

Natural Gas and Oil Line Pipes

It is used in the transmission and distribution Product Information of natural gas, petroleum, petroleum-derived and all kinds of combustible and explosive gases, residential and industrial natural gas domestic installation lines, LPG installation lines, oil and natural gas transmission lines and applications.

Industrial Pipes

It is used in sectors and applications such as construction structures, automotive, machine manufacturing, scaffolding and formwork, conveyor, rack systems, roof systems, furniture, piles and tunnels.

Product Information

Technical Specifications

Water Pipes: It is generally used in the transmission and distribution of water. It is used in applications such as water installation lines, drinking water transmission, fire safety lines, water well lines, irrigation systems.

Production Standards	Steel Grades
EN 10217-1	P195TR1, P235TR1, P265TR1, P195TR2, P235TR2, P265TR2
EN 10224	L235, L275, L355

Natural Gas and Oil Line Pipes: It is used in the transmission and distribution Product Information of natural gas, petroleum, petroleum-derived and all kinds of combustible and explosive gases, residential and industrial natural gas domestic installation lines, LPG installation lines, oil and natural gas transmission lines and applications.

Production Standards	Steel Grades
API 5L PSL 1	Grade B (L245), X42 (L290), X52 (L360), X56 (L390), X60 (L415), X65 (L450), X70 (L485)
API 5L PSL 2	Grade B (L245), X42 (L290), X52 (L360), X56 (L390), X60 (L415), X65 (L450), X70 (L485), X80 (L555)
API 5L PSL2 Service Annex N	Grade B (L245), X42 (L290), X52 (L360), X56 (L390), X60 (L415), X65 (L450), X70 (L485), X80 (L555)
ISO 3183 PSL 1	Grade B (L245), X42 (L290), X52 (L360), X56 (L390), X60 (L415), X65 (L450), X70 (L485)
ISO 3183 PSL 2	Grade B (L245), X42 (L290), X52 (L360), X56 (L390), X60 (L415), X65 (L450), X70 (L485), X80 (L555)
ISO 3183 PSL 2 Service Annex A	Grade BE (L245E), X42E (L290E), X52E (L360E), X56E (L390E), X60E (L415E), X65E (L450E), X70E (L485E), X80E (L555E)

Product Information

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Technical Specifications

Industrial Pipes: : It is used in sectors and applications such as construction structures, automotive, machine manufacturing, scaffolding and formwork, conveyor, rack systems, roof systems, furniture, piles and tunnels.

Production Standards	Steel Grades
EN 10219-1	S235JRH, S275J0H, S275J2H, S355J0H, S355J2H, S355K2H, S275NH, S275NLH, S355NH, S355NLH, S460NH, S460NLH, S275MH, S275MLH, S355MH, S355MLH, S420MH, S420MLH, S460MH, S460MLH
ASTM A252	Grade 1, Grade 2, Grade 3

UN CPC Code: 41287 Other tubes and pipes of circular cross-section, welded, of steel

Content Declaration

Content declaration of 1000kg of spiral welded steel pipes			
Pipes	**Hot Rolled Steel Coil, kg**	**Renewable material, kg**	**Biogenic carbon, kg**
Bare Spiral Welded Steel Pipes	99%-100%	0	0

Product Information

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LCA Information

Declared unit
1 tonne (1000kg) of Spiral Welded Steel Pipe manufactured in Algeria facility (DZ).

Reference service life
Not applicable

Time representativeness
The production data in this LCA study represents the period of 1st January 2020 and 31st December 2020 .

Database(s) and LCA software used
SimaPro v9.4.0.2 and Ecoinvent v3.7.1

Description of system boundaries
Cradle to gate (A1-3) with options, modules C1-C4, module D

Data quality and data collection
According to EN 15804:2012+A2:2019/AC:2021 specific data was used for module A3 (Processes the manufacturer has influence over) and was gathered from the Tosyali Algeria Spiral Pipe Mill, Algeria Facility. Specific data includes actual product weights, amounts of raw materials used, product content, energy consumption, transport figures, water consumption and amounts of wastes.

For A1 and A2 modules, according to EN 15804:2021+A2:2019/AC:2021, generic data was applied and was obtained from Ecoinvent v3.7.1

Allocation
In this study, allocation has not been applied.

Cut-off rules
Life Cycle Inventory data for a minimum of 99 % of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass and environmental relevance was applied. Impacts caused by treatment operations have been calculated lower than 1% environmental relevance.

Product Information

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Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product Stage			Construction Process Stage		Use Stage							End Of Life Stage				Resource Recovery Stage
	Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintanence	Repair	Replacement	Refurbishment	Operaitional energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling Potential
MODULES	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Module declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	DZ	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>99.5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-products	Not Relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-sites	Not Relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: Declared; ND: Not Declared

Product Information

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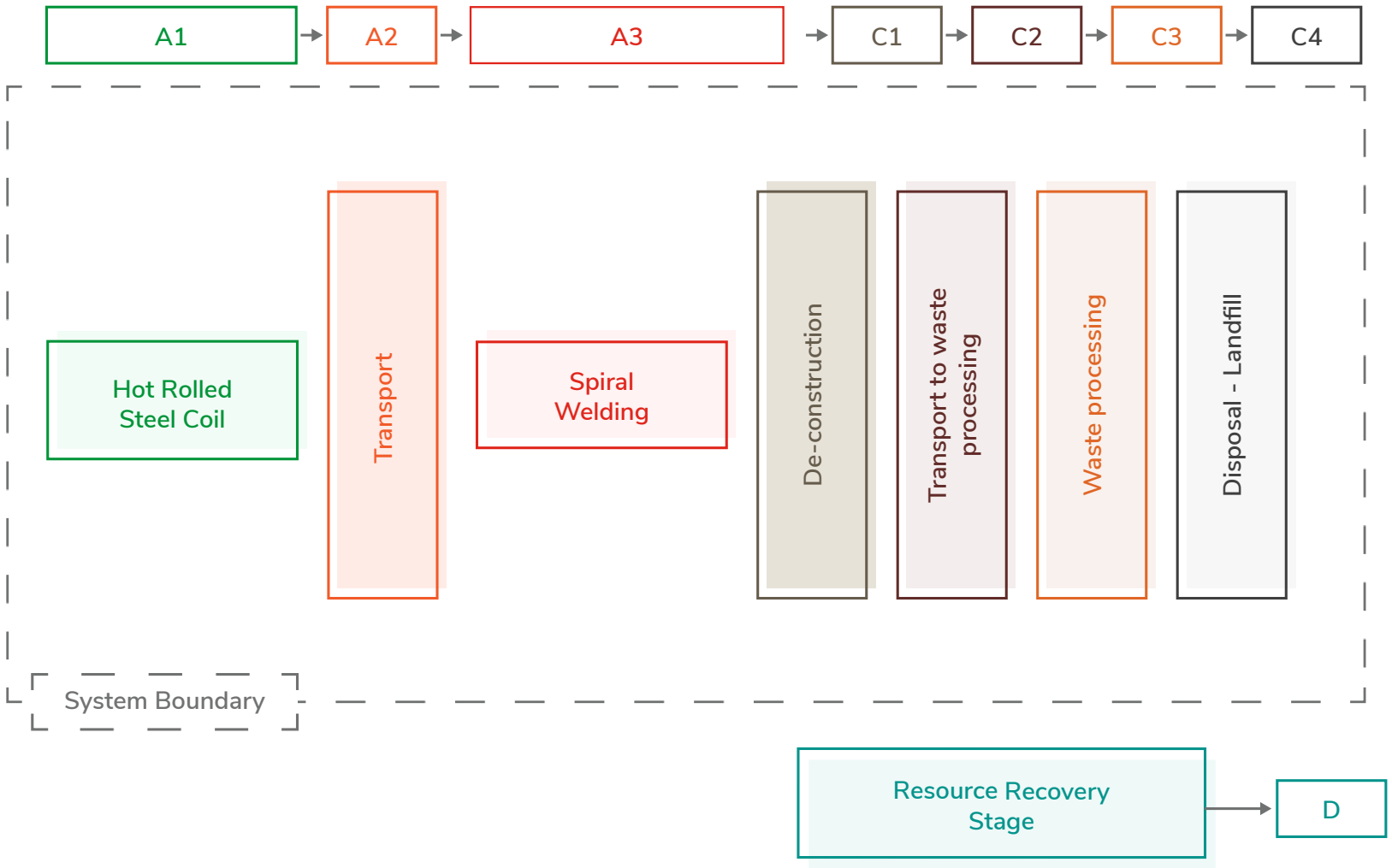
System Diagram



Product Information

Description of declared modules

A1 - Raw Material Supply

This stage takes into account raw material extraction, processing and energy used in the production process.

A2 - Transport to the Manufacturer

This stages include transportation of the raw materials from supplier to factory gate. Transportation types are considered as seaway, road, railroad, etc.

A3 - Manufacturing

This stage includes energy and water consumption during the manufacturing process. Additionally, packaging materials are covered by this stage. Followed production processes are as;

- Spiral Welding
- Coating

C1 - De-construction

The dismantling of Steel Welded Pipe can be considered negligible in the demolition phase, which has a very low impact considering the impact throughout the life of the installation. Therefore, C1 can be considered irrelevant, and environmental indicators set to zero.

C2 - Transport to Waste Processing

An average distance of 100 km has been assumed for the transport to recycling facility. Transport is calculated on the basis of a scenario with the parameters described in the table below.

Parameters C2 Module	
Transport by road*	Lorry >32 metric ton
Distance (km)	100
Database	Ecoinvent v3.7.1

**Technology is Euro 5*

C3 - Waste processing for reuse, recovery and/or recycling

IThere is no sorting or processing required for steel pipes.

C4 - Final disposal

100% of used product after the lifetime will be collected and recycled into the manufacturing system. It is assumed that 5% of the product is lost during de-constructionand recycling, and, 95% is reached to recycling system.

D - Reuse, Recovery or Recycling Potential

Scrap inputs to the production stage are substracted from scrap to be recycled at end of life in order to obtain the net scrap output from the product system. This remaining net scrap is then delivered to recycling process. Module D reports the environmental aspects of recycled scrap generated at the end of life minus that used at the production stage.

Information on which life cycle stages are not considered

This EPD only cover the Cradle to Gate A1-3, C1-4 and D stages because other stages are very dependent on particular scenarios and are better developed for specific building or construction works.

Environmental Performance

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Potential Environmental Impact - *Mandatory Indicators According to EN 15804: 2012+A2:2019/AC:2021*

Results for 1000 kg of Spiral Welded Steel Pipe							
Indicator	**Unit**	**A1:A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq	727	1.28	8.97	0	0.26	-13.8
GWP-biogenic	kg CO_2 eq	3.25	3.08E-02	1.60E-02	0	8.13E-04	-0.23
GWP-luluc	kg CO_2 eq	2.37	1.65E-03	2.74E-03	0	7.12E-05	-4.31E-02
GWP-total	kg CO_2 eq	732	1.31	8.99	0	0.26	-14.0
ODP	kg CFC 11eq	4.22E-05	7.22E-08	2.12E-06	0	1.08E-07	-1.27E-06
AP	mol H+ eq	4.38	6.19E-03	2.91E-02	0	2.48E-03	-0.10
EP-freshwater	kg P eq	3.49E-02	9.32E-05	7.89E-05	0	2.76E-06	-1.17E-03
EP-Marine	kg N eq	0.84	1.28E-03	6.45E-03	0	8.60E-04	-2.48E-02
EP-Terrestrial	kg N eq	9.31	1.22E-02	7.17E-02	0	9.47E-03	-0.28
POCP	kg NMVOC eq	2.58	4.50E-03	2.76E-02	0	2.75E-03	-9.69E-02
ADP-minerals &metals*	kg Sb eq	7.70E-04	9.24E-06	2.15E-05	0	5.87E-07	-1.07E-04
ADP-fossil*	MJ	7245	18.9	143	0	7.35	-246
WDP	m^3	163	0.99	0.53	0	0.33	-5.17

Acronyms

GWP-fossil = Global Warming Potential fossil fuels;
GWP-biogenic = Global Warming Potential biogenic;
GWP-luluc = Global Warming Potential land use and land use change;
ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, Accumulated Exceedance;
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment;
EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, Accumulated Exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-minerals&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Abiotic depletion for fossil resources potential;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Environmental Performance

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Potential Environmental Impact - *Additional Mandatory and Voluntary Indicators*

Results according to PCR2019:14 for 1000 kg of Spiral Welded Steel Pipe							
Indicator	**Unit**	**A1:A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq	727	1.25	8.94	0	0.26	-13.3
Results according to EN 15804+A2 for 1000 kg of Spiral Welded Steel Pipe							
PM	[disease inc.]	2.67E-05	3.89E-07	7.70E-07	0	4.84E-08	-1.25E-05
IRP	[kBq U235 eq]	9.01	0.11	0.60	0	3.02E-02	-1.47
ET-freshwater	[CTUe]	43630	30.8	119	0	4.62	-566
HT-cancer	[CTUh]	3.70E-06	3.57E-08	3.38E-09	0	1.38E-10	-5.21E-07
HT-non-cancer	[CTUh]	4.38E-06	3.17E-08	1.15E-07	0	2.88E-09	-1.90E-07
SQP	[pt]	966	4.80	162	0	15.4	-104

Acronyms

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology;
IRP = Ionizing radiation, human health;
ET-freshwater = Eco-toxicity (freshwater);
HT-cancer = Human toxicity, cancer effects;
HT-non-cancer = Human toxicity, non-cancer effects;
SQP = Potential soil quality index (SQP)

[1] *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 equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.*

Environmental Performance

TOSYALI ALGERIE Fer et Acier

Use of Resources

Results for 1000 kg of Spiral Welded Steel Pipe							
Indicator	**Unit**	**A1:A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	793	2.22	1.55	0	5.92E-02	-59.4
PERM	MJ	0	0	0	0	0	0
PERT	MJ	793	2.22	1.55	0	5.92E-02	-59.4
PENRE	MJ	7899	20.0	152	0	7.81	-260
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	7899	20.0	152	0	7.81	-260
SM	kg	1022	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	27.0	0.17	0.12	0	1.17E-02	-1.46

Acronyms

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy 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 re-sources;
SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Use of net fresh water

Environmental Performance

TOSYALI ALGERIE Fer et Acier

Waste Production

Results per functional or declared unit							
Indicator	**Unit**	**A1:A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	14.2	0	0	0	0	0
Non-hazardous waste disposed	kg	5.92	0	0	0	50.0	0
Radioactive waste disposed	kg	0	0	0	0	0	0

Output Flows

Results per functional or declared unit							
Indicator	**Unit**	**A1:A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0	0	0	0	0	0
Materials for recycling	kg	25.9	0	0	0	0	950
Materials for energy recycling	kg	4.22E-03	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0
Radioactive waste disposed	MJ	0	0	0	0	0	0

References

ISO 14040
2006 Environmental management
Life cycle assessment
Principles and framework

ISO 14044
2006 Environmental management
Life cycle assessment
Requirements and guidelines

ISO 14025
2006 Environmental labels and declarations
Type III environmental declarations
Principles and procedures

EN 15804:2012+A2:2019/AC:2021
Sustainability of construction works
Environmental product declarations
Core rules for the product category of construction products

The International EPD® System
www.environdec.com

The International EPD® System
The General Programme Instructions v3.01

The International EPD® System
PCR 2019:14 Construction products v1.2.5 (EN 15804:A2)

Ecoinvent 3.7.1
www.ecoinvent.org

SimaPro LCA Software
www.simapro.com

Tosyali Algeria
www.tosyali-algerie.com

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