

Environmental Product Declaration

EPD Program	Title	Details
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	Date of Revision	-
International Climate Intelligence System 71-75 Shelton Street Covent Garden, London, WC2H 9JQ United Kingdom office@climateintell.com		

As per ISO 14025 & EN 15804:2012+A2:2019/AC: 2021 for

Structural Steel Fabricated Products



The most recent data needs to be provided through an EPD, which may be updated when circumstances change. Thereby the claimed validity is contingent upon ongoing validation at www.climateintell.com



www.assentsteel.com



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1.0 PROGRAM INFORMATION

Program

International Climate Intelligence System

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Product Group Classification

UN CPC 421

Product Category Rules (PCR)

PCR 2020:17 Construction products(EN 15804:2012+

A2:2019/ AC:2021) Version 1.2.5 dated 01.11.2022

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

Registration Number

ICIS-202411-83

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21.11.2024

Valid until

20.11.2029

Geographical Scope

Global



2.0 INTRODUCTION

This report contains the environmental performance of the fabrication process of Structural Steel Products by Assent Steel Industries LLC. This Environmental Product Declaration (EPD) has been developed using the Life Cycle Assessment (LCA) methodology. The environmental impact values calculated are expressed to 1 ton of Structural Steel Fabricated Products.

The assessed life cycle includes all phases in the fabrication process of Structural Steel Products in a “cradle to gate with options” scope. This LCA covers transportation of Raw materials, production, distribution of final product to the customer and end of life stages.

This Factory wide EPD has been conducted according to the program operator regulations and it has been verified in accordance with the International Climate Intelligence System. The EPD regulation is a system for the international use of Type III Environmental Declarations, according to ISO 14025:2006. Not only the system, but also its applications, is described in the Programmer’s Product Category Rules (PCR). This report has been made following the specifications given in the European standard EN 15804:2012+A2:2019/AC: 2021.

3.0 COMPANY INFORMATION

A prominent member company of the ASGC Group, ASSENT STEEL INDUSTRIES LLC started in 2008 with a fully equipped and highly advanced Steel manufacturing company in Dubai and the GCC Region.

Today, ASSENT STEEL INDUSTRIES LLC is a leading Steel Fabrication and Erection company in the region, supported by a large steel engineering services facility to serve the requirements of industrial and commercial projects. Our team of industry experts focuses on delivering high-quality products and services to serve the high global demand for steel construction products.

ASSENT STEEL INDUSTRIES LLC Manufacturing Facility is located at Dubai Industrial City – UAE, having a production capacity of up to 120,000 tons/year. As one of the largest steel manufacturing companies in Dubai, UAE, we are equipped with state-of-art equipment and technology to produce quality and durable material.



We are a people-first company. As a result, we have taken extensive measures to optimize our manufacturing facility for a safe, secure and efficient work environment. Such a robust working environment helps us build safer and deliver faster, exceeding your expectations and meeting your demands with ease. ASSENT STEEL INDUSTRIES LLC is a market-leading “One-Stop-Shop” structural steel manufacturing company that helps transform your complex project designs into iconic structures. We offer the full range of design-build integrated projects services for best-in-class manufactured products, including hot-rolled structural steel structures, pre-engineered buildings, and cold form cladding.

ASSENT STEEL INDUSTRIES LLC capabilities & resources can serve and support clients as a reliable and trusted partner for several commercial and industrial projects (Airports, Bridges, Power plants, high-rise buildings, Showrooms, Terminal Buildings, Factories, Car parks, etc.) by providing vast services as follow:

- Engineering Design & Detailing.
- Fabrication.
- Painting & Fireproofing.
- Erection.

The quality of the products has been very well accepted and well-established brand in the MENA markets and other parts of the world. The convenience of being close to the seaports of Jebel Ali is seen in the ease of shipments to all parts of the world. The company also uses the road & other transport networks to cater to the markets.

Accreditation and Certifications

- ISO 9001:2015 Quality Management System Certificate (IAS 01 2200366).
- ISO 14001:2015 - Environmental Management System Certificate (IAS 01 2200366).
- ISO 45001:2018- Occupational Health & Safety Management System Certificate (IAS 01 2200366).
- EN 1090-1:2009/A1:2011 – Factory Production Control (2388-CPR-0274 Rev. 1.0).
- EN 1090-1:2009/A1:2011-UKAS Product Certification (8501-CPR-23-72986 Rev. 0)
- ISO 3834-2:2021 – Welding Certificate of Conformity (10000452339-PA-RvA-ARE Rev. 1.0)
- American Institute of Steel Construction Certification Programs(C-00024605)
- AWS B5.17 & QC17-American Welding Society (230704F)
- Canadian Welding Bureau Certification to CSA W47.1 Div 2
- LEED Platinum Certification v4.1 – Operation and Maintenance Interiors (1000156235)

Global Presence

ASSENT STEEL INDUSTRIES L.L.C, has a presence in over 20 countries, AGIS covers all of the key steel markets in the region, from emerging to mature.

For more details - <https://assentsteel.com/global-presence>



4.0 PRODUCT INFORMATION

4.1 Analyzed Product

Hot-rolled fabricated structural steel sections are widely used in building, bridge, and industrial projects. These include shapes like parallel flange sections, angles, channels, and tees, which are detailed, cut, drilled, bolted, welded, and processed by fabrication for installation.

Fabricated hot rolled sections are comprised of a family of steel products of varying strength, performance, physical, metallurgical and chemical characteristics meeting the requirements of the Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes and Steel Piling and grade specific standards. Structural Steel as defined in The Code of Standard practice for Steel Buildings and Bridges, Infrastructures (ANSI/AISC 303-16) is then fabricated according to the applicable standards.

This is a factory-wide Environmental Product Declaration (EPD) detailed the environmental impact of the factory's products throughout their lifecycle. The following products are considered;

- Fabricated Hot-Rolled Structural Sections
- Fabricated Steel Plate
- Fabricated Hollow Structural Sections (HSS)
- Fabricated Products with Zinc Coated and/or painted

Structural Steel Fabricated products are offered in standard size but can also be made to custom specifications.

Structural Steel Fabricated products manufactured by Assent Steel are defined by the following standards;

- ASTM A36/A36M-19 Standard Specification for Carbon Structural Steel
- ASTM A572/A572M-21 Standard Specification for High-Strength Low-Alloy Structural Steel
- ASTM A992/A992M-20 Standard Specification for Structural Steel Shapes
- ASTM A709/A709M-21 Standard Specification for Structural Steel for Bridges
- ASTM A588/A588M-19 Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 psi minimum yield point, with Atmospheric Corrosion Resistance
- AWS D1.1 – American Welding Society “Structural Welding Code”

- AWS A1.5 – American Welding Society “Bridge Welding Code”
- AWS D1.8 – American Welding Society “Structural Welding Code”

4.2 Product Details

Product of any size of heavy-industrial, infrastructure or commercial projects, ranging in scale and complexity. Our products have included steel framing for the following structures:

- ✱ Oil & Gas fields
- ✱ Pipe Racks & Platforms
- ✱ Aluminium Refineries & Smelters
- ✱ Petro-Chemical Industries
- ✱ Power Plants
- ✱ Steel Rolling Mills
- ✱ Shopping Malls
- ✱ Hi-Rise Towers
- ✱ Schools
- ✱ Hospitality Buildings
- ✱ Depots & Yards
- ✱ Airports & Hangers & Seaports



4.3 Product Application

Designed, fabricated, and erected steel structures for projects of;

- Construction
- Oil & Gas Industry
- Pre-engineered Buildings

Construction

- | | | |
|----------------------|------------------------|--------------------|
| ✱ Airport | ✱ Arena/Stadiums | ✱ Education |
| ✱ Leisure Centre | ✱ Metro Rail -Depot | ✱ Shopping Mall |
| ✱ Metro Rail Station | ✱ Museum | ✱ Retail Buildings |
| ✱ High Rise Tower | ✱ Commercial Buildings | ✱ Cultural Centers |



For more details <https://assentsteel.com/projects-construction>

Oil & Gas Industry

- | | | |
|------------------------|-----------------------|------------------------|
| ✱ Aluminium Refineries | ✱ Desalination Plants | ✱ Mining Industries |
| ✱ Oil & Gas Fields | ✱ Petro-Chemical | ✱ Petroleum Refineries |
| ✱ Power Plants | ✱ Rolling Mills | |



For more details <https://assentsteel.com/projects-oil-gas-industry>

Pre-Engineered Buildings

- Airport Hanger
- Industrial
- Showrooms
- Cold Store
- Labour Camps
- Sports Centre
- Food Processing Facilities
- Logistics Centre
- Military Service Buildings



For more details <https://assentsteel.com/projects-peb>

5.0 LCA INFORMATION

5.1 Declared Unit

The Declared Unit of the Life Cycle Assessment is 1 ton of Structural Steel Fabricated Products. All direct and indirect environmental impacts, as well as the use of resources, are reported referred to this unit.

5.2 Time representativeness

Manufacturing facility specific data from Assent Steel Industry LLC is based on 1 year average data (Reference year January to December 2023). The following rules for time scope of data were applied - < 10 years for background data and < 2 years for manufacturer's data.

5.3 LCA Software and Database

Version 3.17.4.0 of software Air.e LCA™ with Ecoinvent™ 3.10.0 database has been used for LCA modeling and impacts calculations.

5.4 System Boundaries

This EPD covers all product stages from “cradle to gate with options”, i.e this LCA covers Production stage A1-A3, Transportation A4, End of life stages C1-C4 and Resource recovery stage D according to EN 15804 + A2/AC:2021.

The procedures that are not controlled by the company, but are included in this environmental study, are:

- The extraction and production of fuels and electricity.
- The production of the machinery, buildings, and vehicles.

All related direct and indirect environmental impacts related to these elements have been calculated and were included in the LCAs in this EPD.

Upstream Processes (A1: Raw Material Supply): Fabrication of the product starts with mainly raw material (Steel) production and transportation from different parts of the world and some locally sourced. 'Raw material supply' includes raw material extraction before production. Received steels re manufactured from both Electric Arc Furnace (EAF) 78.9% and Blast furnace-basic Oxygen Furnace (BOF) 21.1%. Below tabled recycled content material used in the raw material (Steel) and considered in the LCA.

Angles	95 – 96%	Channels	95 – 96%
Plates	10 – 85%	Pipes	44%
Profiles	20%	Miscellaneous	96%

Core Processes (A2: Transportation): Transport is relevant for delivery of raw materials to the factory and the transport of materials within the plant and in our case, the modelling included each raw material's road and sea distances (average values).

Manufacturing (module A3): The first phase in the LCA is the Fabrication of the Structural Steel Products. Fabrication work starts with surface cleaning, cutting, machining, punching/drilling, bending/rolling, fitting, welding, finishing, surface treatment (Galvanizing and Painting) and delivery.

Transport (module A4): To create a scenario of the A4 phase, all the products sold from January to December 2023 has been analyzed as representative of the international transport. The transport means 7.5-16t & >32t trucks, Euro 6.

Scenario	Parameter	Units	Value Per functional unit
A4 – Cargo Ship	Vehicle type used for transport	Transoceanic cargo ship	n/a
	Vehicle load capacity	Kg (dw)	50,000
	Fuel type and consumption	Liters of heavy fuel oil per km	0.24
	Bulk density of transported products	Kg/m3	n/a
	Volume capacity utilization factor	n/a	1
A4 - Truck	Vehicle type used for transport	>32t truck, 7.5-16t truck	n/a

	Vehicle load capacity	Kg	25,000
	Fuel type and consumption	Liters of diesel per km	0.38
	Bulk density of transported products	Kg/m ³	n/a
	Volume capacity utilization factor	n/a	1

Dismantling/demolition (module C1)

This module assumes that 95% of the hot rolled steel structures used by Assent Steel for various applications such as Oil & Gas fields, Power plants, seaports, etc are recycled and the remaining 5% is landfilled. Given the size of the projects, demolition of these steel structures are done mechanically using diesel as the fuel for the different machinery used. A conservative assumption for the amount of diesel used to demolish one metric ton of steel structures would be 20 liters in this scenario.

Transportation of demolished items (module C2)

This module considers that 95% of the steel coil is recycled which is taken to a nearby recycling center averaged at a distance of 50 kms in a >32 ton truck and the remaining 5% of the waste is landfilled using the same transportation assumptions.

Type	Capacity utilization	Type of vehicle	Average distance
Truck	75%	Euro >32 ton	50 km

Waste processing (module C3)

Steel must be mechanically separated from concrete or any other material surrounding them prior to recycling so that the steel can be made available to a downstream product system as secondary material. 95% of the steel is recovered whereas the remaining 5% is assumed to be landfilled. This is considered in module C3.

Disposal (module C4)

This module represents the 5% of used hot rolled steel structures which is to be disposed of in a landfill.

Reuse, Recycling, and Recovering Potential (module D)

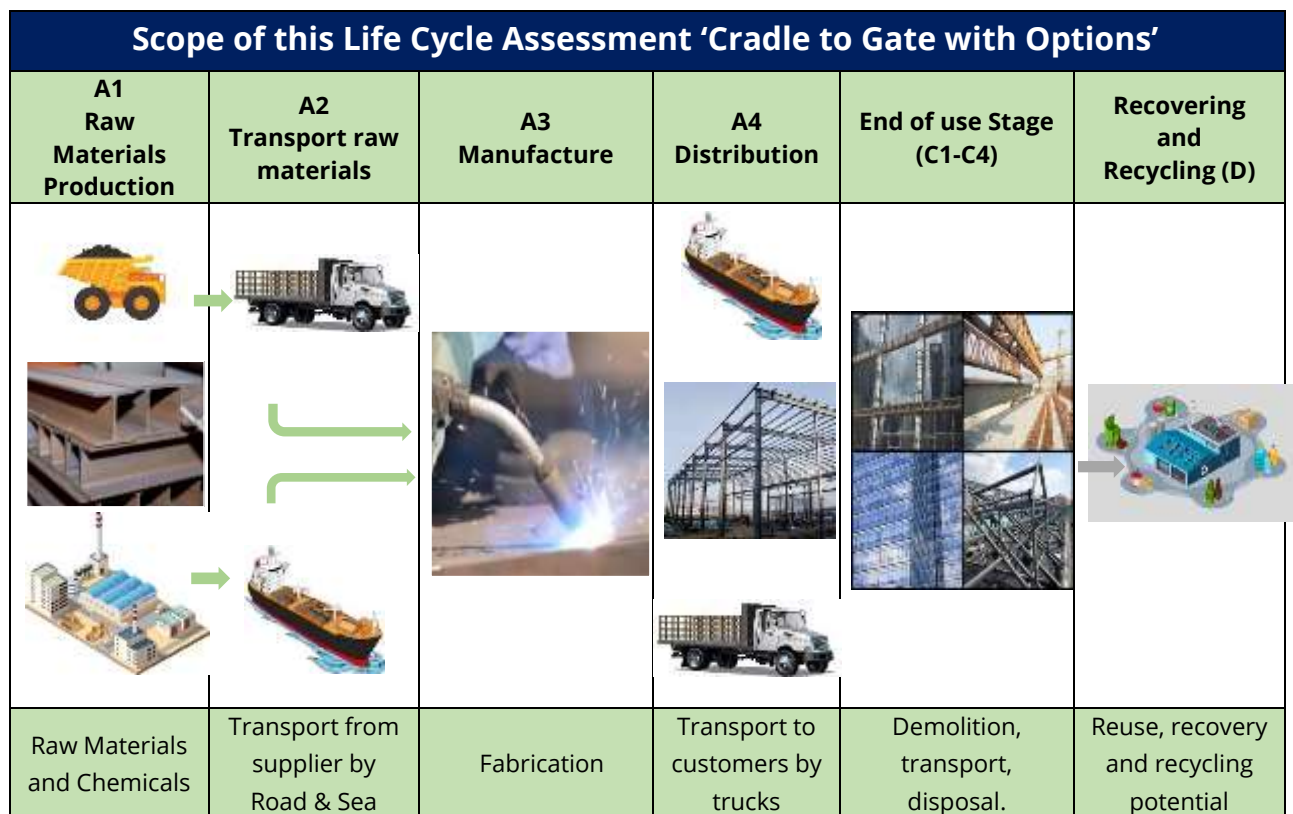
This module accounts for the benefits from the recycling potential of all the used packaging materials and steel.

Manufacturing and System Boundaries Diagram

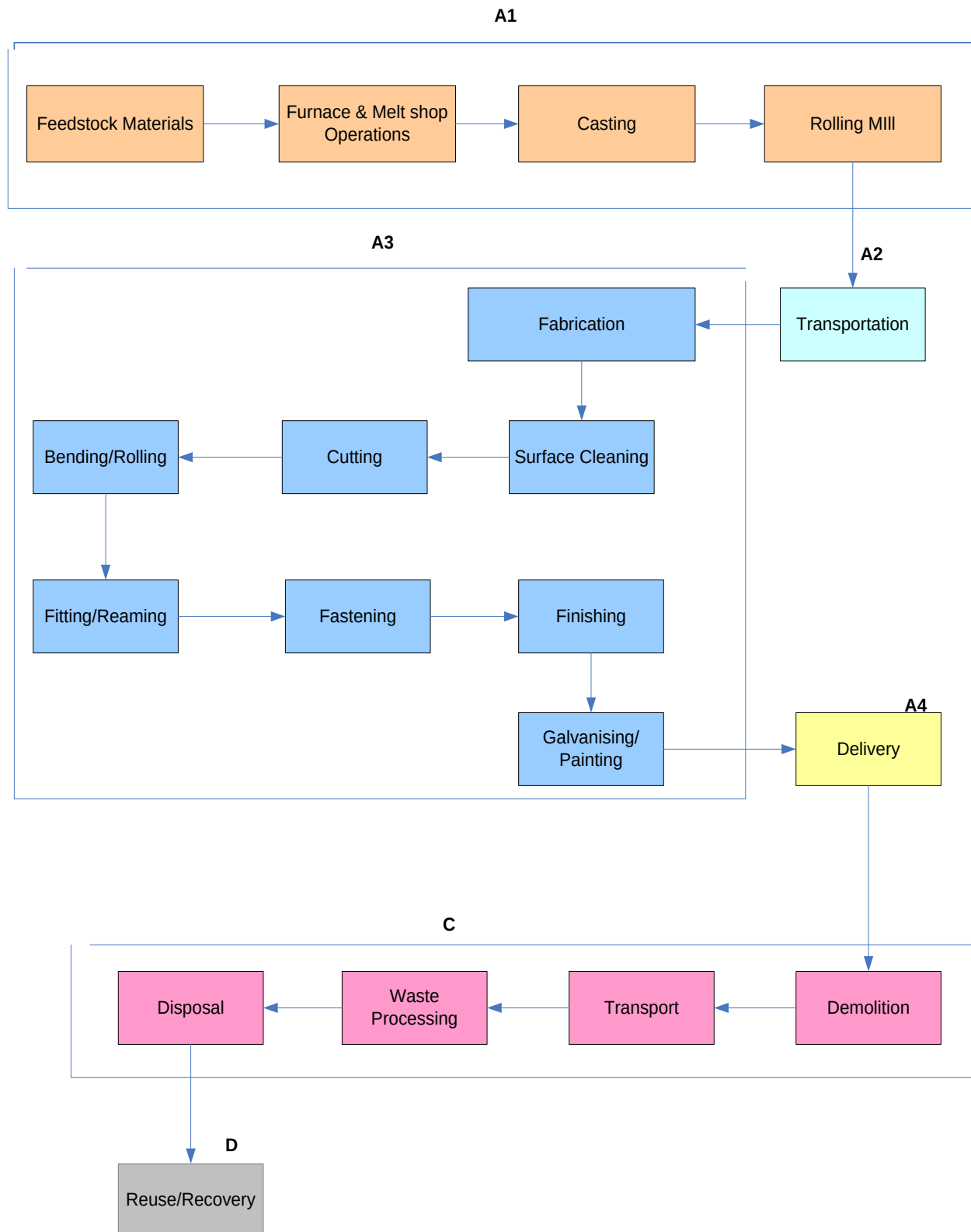
	Production Stage					Construction Process Stage	Use Stage							End of Life Stage				Resource Recovery Stage
	Raw Materials	Transport	Manufacturing	Transport	Construction Installation		Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-construction Demolition	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
Modules declared	X	X	X	X	ND		ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	UAE	GL O	-		-	-	-	-	-	-	-	GLO	GL O	GLO	GL O	GLO
Specific data	GWP > 90%						-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	One Product						-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	One manufacturing center						-	-	-	-	-	-	-	-	-	-	-	-

X = Included, ND=Module not declared, NR= Module not relevant

Modules from A5 to B7 are not included (X refers to considered stage; N refers to not relevant stage and ND to not declared stage).



5.5 The following diagram is a more detailed description of the modules.



5.6 Content Declaration

Product Components	Weight Kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	985.00	As mentioned in 5.4-A1	0
Zinc	11.88	0	0
Paint	0.50	0	0
Welding Flux	2.50	0	0
Chrome Passivator	0.12	0	0
Total	1000.00	10-96	0

Packaging Materials			
Packaging Materials	Weight Kg	Weight % (Versus the Product)	Weight biogenic carbon, kg C/kg
Wooden Pallet*	0.15	1.47	0
Steel Strap	1.40E-04	0.014	0
Lashing Belt	4.20E-04	0.042	0
Lashing Buckles	5.78E-04	0.058	0
Cardboard	4.35E-04	0.044	0
Cable Tie	4.94E-04	0.049	0
Total	1.67E-02	1.677	0
*Biogenic carbon content is not presents since the packaging weights less than a 5% over the product's weight.			

5.7 Substances listed in the "Candidate List of SVHC"

The following list includes all the substances used to provide the service that are included in the Candidate List of substances of very high concern by European Chemicals Agency.

Material Component	Substance	Weight	CAS Number	Hazard Class and Category Code(s)1	Hazard statement Code(s)1
Conversion Coating	Dichromium tris(Chromate)	0.012%	24613-89-6	Ox. Sol. 1 Carc. 1B Skin Corr. 1A Skin Sens. 1 Aquatic Acute 1 Aquatic Chronic	H271 H350 H314 H317 H400 H410

5.8 More information

Cut-off rules: more than 99% of the materials and energy consumption have been included. The Polluter Pays Principle and the Modularity Principle have been followed.

Allocations: The allocation of common inputs and outputs is based on the general allocation rule what represents the proportion of production of every specific product in overall production expressed in Ton. Generic process data for production of input materials were used.

Electricity: A specific dataset with the Life Cycle Inventory (LCI) corresponding to the electricity mix in Dubai, United Arab Emirates, has been used for this LCA.

Calculation Rules: Datasets from Ecoinvent 3.10.0 with emission factors for raw materials and generic chemicals have been characterized to adjust them to the characteristics of manufacturing of suppliers or counties where suppliers are located. Specific datasets with the emissions factors corresponding to the fuel combustion of production plant and machinery have been developed for these LCAs. Indirect emissions due to diesel production and transportation are also included in the environmental impact. Minor components are not directly related to the product, with less than 1% impact, such as office supplies, has been excluded from the assessment.

All transports of components have been included in the LCA considering real distances travelled by materials used for production. It is estimated in a global scale according to Ecoinvent™ criteria. As exact port locations are not known in detail, transport distances have been calculated from a one of the ports in the country of origin to the factory. Operation in port has also been excluded. Road distances calculated using Google Maps. Maritime distances calculated using Marine Traffic Voyage Planner.

By Products Assignment: Economic allocation was applied and the allocation was performed according to the PCR. Economic allocation was based on the income of each product. List of By Products used in this EPD are:

- Steel Powder
- Paint Powder

6.0 ENVIRONMENTAL PERFORMANCE

6.1 Potential Environment Impacts

During the assessment it was not evident to distinguish the differences in the consumption of electricity, water and raw material during the manufacturing. Hence, the calculation is based on total production vs total consumption against manufacturing of the product. Environmental impacts are calculated using the EF-3.1, (ILCD) and TRACI (Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts).

Structural Steel Fabricated Products - Impacts as per EF 3.1(ILCD)

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding thresholds values, safety margins or risks.

Core Environmental Impact Indicators

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Climate change (GWP) – fossil	kg CO2e	1.85E+03	3.82E+01	2.55E+02	7.77E+01	ND	ND	2.25E+01	5.82E+00	1.38E+02	3.05E-01	-1.14E+03
Climate change (GWP) – biogenic	kg CO2e	3.22E+00	3.91E-03	2.59E-01	1.01E-02	ND	ND	4.73E-03	0.00E+00	1.07E+00	1.40E-04	-3.39E+00
Climate change (GWP) – LULUC	kg CO2e	2.77E+01	1.59E-02	1.14E-01	4.12E-02	ND	ND	3.51E-03	0.00E+00	3.40E-01	1.08E-04	-8.51E+00
Climate change (GWP) – total	kg CO2e	1.88E+03	3.82E+01	2.55E+02	7.77E+01	ND	ND	2.25E+01	5.82E+00	1.39E+02	3.06E-01	-1.16E+03
Ozone depletion	kg CFC11e	2.29E-05	4.61E-06	4.78E-06	1.19E-05	ND	ND	1.40E-06	0.00E+00	1.97E-06	8.81E-09	-1.77E-05
Acidification	mol H+e	8.96E+00	7.61E-01	1.62E+00	1.96E+00	ND	ND	6.78E-02	2.05E-03	1.02E+00	2.30E-03	-6.72E+00
Eutrophication, aquatic freshwater	kg PO4e	2.42E+00	2.23E-03	1.12E-01	5.77E-03	ND	ND	2.30E-03	0.00E+00	1.98E-01	7.92E-05	-1.57E+00
Eutrophication, aquatic freshwater	Kg P eq	7.90E-01	7.27E-04	3.65E-02	1.88E-03	ND	ND	7.48E-04	0.00E+00	6.45E-02	2.58E-05	-5.11E-01
Eutrophication, aquatic marine	kg Ne	2.90E+00	1.89E-01	6.41E-01	4.84E-01	ND	ND	1.17E-02	1.02E-03	1.96E-01	8.81E-04	-2.43E+00
Eutrophication, terrestrial	mol Ne	2.33E+01	2.10E+00	6.93E+00	5.38E+00	ND	ND	1.22E-01	1.15E-02	2.25E+00	9.43E-03	-1.85E+01
Photochemical ozone formation	kg NMVOCe	1.12E+01	5.43E-01	1.97E+00	1.39E+00	ND	ND	1.27E-01	3.03E-03	7.39E-01	3.28E-03	-9.30E+00
Abiotic depletion, minerals & metals	kg Sbe	1.39E-02	3.19E-05	5.07E-04	8.25E-05	ND	ND	1.54E-05	0.00E+00	6.15E-03	4.22E-07	-9.01E-03
Abiotic depletion of fossil resources	MJ	2.10E+04	3.15E+02	2.90E+03	8.14E+02	ND	ND	1.10E+03	0.00E+00	1.59E+03	8.05E+00	-1.44E+04
Water use	m3e depr.	1.03E+03	7.09E-01	8.43E+01	1.83E+00	ND	ND	1.69E+00	0.00E+00	4.28E+01	3.44E-01	-6.65E+02

EN 15804+ A2 disclaimers for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. "Reading example: 1.57E-03 = 1.57*10-3 = 0.00157"

Additional Environmental Impact Indicators

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1.70E-04	7.39E-07	5.72E-06	1.87E-06	ND	ND	5.28E-07	1.08E-08	1.00E-05	4.91E-08	-1.30E-04
Ionizing radiation, human health	kBq U235e	7.09E+01	1.35E+00	8.63E+00	3.48E+00	ND	ND	1.88E-01	0.00E+00	7.22E+00	4.83E-03	-5.26E+01
Eco-toxicity (freshwater)	CTUe	3.31E+04	8.68E+01	3.14E+02	2.24E+02	ND	ND	5.36E+01	1.74E-02	2.36E+03	3.45E+00	-1.42E+04
Human toxicity, cancer effects	CTUh	7.00E-05	9.75E-09	1.68E-07	2.44E-08	ND	ND	5.20E-08	2.00E-10	3.90E-06	1.34E-10	-2.00E-05
Human toxicity, non-cancer effects	CTUh	9.00E-05	8.73E-08	1.16E-06	2.11E-07	ND	ND	7.62E-08	3.85E-09	6.15E-06	1.64E-09	-9.00E-05
Land use related impacts/soil quality	Dimensionless	1.10E+06	3.93E+01	9.93E+02	1.02E+02	ND	ND	6.26E+01	0.00E+00	2.18E+03	1.50E+01	-1.10E+06

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

Environmental impacts – GWP-GHG

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG	kg CO2e	1.88E+03	3.82E+01	2.55E+02	7.77E+01	ND	ND	2.25E+01	5.82E+00	1.38E+02	3.05E-01	-1.15E+03

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of Natural Resources

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renewable PER used as energy	MJ	2.36E+05	1.99E+00	1.19E+02	5.13E+00	ND	ND	2.23E+00	0.00E+00	2.44E+02	6.62E-02	-2.35E+05
Renewable PER used as materials	MJ	6.39E+00	8.77E-03	6.23E-01	2.27E-02	ND	ND	1.09E-02	0.00E+00	6.44E-01	2.72E-04	-4.55E+00
Total use of renewable PER	MJ	2.36E+05	2.00E+00	1.20E+02	5.15E+00	ND	ND	2.24E+00	0.00E+00	2.45E+02	6.65E-02	-2.35E+05

Non-renew. PER used as energy	MJ	2.10E+04	3.15E+02	2.92E+03	8.14E+02	ND	ND	1.10E+03	0.00E+00	1.59E+03	8.05E+00	-1.44E+04
Non-renew. PER used as materials	MJ	6.23E-03	5.24E-06	2.90E-04	1.35E-05	ND	ND	5.61E-06	0.00E+00	4.54E-04	5.69E-06	-4.30E-03
Total use of non-renewable PER	MJ	2.10E+04	3.15E+02	2.92E+03	8.14E+02	ND	ND	1.10E+03	0.00E+00	1.59E+03	8.05E+00	-1.44E+04
Use of secondary materials	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renew. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m3	0.00E+00	0.00E+00	2.29E-01	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

End of Life - Waste

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	Kg	0.00E+00	0.00E+00	1.21E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	5.00E-02	0.00E+00
Non-hazardous waste	Kg	0.00E+00	0.00E+00	8.19E-02	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radioactive waste	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

End of Life - Outflows

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.67E+02
Materials for recycling	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Biogenic Carbon Content

Details	Unit	A1-A3
Biogenic carbon content in product	Kg C	0
Biogenic carbon content in accompanying packaging	Kg C	0

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂. "Reading example: 1.57E-03 = 1.57*10⁻³ = 0.00157"

Disclaimer: "According to the EN 15804:2012+A2:2019 standard, the LCIA results are relative expressions translating impacts into environmental themes such as climate change, ozone depletion, etc. (midpoint impact categories). Thus, the LCIA results do not predict impacts on category endpoints such as impact on the extinction of species or human health. In addition, the results do not provide information about the exceeding of thresholds, safety margins or risks".

Structural Steel Fabricated Products - Impacts as per TRACI

Impact Category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification [AP]	kg SO ₂ e	7.71E+00	6.46E-01	1.47E+00	1.66E+00	ND	ND	5.58E-02	1.91E-03	8.52E-01	2.06E-03	-5.80E+00
Climate Change [GWP 100]	kg CO ₂ e	1.86E+03	3.82E+01	2.52E+02	7.77E+01	ND	ND	2.16E+01	5.83E+00	1.37E+02	2.98E-01	-1.14E+03
Eco-toxicity (freshwater)	CTUe	6.62E+03	5.74E+00	4.66E+01	1.46E+01	ND	ND	8.02E+00	5.56E-02	3.36E+02	1.15E-01	-3.03E+03
Eutrophication [EP]	kg Ne	3.77E+00	2.87E-02	1.14E-01	7.37E-02	ND	ND	4.71E-03	1.19E-04	1.60E-01	1.76E-04	-3.47E+00
Human toxicity, cancer effects	CTUc	1.80E-04	3.28E-07	2.00E-06	8.47E-07	ND	ND	4.06E-08	9.54E-11	2.26E-06	4.77E-09	-1.80E-04
Human toxicity, non-cancer effects	CTUnc	4.00E-05	3.33E-07	4.81E-06	6.33E-07	ND	ND	1.66E-07	6.09E-08	7.54E-06	5.18E-09	-3.00E-05
Ozone Depletion [ODP100]	kg CFC-11e	2.35E-05	4.86E-06	5.05E-06	1.26E-05	ND	ND	1.47E-06	0.00E+00	2.08E+00	9.36E-09	-1.80E-05
Particulate matter formation [PMFP]	kg PM _{2.5} e	2.05E+00	3.86E-02	3.04E-01	9.97E-02	ND	ND	6.40E-03	4.90E-05	1.72E-01	2.83E-04	-1.40E+00
Photochemical ozone formation [HOFPI]	kg O ₃ e	9.21E+01	8.21E+00	3.96E+01	2.10E+01	ND	ND	5.39E-01	6.53E-02	7.37E+00	3.72E-02	-7.34E+01

6.2 Interpretation of LCA Study Results

In general terms, as it is shown in the table of core environmental impact indicators, A1-A3 modules have the higher impact, representing above 80% of the whole impact. A4 module has a less impact. C2 and C4 module has little impact too, representing at most 0.16% and 0.01% respectively of the whole impact. Refer the below table 1 for more detailed explanations.

Concluding, the study provides fair understanding of environmental impacts during the various life cycle stages of galvanized steel coil production. It also identifies the hot spots in the value chain where improvement activities can be prioritized and accordingly actions can be planned. The scope covers the ecological information to be divided into raw material production (A1), transportation (A2), manufacturing (A3), delivery (A4), product dismantling (C1), transport of dismantled product to site (C2), waste processing (C3), waste disposal (C4) as well as the end of life stage recycling (D) considerations.

Table 1 - Interpretation of most significant contributors to life cycle parameters

Impact Indicator	Description	Most significant contributor
Depletion of abiotic resources – fossil fuels	Indicator of the depletion of natural fossil fuel resources.	The total cradle to gate impact is 2.42E+04 (24193.34) MJ. In A1 – A3, the raw material (steel) (86.73%), production process (11.97%) has the highest impacts. A total credit of - 1.44E+04 MJ is taken in module D.
Climate Change (Global Warming Potential- GWP-GHG)	Indicator of potential global warming due to emissions of greenhouse gases to the air. Divided into 3 subcategories based on the emission source: (1) fossil resources, (2) bio-based resources, and (3) land use change.	The total cradle to gate impact is 2.17E+03 (2170.82) kg CO ₂ eq. In A1 – A3, the raw material (steel) (86.50%) followed by production A3 (11.74%) has the highest impacts. A total credit of -1.15E+03(1153.38) kg CO ₂ eq is taken in the module D.
Climate change (fossil)	Indicator of the Climate change is largely driven by the release of greenhouse gases like CO ₂ .	The total cradle to gate impact is 2.14E+03 (2143.03) kg CO ₂ eq. In A1 – A3, the raw material (86.33%), Production process (11.89%) has the highest impacts. A total credit of - 1.14E+03 (1144.87) kg CO ₂ eq is taken in the module D.

7.0 MANDATORY STATEMENTS

Explanatory material can be obtained from EPD owner and/or LCA author. The verifier and The Program Operator do not make any claim or present any responsibility about the legality of the product. The EPD owner has the sole ownership, liability, and responsibility for the EPD. The LCA Author shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

EPDs within the same product category but registered in different EPD programmes 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; have equivalent content declarations; and be valid at the time of comparison.

8.0 ADDITIONAL INFORMATION

8.1 Recycle Content

Recycling Content – Input Material (Steel)

Assent Steel has purchased Structural Steel during the period of January to December 2023 with a recycle content declared by their manufacturers. Recycled Content details given in section 5.4, A1stage.

Recycling Content – End of Life

All steel products are recyclable at end of life. Current practice for the average steel consist of 95% recycling and 5% landfill according to the /European Commission Technical Steel Research.

8.2 Sustainability

Assent Steel is committed to the highest standards of Corporate Social Responsibility and Sustainable Development which is an integral part of its business philosophy. The company includes environmental and social responsibility considerations into all its strategic and operational decisions and believes that acting in this manner is not only a business imperative but provides a competitive business advantage in the long run.

Assent Steel always strives to exemplify best industry practices and aims for inclusive growth involving all its stakeholders, including engagement with our business communities in the vicinity of our operations. Assent Steel believes Sustainability is a journey of continuous improvement and through our commitment to the UN's

Sustainability Vision 2030 we are reducing our business impact on the environment by using materials and resources to meet our Corporate Sustainability goals. We are committed to efficient management of natural resources, energy, and wastes, and minimize the impact of our processes on the ecology. We ascertain and continually improve the safety and environmental efficiency of our products and services, providing our customers with only the most eco-efficient options.

Sustainability Policy

Assent Steel has a committed Sustainability policy to reducing the environmental & sustainability risk level in all our operations. Our robust and efficient working conditions are in effect from our policy. This involves integrating sustainable measures into our business model and future developments while inspiring best practices from our stakeholders and the communities we serve. For more details <https://assentsteel.com/sustainability>

8.3 Information related to Sector EPD

This is not a sector EPD. This is an Factory EPD

8.4 Differences versus previous versions

This is the first version of the EPD.

9.0 VERIFICATION

Diffusion Institution	International Climate Intelligence System 71-75 Shelton Street Covent Garden London, WC2H 9JQ United Kingdom
Registration Number	ICIS-202411-83
Date of Publication	21.11.2024
Valid until	20.11.2029
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Product category rules (PCR): PCR 2020:17 Construction products (EN15804:2012+A2:2019/AC:2021) Version 1.2.5 dated 01.11.2022. EN 15804 serves as the Core Product Category Rules (PCR)	
PCR review was conducted by: International Climate Intelligence System.	
Independent verification of the declaration and data, according to ISO 14025:2006 and ISO 14040: ☐ EPD Process Certification (internal) ☒ EPD Verification (external)	
Third party verifier: Mr.Luis Manuel, San Adrián, Spain Accredited by: International Climate Intelligence System	

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11.0 REFERENCES

ISO 14040:2006 "Environmental management -- life cycle assessment -- principles and framework"; ISO 14044:2006 "Environmental management -- life cycle assessment -- requirements and guidelines"; ISO 14020:2000 "Environmental Labels and declarations - General Principles.

ISO 14025:2006 "Environmental labels and declarations -- type III environmental declarations -- principles and procedures". EN 15804+A2:2019/AC:2021 European Committee for Standardization: Environmental product declarations – Core rules for the product category of construction products.

General Programme Instructions of the International Climate Intelligence System (v2.0, 2023)

