

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and
EN 15804:2012+A2:2021 :



HFIW Steel Line Pipes & Tubes + OCTG



Program:
Programme operator:
EPD Reference number:
Issue date:
Valid until:
Reference Year:
Geographical Scope:

The EFI Program
The Environmental Footprint Institute
260205EPD CR:P-3100
23.02.2026
22.02.2031
2025

Manufactured in Abu Dhabi (UAE)
and distributed in UAE and foreign countries.

An EPD should provide current information and may be updated if conditions change.
The stated validity is therefore subject to the continued verification and registration at
www.environmentalfootprintinstitute.org

PROGRAM INFORMATION

- Program The EFI Program
 - Product Group Classification UN CPC 41285, 41286
 - Product Category Rules (PCR) P-3100: Construction products in general (EN-15804)
 - Registration Number REF:260205EPD CR:P-3100
 - Issue Date 23.02.2026
 - Validity Date 22.02.2031
- 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.environmentalfootprintinstitute.org
- Geographical Scope Manufactured in Abu Dhabi (UAE) and distributed in UAE and foreign countries.

EPDs within the same product category but registered in different EPD programs may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison.

COMPANY INFORMATION

AJ Steel, a manufacturer of Tubes and Pipes, is strategically located with its two manufacturing units out of Abu Dhabi, UAE to cater to the global demand of ERW(Electric Resistance Welded)/HFIW(High-Frequency Induction Welded) steel pipes and tubes. Within a short span of its establishment since 2006, it has grown to become a Global Brand in its segment. With Quality, Service and Continuous Improvement being its principal motto, AJ Steel has grown together with its customers as partners in their success. We have an annual rated rolling capacity of 530,000 mton through various mills producing MS Tubes, Pipes, Square & Rectangular Hollow Section with various finishing options of threading, coupling, roll grooving, swedging, plain and bevel ends while offering coatings like galvanization, black painting, blue/red primer, varnishing & others conforming to local and international standards such as BS EN 10255:2004, BS EN 21:1985, ASTM A53/A53M 07, ASTM A795/A795M-08, ASTM A500/A500M-07, DIN EN 10255:2007, DIN EN 39:2001, API 5L & 5CT, JIS in various thickness (0.8 mm to 12.7 mm) and OD (15 mm to 500 mm) and length (up to 14 mtr).

AJ Steel, exports most of its products to countries around the world for diverse applications like Oil & Gas, Fire & Sprinklers, Agriculture & Irrigation, Structural, Piling.

Manufacturing & Market Presence of AJ Steel

AJ Steel manufacturing plant facilities are located in Khalifa Economic Zones Abu Dhabi KEZAD, Abu Dhabi. AJ Steel is steadily moving towards the goal of touching 1.25m ton rolling capacities with value added product.

Manufacturing Plant Site	Site Code	Plot No	Existing Area (sq mtr.)	Rolling Capacity (ton)	Exist + Exp Area (sq mtr.)	Planned Capacity
ICAD I	ASAD1	33C2	14,857.4	132,000	14,857.4	132,000
ICAD II	ASAD2	399HR8	79,946.29	398,000	175,789.58	598,000
AJ Steel				530,000	190,640.98	730,000

Certifications



Product Approvals



Presence of AJ Steel



- Australia
- Austria
- Bahrain
- Belgium
- Brazil
- Canada
- Caribbean Island
- Denmark
- Egypt
- Ethiopia
- France
- Germany
- Greece
- Guyana
- India
- Ireland
- Italy
- Kuwait
- Libya
- Malaysia
- Netherlands
- New Zealand
- Oman
- Poland
- Saudi Arabia
- Singapore
- Spain
- Sri Lanka
- Sudan
- Thailand
- UK
- USA

Manufacturing Locations of AJ Steel

Markets Having AJ Steel Presence

Product name: HFIW Steel Line Pipes & Tubes + OCTG

Product identification:

HFIW Steel Line Pipes & Tubes + OCTG for Oil & Gas, Casing and Tubing Applications.

UN CPC code: CPC 41285, 41286

Product description:

Steel line pipes and oilfield pipes (Oil Country Tubular Goods, OCTG) involve pipes made of low-alloyed steel and fine-grade steel. Steel pipes for oil and gas pipelines are standardized in API 5L & API 5CT, as applicable. These products are manufactured from high-quality hot-rolled steel coils using high-frequency induction welding (HFIW) technology. The range includes HFIW Line Pipes and OCTG products such as casing and tubing, available in various diameters, wall thicknesses, and lengths to meet international standards ensuring excellent weld integrity, dimensional accuracy, and high resistance to pressure and corrosion. Their robust construction and reliability make them suitable for demanding exploration, drilling, and production environments.

Applications:

The product is engineered for diverse oil & gas sector uses, including:

- Line Pipes – for transportation of crude oil, natural gas, and petroleum products
- Casing Pipes – for lining boreholes during drilling to prevent collapse & isolate pressure zones
- Tubing Pipes – for conveying extracted oil and gas from the reservoir to the surface
- Water Injection & Disposal Wells – for enhanced oil recovery and produced water management
- Structural & Auxiliary Uses – offshore and onshore oilfield structures, supports, and related installations
- Geothermal & Concentrated Solar Application: conveying liquid & gaseous mediums under its own pressure



Product Forms:

The mechanical-technological properties for oilfield pipes can be found in API standards. Table provides a quick summary.

Parameters	Unit	Value
Density	Kg/m3	7,850
Modulus of Elasticity	MPa	210,000
Tensile Strength ASTM A370	MPa	235 – 485
Yield Strength ASTM A370	MPa	360 - 570
Elongation ASTM A370	%	16 - 29

Name and location of production site(s):

ASAD2

Ajmal Steel Tubes & Pipes Industries LLC Br 1
399HR8, PO Box 93323, ICAD II, Mussafah,
Abu Dhabi, United Arab Emirates
24.283433 Latitude
54.470022 Longitude

LCA INFORMATION

Declared Unit

The declared unit of this study is 1000 kg of HFIW Steel Line Pipes & Tubes and OCTG products. A mass-based declared unit was selected as it reflects the standard basis for production and sales. All LCI and LCIA results are expressed per 1000 kg of finished product.

This EPD covers two product groups manufactured using similar raw materials and identical production processes at Ajmal Steel Tubes & Pipes Industries LLC. The reported environmental impacts represent a production-weighted average of both product groups. Variations between the products are limited to dimensional and finishing differences and do not significantly influence the overall environmental profile; therefore, the average results are considered representative in accordance with EN 15804:2012+A2:2019.

Time Representativeness

Primary data was collected from the manufacturing plant in Abu Dhabi (UAE) for the period January 2024 – December 2024, and is representative of the product and its production process.

Reference Service Life

In accordance with EN 15804:2012 + A2:2019, the Reference Service Life (RSL) and product lifespan for HFIW Steel Line & OCTG Pipes & Tubes are 50 years under normal conditions of use and maintenance. Although the RSL is defined, no environmental impacts are reported for the use stage (Modules B1–B7) because HFIW Steel Line Pipes & Tubes + OCTG are generally inert in service, and when properly installed and maintained, they require minimal energy, water, maintenance, repair, or replacement during their expected lifetime. Surface coatings, such as galvanization or paint, may provide additional corrosion protection but are considered part of the initial production stage in the life-cycle assessment.

Geographical Scope

- A1–A3 (Raw Material Production and Manufacturing): United Arab Emirates (UAE), based on local production and factory data.
- A4–A5 (Transport to Construction Site and Installation): Global (GLO), covering domestic and international distribution and installation.
- C1–C4 / Module D (End-of-Life and Benefits Beyond System Boundary): UAE, based on local collection, recycling, and disposal practices.

Database(s) and LCA software used: Ecoinvent 3.11.0 database and EN 15804 reference package based on EF 3.1 has been used. The LCA software used is Air.e LCA v.3.19.12.

Description of system boundaries:

The scope of the study is set to be Cradle to gate with options, modules C1–C4, module D and with optional modules (A4, A5).

The systems boundaries are strictly referred to the manufacturing plant of Ajmal Steel Tubes & Pipes Industries LLC located in Abu Dhabi (UAE). This Environmental Product Declaration (EPD) follows the structure and life cycle stages defined in the reference Product Category Rules (PCR) for Construction products, based on EN15804:2012+A2:2019. The declared system boundary is cradle-to-gate with options, including the product stage (Modules A1–A3) and the additional stages:

- A4–A5: Transport to construction site and installation.
- C1–C4: Deconstruction/demolition, transport, waste processing, and final disposal.
- Module D: Benefits and loads beyond the system boundary (e.g., potential recycling or energy recovery).

Module B (B1–B7) is excluded because ERW/HFIW steel pipes are passive products that do not consume energy or water and do not require maintenance, repair, replacement, or refurbishment during normal use; therefore, the use stage is considered not relevant.

Module A1:

Raw Material Supply: This stage covers the extraction and pre-processing of raw materials such as steel coils or plates, which are the primary feedstock for HFIW pipe production. Pre-treatment includes steel refining, alloying, and rolling to produce coils or sheets suitable for pipe manufacturing. The base material for manufacturing hot-rolled coils as a preliminary material is iron (percentage by mass $\geq 99.5\%$). Other primary components are carbon, silicon and manganese. Chemical composition varies depending on the type of steel. The detailed percentages by mass are indicated in the API product standard. Other materials: Various gases, oils, lubricants, chemicals, PVC caps, Wooden Blocks, Steel Straps etc depending on the rolling & coating process.

Module A2:

Transportation of raw materials to manufacturer: This stage includes the transportation of raw materials to the manufacturing facility and the movement of materials within the plant. The calculation is based on the average transport distances from suppliers in 2024.

- Vehicle used for transport - 3.5-7.5t & $>32t$ trucks, Euro 5
- Vehicle capacity - 3.5 -7.5 tons and 25 tons
- Fuel type and consumption - Diesel, 0.38 litres per km
- Capacity utilization (including empty poly cartages) - 50% as assumed in Ecoinvent
- Bulk Sea transportation - Mass of the transported product.

Module A3: Manufacturing:

Hot-rolled coils of suitable width and thickness represent the preliminary material for manufacturing longitudinal seam-welded steel pipes. ASAD2 has three mills with identical manufacturing processes. Three processes are carried out: forming the sheet into open-seam pipes, welding and annealing the seam for achieving the requisite structure. The heated strip edges are welded together by pressing. The pipes are rounded and aligned followed by non-destructive testing. The pipe is then cut to the requisite length. Production speed ranges from 3 to 15 m/min. For product manufacturing and quality assurance, both sites are certified according to ISO 9001 and ASAD2 site based on API Q1 for products according to API 5 CT & 5L. Minor surface finishing, threading, beveling, deburring, and straightening are performed as required before the pipes are painted, bundled, wrapped, and packaged with plastic straps, cardboard, and wooden supports for dispatch. Oilfield pipes are shipped bundled with steel straps and/or secured on wooden blocks with wooden wedges and can be re-used. During slitting, forming, welding, and cutting, approximately 9.77% (without arising) of the input steel may become process scrap (trimming, off-cuts, or defective pieces). This scrap is high-quality steel, which is sent to authorized local recyclers.

The production of packaging materials and their transportation to the manufacturing facility are included within this stage. The transportation of packaging materials is assumed to be the same as described in Module A2, using the same transport mode, distances, and vehicle types.

Energy consumption in manufacturing includes electricity and diesel. Electricity powers the slitting, forming, welding, cutting, finishing, and packaging operations. Diesel is used in on-site material handling equipment, forklifts. Electricity is sourced from the national grid, typically composed of 80% non-renewable fossil-based electricity and 20% renewable or low-impact sources. The dataset “market for electricity, low voltage | EN15804, AE” can be applied, with a global warming potential (GWP-GHG) of 0.5856 kg CO₂-eq/kWh. Diesel consumption contributes additional greenhouse gas emissions and air pollutants, calculated based on standard emission factors (dataset: diesel, burned in building machine | EN15804 with GWP-GHG = 0.1 kg CO₂-eq/kg)

This stage also includes emissions to air, water, and soil from slitting, forming, welding, finishing, cleaning, and threading processes. All outputs, including scrap steel, wastewater, and emissions, are managed in compliance with local environmental regulations to minimize environmental impacts.

Manufacturing programme is governed by environmental, safety & health policies within Sustainability drive. Environment permit has to be obtained from statutory authorities besides meeting with local body audits in strict compliance with local laws. AJ Steel is certified ISO 14001 and ISO 45001 organization.

Module A4 –Transport:

This module includes the transportation of finished HFIW Steel Line Pipes & Tubes + OCTG from the manufacturing facility to the construction site or distribution point. Transport impacts are calculated based on the average transport distances from suppliers in 2024. Road transport is assumed using Euro 5 diesel trucks with load capacities of 3.5–7.5 tons and 25 tons (>32 tons gross vehicle weight category). Diesel fuel consumption is assumed as 0.38 liters per kilometer. A capacity utilization factor of 50% is applied, including empty return trips, in accordance with Ecoinvent assumptions. Where applicable, bulk sea transportation is included and calculated based on the mass of the transported product and transport distance. Packaging materials and handling related to transport are also considered in this module, in accordance with EN 15804 requirements.

Module A5 – Installation:

Pipe connection J55 and N80Q pipe grades can be done on site. Oilfield pipes are connected either by means of so-called API (American Petroleum Institute) round threads, BTC (Bulge Control Technology) or premium threads. Standard environmental & health protection measures need to be taken. Requirement of waste disposal is met with as per local laws. This stage covers the processes required to install HFIW Steel Line Pipes & Tubes + OCTG at the construction site. It includes handling, cutting, welding, joining, and assembly, as well as the energy, water, and auxiliary materials used during installation. Any minor waste generated from cutting or fitting at the site is consider negligible.

Module C1: De-construction and demolition:

At the end of their life, HFIW Steel Line Pipes & Tubes + OCTG are removed from buildings or structures during demolition. The process is assumed to be mechanical, using diesel-powered equipment, with an average energy consumption of 0.01 kWh/kg of profile. It is assumed that 100% of the HFIW Steel Line Pipes & Tubes + OCTG waste is collected as construction and demolition waste for subsequent recovery, recycling, or disposal. There are no restrictions on the use of steel pipes. There are no health risks for users of line and oilfield pipes or for persons manufacturing or processing these pipes.

Module C2: Transportation to waste processing:

This module includes the transportation of HFIW Steel Line Pipes & Tubes + OCTG from the demolition site to waste processing or recycling facilities. An average transport distance of 50 km by road is assumed. Transport is carried out using Euro 5 diesel trucks (3.5–7.5 tons and 25 tons capacity), with fuel consumption of 0.38 liters per kilometer. A capacity utilization factor of 50%, including empty return trips, is applied in accordance with Ecoinvent assumptions. Energy use and emissions associated with transport are included in this module, as required by EN 15804.

Module C3: Waste processing for reuse, recovery and/or recycling:

Covers the processes required to prepare the steel for recycling, including sorting, cleaning, shredding, and melting. Steel is highly recyclable, and most of the material is recovered, minimizing losses to landfill.

At the end of life, steel pipes and tubes are assumed to have a recycling rate of 90–95%. This assumption is consistent with data from the World Steel Association (2021) and EUROFER (2020), which report that more than 90% of steel used in construction is recovered and recycled.

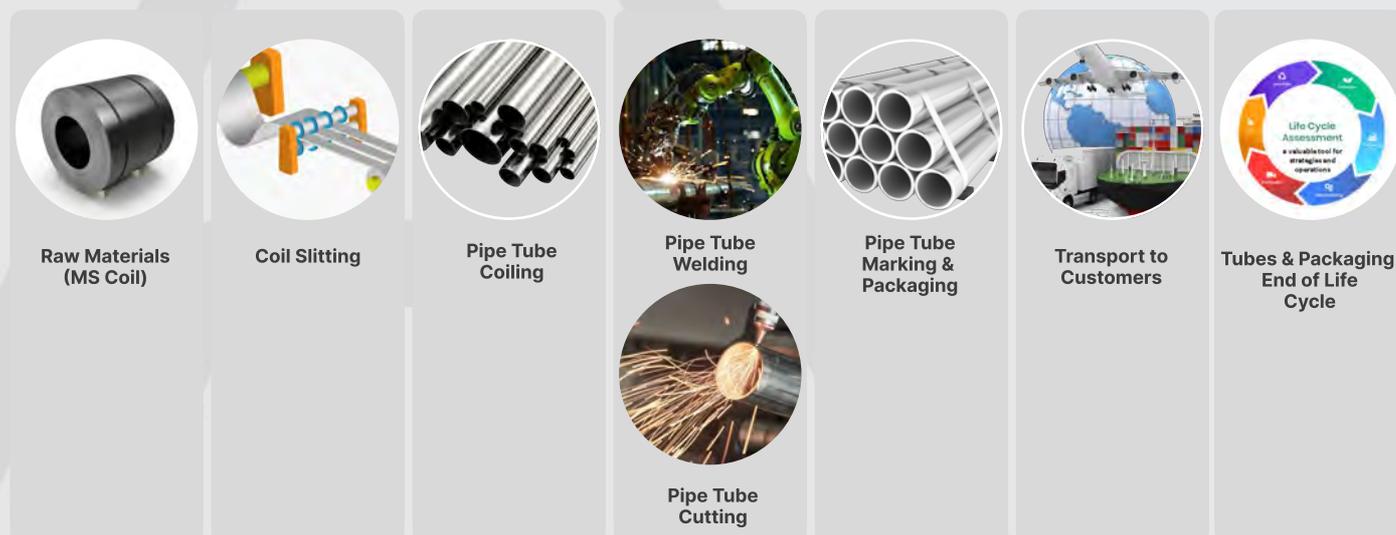
Module C4: Disposal:

At the end of life, the remaining 5% of HFIW Steel Line Pipes & Tubes + OCTG that cannot be recycled and assumed to be sent to landfill or appropriate disposal sites. The environmental impact for this stage accounts for the energy use and emissions associated with disposal, while the majority of material (95%) is recovered through recycling.

D: Reuse-Recovery-Recycling-potential:

Module D accounts for the potential environmental benefits and avoided impacts resulting from the recovery and recycling of HFIW steel pipes at the end of their life. Steel is highly recyclable, and in this scenario, 95% of the pipe material is assumed to be collected and recycled into new steel production. This recycling displaces the need for primary steel production, thereby reducing energy use, greenhouse gas emissions, and raw material extraction associated with virgin steel.

MANUFACTURING FLOW AND SYSTEM BOUNDARIES DIAGRAM

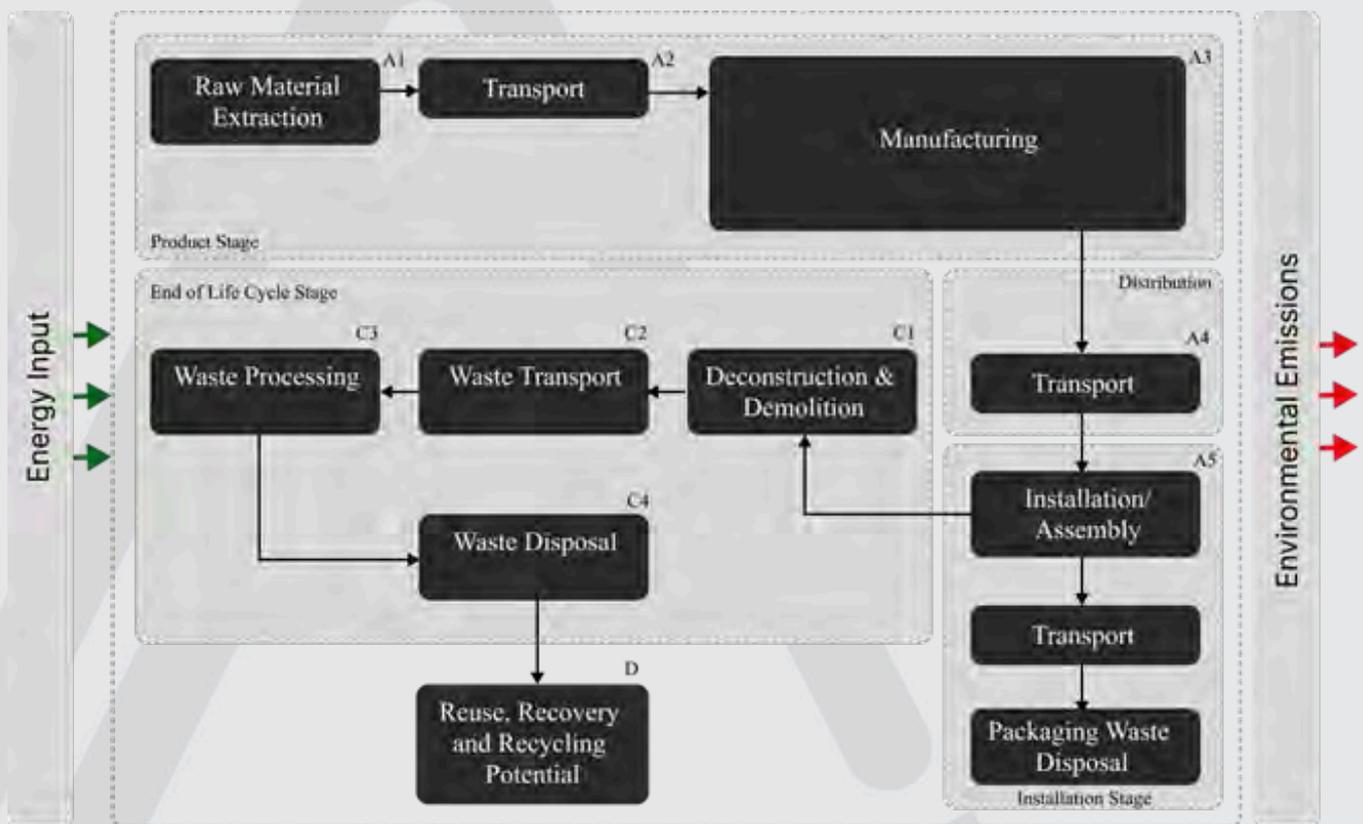


The scope of this EPD is "cradle to gate with options".

Possible scopes of the LCA defined in the European standard EN 15804:2012+A2:2019/AC:2021 are :

Module	Production Stage			Construction Stage		Use Stage							End of Life Stage				Resource Recovery Stage
	Raw Materials	Transport	Manufacturing	Transport	Construction Installation	Use Stage	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction & Demolition	Transport	Waste Processing	Disposal	Reuse Recovery Recycling Potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Module Declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	UAE	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific Data	GWP>90%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation Products	GWP<10%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation Sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Process Flow Diagram



Content Declaration

Content Declaration of the Product

Product Components	mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, kg C/ product or DU
HR Coils	1000	20%	0.00E+00
Industrial Gases	5.89		0.00E+00
Oils & Lubricants	0.22		0.00E+00
Total	1000		0.00E+00

Content Declaration of Packaging

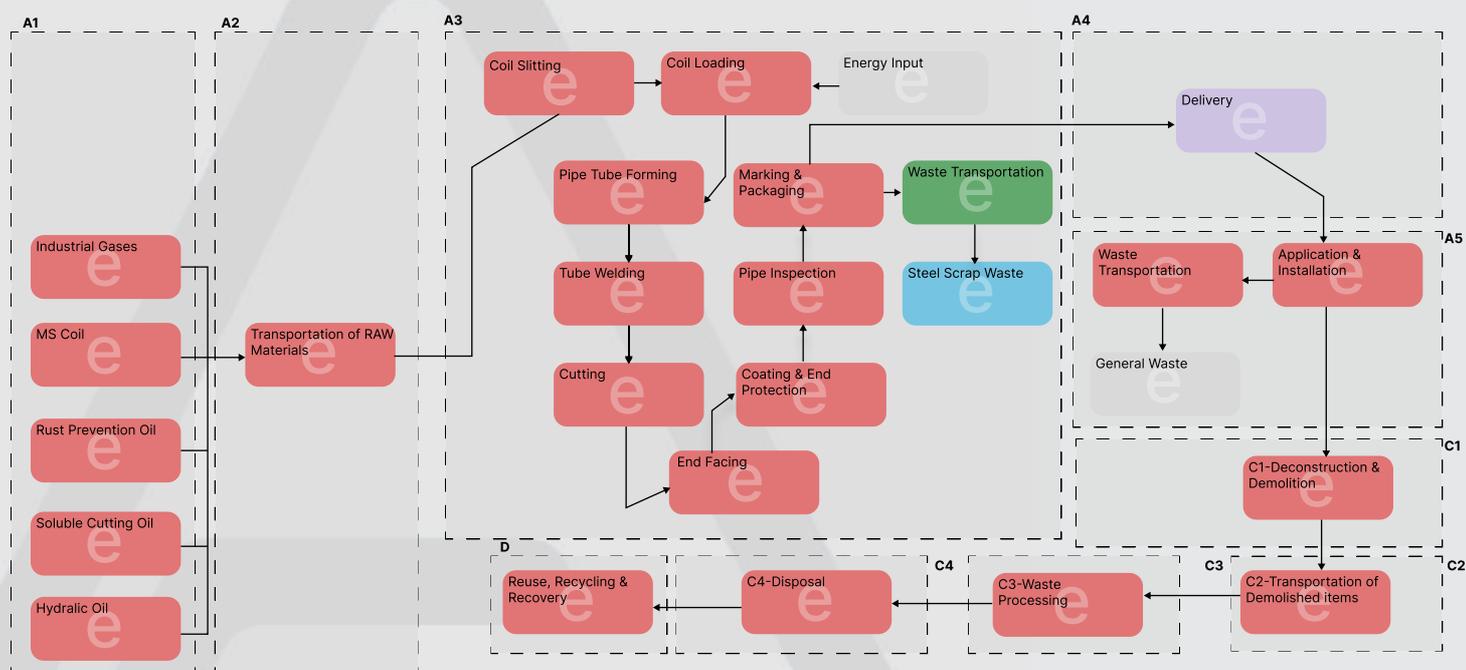
Packaging Materials			
Packaging Materials	Weight Kg per DU	Weight % (Versus the Product)	Weight biogenic carbon, kg C/kg
Wooden Pallet	1.09E-03	1.09E-01	4.83E-04
PVC Caps	2.65E-04	2.65E-02	0.00E+00
HDPE Bags	2.33E-05	2.33E-03	0.00E+00
Steel Straps	6.03E-04	6.03E-02	0.00E+00

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

Substance listed in the "Candidate List of SVHC"

During the life cycle of the product no hazardous substance listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" has been used in a percentage higher than 0.1% of the weight of the product.

Life Cycle Assessment Modeling



Data Quality, Assumptions and Allocations

Data Quality: This assessment covers all processes contributing to the declared environmental impact indicators (e.g., GWP, ODP, AP, EP) for the A1–A3 cradle-to-gate stages. Processes representing $\geq 80\%$ of the contribution to each indicator are assessed in detail, while minor contributors are summarized.

Narrative: Most data for this LCA are primary, collected from plant records and suppliers, covering materials (HR Coil, gases, oils) and packaging, with reference years from 2024–2028. Primary data represent the majority of GWP contributions in A1–A3, particularly HR Coil ($>90\%$). Secondary data from Ecoinvent v3.11 were used for electricity, diesel, water, transport, and waste disposal, contributing smaller shares to GWP. The combination of primary and high-quality secondary data ensures a reliable, representative, and transparent assessment of environmental impacts for HFIW steel pipe and tube production. This dataset complies with the requirements of EN 15804:2012+A2:2019, supporting robust Environmental Product Declarations.

Assumptions: The life-cycle assessment (LCA) for HFIW Steel Line Pipes & Tubes + OCTG is based on the following key assumptions. Transportation of raw materials and finished pipes is primarily by road and sea, using diesel trucks and container vessels minor transport routes contributing less than 1 % of impacts are excluded, based on typical supplier-to-factory and factory-to-customer distances for both local and international deliveries. Raw material production includes steel coils or plates and auxiliary chemicals (e.g., lubricants, anti-scale agents), with primary plant data or representative proxy datasets applied; minor additives representing less than 1 % of the total mass are excluded in line with cut-off rules to ensure a representative life-cycle inventory.

A reference service life (RSL) and product lifespan of 50 years is assumed, reflecting typical performance of ERW steel pipes in building, infrastructure, and industrial applications. Production equipment, buildings, business travel, employee commuting, and R&D activities are outside the scope of the declared unit and are therefore excluded. Consistent with PCR 2019:14 v2.0.1 Section 4.4 and the principles of EN 15804 (Polluter Pays and Modularity), all flows contributing less than 1 % of total mass, energy use, or environmental impact are cut off, ensuring that more than 99 % of relevant flows are included in the assessment.

Allocation:

- No co-products: Process scrap (9.77 % of input steel mass) generated during manufacturing is treated as a co-product. The cut-off approach has been applied, whereby the environmental burdens of production are allocated entirely to the main product (the finished pipes & tubes), and the scrap is considered to leave the system with zero burden. The benefits of recycling this scrap are accounted for as avoided primary material production, reflected in the recycled content of the HR Coil.
- Energy and raw material use assigned entirely to product.
- Transport burdens allocated by mass x km.
- End-of-life burdens fully assigned to HFIW Steel Line Pipes & Tubes + OCTG.
- Upstream and downstream allocations follow the rules documented in the respective LCA databases (e.g., eco-invent 3.11.0).

Cut-off Criteria: Cut-off criteria follow PCR 2019:14 v2.0.1 Section 4.4 and EN 15804:2012+A2:2019. Flows contributing less than 1% of total mass, energy, or environmental impact were excluded. More than 99% of relevant material and energy flows were included. The Polluter Pays Principle and Modularity Principle have been applied.

Environmental Performance

LCA results of the product(s) - main environmental performance results
Mandatory impact category indicators according to EN 15804

Impact category indicators according to EN 15804 (Results per declared unit)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-Total	kg CO ₂ eq.	3.08E+03	8.60E+01	2.24E-01	ND	3.62E+00	9.90E+00	4.95E+01	3.13E-01	-7.43E+02						
GWP-fossil	kg CO ₂ eq.	3.07E+03	8.60E+01	5.77E-02	ND	3.62E+00	9.89E+00	2.01E+01	3.13E-01	-7.44E+02						
GWP-biogenic	kg CO ₂ eq.	7.78E+00	1.86E-02	1.66E-01	ND	3.61E-04	2.27E-03	2.94E+01	9.70E-05	8.61E-01						
GWP-luluc	kg CO ₂ eq.	2.00E+00	4.17E-02	3.50E-05	ND	3.71E-04	4.54E-03	2.38E-02	1.79E-04	-1.78E-01						
ODP	kg CFC 11 eq.	1.99E-05	1.11E-06	6.99E-10	ND	5.38E-08	1.34E-07	1.15E-07	8.71E-09	-3.69E-06						
AP	mol H ⁺ eq.	1.42E+01	6.25E-01	3.57E-04	ND	3.24E-02	2.37E-02	1.31E-01	2.19E-03	-3.05E+00						
EP-freshwater	kg P eq.	1.57E+00	8.44E-03	7.74E-04	ND	1.17E-04	1.08E-03	9.40E-03	2.74E-05	-6.24E-01						
EP-marine	kg N eq.	3.58E+00	1.65E-01	6.05E-04	ND	1.51E-02	5.52E-03	6.29E-02	8.44E-04	8.29E-02						
EP-terrestrial	mol N eq.	3.41E+01	1.81E+00	9.39E-04	ND	1.65E-01	5.88E-02	3.86E-01	9.19E-03	-8.01E+00						
POCP	kg NMVOC eq.	1.19E+01	6.00E-01	3.91E-04	ND	4.94E-02	3.21E-02	1.27E-01	3.32E-03	-2.83E+00						
ADP-minerals & metals*	kg Sb eq.	1.95E-02	2.52E-04	3.33E-07	ND	1.26E-06	3.30E-05	3.92E-04	4.55E-07	-1.14E-02						
ADP-fossil*	MJ	3.46E+04	1.17E+03	7.29E-01	ND	4.72E+01	1.37E+02	1.69E+02	7.66E+00	-8.01E+03						
WDP*	m ³	7.29E+02	5.97E+00	-2.16E-01	ND	1.23E-01	7.75E-01	3.12E+00	3.39E-01	-1.44E+03						
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 on these results are high or as there is limited experienced with the indicator. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Additional Environmental Impact Indicators

Additional mandatory and voluntary impact category indicators (Results per declared unit)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	3.18E+03	8.68E+01	2.35E-01	ND	3.68E+00	9.97E+00	5.21E+01	3.20E-01	-8.00E+02						

Resource use indicators

Resource use indicators (Results per declared unit)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2.95E+03	1.54E+01	-2.63E+00	ND	2.96E-01	1.93E+00	2.40E+01	7.16E-02	-1.10E+03						
PERM	MJ	2.27E+01	0.00E+00	2.65E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
PERT	MJ	2.98E+03	1.54E+01	2.38E-02	ND	2.96E-01	1.93E+00	2.40E+01	7.16E-02	-1.10E+03						
PENRE	MJ	3.46E+04	1.17E+03	-1.01E+00	ND	4.72E+01	1.37E+02	1.69E+02	7.66E+00	-8.01E+03						
PENRM	MJ	3.11E+01	0.00E+00	1.73E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
PENRT	MJ	3.46E+04	1.17E+03	7.29E-01	ND	4.72E+01	1.37E+02	1.69E+02	7.66E+00	-8.01E+03						
SM	kg	4.51E+02	5.36E-01	4.28E-04	ND	1.95E-02	6.12E-02	3.05E-01	1.91E-03	5.56E+02						
RSF	MJ	1.51E+00	5.84E-03	1.85E-05	ND	5.12E-05	7.94E-04	2.42E-02	3.98E-05	-8.38E-02						
NRSF	MJ	1.53E-01	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
FW	m ³	3.65E+01	1.46E-01	-5.02E-03	ND	3.02E-03	1.89E-02	8.12E-02	7.92E-03	-3.45E+01						
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															

Waste indicators

Waste indicators (Results per functional or declared unit)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.05E+03	2.54E+00	2.53E-03	ND	5.29E-02	3.13E-01	1.78E+00	8.72E-03	-4.16E+02						
Non-hazardous waste disposed	kg	1.37E+04	4.76E+01	3.73E+00	ND	7.71E-01	6.03E+00	7.16E+01	2.02E-01	9.86E+03						
Radioactive waste disposed	kg	2.68E-02	2.18E-04	2.68E-07	ND	4.93E-06	2.73E-05	2.17E-04	1.12E-06	-3.49E-03						

Output flow indicators

Output flow indicators (Results per declared unit)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Material for recycling	kg	1.87E+02	2.15E-01	5.79E-01	ND	2.10E-04	1.57E-03	9.60E+02	8.30E-05	-2.12E-01						
Materials for energy recovery	kg	1.05E-02	6.99E-05	6.56E-08	ND	6.70E-07	9.30E-06	3.75E-05	1.47E-07	-7.00E-03						
Exported energy, electricity	MJ	9.24E+00	9.28E-02	2.23E-04	ND	2.23E-03	1.16E-02	8.21E-02	4.97E-04	-1.38E+00						
Exported energy, thermal	MJ	1.38E+01	1.53E-01	9.35E-05	ND	1.05E-03	2.07E-02	2.32E-02	2.64E-04	-7.94E+00						

Contact Information

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ENVIRONMENTAL FOOTPRINT INSTITUTE

Abbreviations

EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
AE	United Arab Emirates
GLO	Global
ERW	Electric Resistance Welded
HFIW	High-Frequency Induction Welded
OCTG	Oil Country Tubular Goods

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- Air.e LCA Version 3.20.1.0, SolidForest GmbH, www.solidforest.com – LCA software used for modelling and calculations.
- Ecoinvent 3.11, www.ecoinvent.org – Life cycle inventory database for background processes.
- 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+A2:2019/AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
- UAE Ministry of Climate Change and Environment (MOCCA), 2021, Construction and Demolition Waste Management, UAE – Reference for end-of-life assumptions, waste recycling, and disposal rates.
- UAE's National Greenhouse Gas Inventory Report (NIR)
- Model for Life Cycle Assessment (LCA) of buildings, European Commission, Joint Research Centre
- IBU Product Category Rules for Building-Related Products and Services - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, version 1.4
- World Steel Association (worldsteel)–“Steel is 100% recyclable and is the most recycled material in the world. More than 90% of structural steel is recovered and recycled at end-of-life.”
- European Steel Association (EUROFER)–“More than 95% of steel from construction and demolition is recovered for recycling and reuse in Europe.”
- International Stainless Steel Forum (ISSF)–“On average, stainless steels contain about 60% recycled content, and end-of-life recovery rates are between 85% and 95% depending on the product sector.”

Version History

Original Version of the EPD, 2026-02-23

