

Environmental Product Declaration

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

Hot Dip Galvanized Steel Coil



EPD Program	Title	Details
International Climate Intelligence System 71-75 Shelton Street Covent Garden London, WC2H 9JQ United Kingdom info@climateintell.com	Registration #	ICIS-202406-35
	Date of Publication	17.06.2024
	Validity	16.06.2029
	Date of Revision	-

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



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1.0 PROGRAM INFORMATION

Program	International Climate Intelligence System 71-75 Shelton Street Covent Garden London, WC2H 9JQ United Kingdom info@climateintell.com
Product Group Classification	UN CPC 41231
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 standard EN 15804 serves as the Core Product Category Rules (PCR)
Registration Number	ICIS-202406-35
Date of Publication	17.06.2024
Validity Date	16.06.2029
Geographical Scope	Global

2.0 INTRODUCTION

This report contains the environmental performance of the manufacturing process of Hot Dip Galvanized Steel Coil manufactured by Al Ghurair Iron & Steel 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 Hot Dip Galvanized Steel Coil.

The assessed life cycle includes all phases in the manufacturing process of Hot Dip Galvanized Steel 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 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

Al Ghurair Iron & Steel LLC (AGIS) is the first Flat Steel Cold rolling and hot-dip galvanizing complex in the United Arab Emirates and one of the largest producers of Galvanized steel in the Middle East & North Africa Region. AGIS is a joint venture of the Saif Al Ghurair Group, one of the largest and well diversified business houses of UAE and Nippon Steel Corporation, Japan's largest & one of the biggest steelmakers in the world. Located strategically in the Industrial City of Abu Dhabi (ICAD), Mussafah, Abu Dhabi, the 500,000TPA facility caters to the requirement of the construction, fabrication & other non-automotive industries in the MENA region and other parts of the world.

AGIS produces 500,000 TPA of Hot Dip Galvanized Coils with a thickness range of 0.20 to 2.5mm and width up to 1250mm from its two continuous Galvanizing lines. The production lines have been engineered & designed to cater to the requirement of the end-users in the region. Sheets & Slitted coils are also offered as per customer requirements. All grades of GI-CQ, LFQ, SQ & HSLA for a wide variety of applications are produced in AGIS. It also offers Skin Passed GI and Oiled Hot Dip Galvanized Coils for some special applications.

The main production lines include a Semi-continuous Pickling Line, a 6-Hi Reversing Cold Rolling Mill and two continuous galvanizing lines.

Product Range & Capabilities:

Hot Dip Galvanized Coils – Thickness: 0.20 to 2.50 mm – 500,000 MT/annum.

Galvanized Steel Sheets and slit coils are also offered as per customer requirement.

AGIS is committed to maintaining the health and safety of its employees, customers, contractors and other stakeholders, as well as preserving the integrity of our environment. The company is a proud recipient of the ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Certificates for its Quality, Environment and Health & Safety Management Systems. The Environment, Health & Safety Management System (EHMS) of the Company has been certified by ZonesCorp.



With a presence in over 20 countries, AGIS covers all of the key steel markets in the region, from emerging to mature. The quality of the products has been very well accepted and AGIS is a well-established brand in the MENA markets and other parts of the world.

The convenience of being close to the seaports of Abu Dhabi & Jebel Ali is seen in the ease of shipments to all parts of the world – both in containers and by break bulk. The company also uses the road & other transport networks to cater to the markets. Consumers have the ease of getting their material delivered at their doorstep straight from the Mill.

Mission

At AGIS, we provide high Quality and cost effective Flat Steel products and services on time, to our customers. We achieve this by abiding by the highest standards of Operational excellence, Safety, Transparency and Accountability that rewards all our stakeholders and the communities we operate in.

Vision

By 2023, AGIS will be the leading manufacturer and supplier of Coated Flat Steel products in the MENA region, constantly Exceeding Customer Expectations and providing our employees with a healthy work environment with opportunities for growth.



4.0 PRODUCT INFORMATION

4.1 Analyzed Product

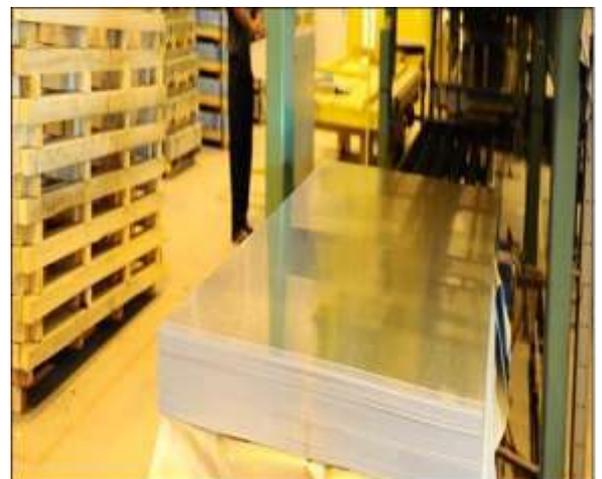
The assessed system in this Environmental Product Declaration (EPD) comprises the full life cycle of **Hot Dip Galvanized Steel Coil** by AGIS LLC in its factory in Abu Dhabi. The assessment has been done using the production data from December 2019 – November 2020. The galvanized coils are further slit into coils and sheets. This Environmental Product Declaration refers to a double-sided hot dip galvanized steel, consisting of steel substrate with a specific metallic alloyed zinc coating, applied by means of a continuous hot dip galvanizing process.



COIL



SLIT COIL



SHEET

4.2 Product Details

Thickness Range(mm)	Width Range (mm)	Form	Remarks
0.20 - 2.50	900 - 1250	Coil Form	Zinc coated, galvanized coil mill edge
0.20 - 2.50	35 - 1250	Coil Form	Zinc coated galvanized coil, trimmed/slitted edge
0.30 - 2.50	650 - 1250	1200 - 4000 (Plain Sheet)	Zinc coated sheet cut from galvanized coil

4.3 Zinc Coting

GP Thickness* Range, mm	CQ / LFQ	DQ	DDQ	EDDS
	CS Type	FS Type	DDS	EDDS
0.200 - 0.239	60 - 120	-	-	-
0.240 - 0.300	60 - 180	-	-	-
0.301 - 0.479	60 - 275	-	-	-
0.480 - 0.700	60 - 350	60 - 350	-	-
0.701 - 0.800	60 - 350	60 - 350	-	-
0.801 - 1.200	90 - 350	90 - 350	-	-
1.201 - 1.500	90 - 350	90 - 350	-	-
1.510 - 2.000	90 - 350	90 - 350	-	-
2.001 - 2.500	90 - 275	90 - 275	-	-
2.510 2.800	120 - 275	-	-	-

GP Thickness* Range, mm	Structural Quality (SQ)				SQ/Full Hard	HSLA
	SS 33	SS 37	SS 50	G450	SS 80	HSLAS 40
0.200 - 0.239	60 - 120	-	-	-	90 - 120	-
0.240 - 0.300	60 - 180	-	-	-	90 - 180	-
0.301 - 0.479	60 - 275	-	-	-	90 - 275	-
0.480 - 0.700	60 - 350	90 - 350	90 - 350	-	90 - 275	-
0.701 - 0.800	60 - 350	90 - 350	100 - 350	100 - 350	90 - 275	-
0.801 - 1.200	90 - 350	90 - 350	100 - 350	100 - 350	90 - 275	-
1.201 - 1.500	90 - 350	90 - 350	100 - 350	100 - 350	-	90 - 350
1.510 - 2.000	90 - 350	90 - 275	100 - 275	100 - 275	-	90 - 275
2.001 - 2.500	90 - 275	90 - 275	100 - 275	100 - 275	-	90 - 275
2.510 2.800	-	-	-	-	-	-

4.4 Product Application

Product	Form	End Uses
<p>Hot Dip Galvanized (HDG)</p> <ul style="list-style-type: none"> • Full Hard (FH) • Commercial Quality (CQ, LFQ) • Drawing Quality (DQ) • Deep Drawing Quality (DDQ) • Structural Quality (SQ) 	<p>Coil/Sheet</p>	<ul style="list-style-type: none"> • Construction : Roofing, Sidewall, Partition, Panel, valley gutter, Louvers, False Ceiling, Duct, Heating Ventilation cold rolled sections, Lintels, color coating (pre-painting), Z,C purlins, Decking, Steel buildings etc. • Domestic : Trunk, ICE Box, Household Machine, Tub, Bucket, Storage Bin, Dustbin, Water tank, Washing Machine body, Door/Window Frame (powder coating), Building Panel etc. • Agriculture: Grain Silo, Sprayer, Pan, Feeding through etc. • White Goods/Electrical Appliances: Cabinet of Air Conditioner/Water Cooler, Refrigerator, Freezer, VCR, Water Heater, PC Hard Disk, Electrical Panel, Cable Treys and accessories etc. • Furniture and Fixtures : Desk, Locker, Rack, Cabinet, Shelf, Almirah etc • Industrial Components: Ducting, Drum/Barrel, Rolling Shutter, Container, Packaging materials etc. • Outdoor : Sign – Board, Hoarding, Road Signs etc.

5.0 LCA INFORMATION

5.1 Declared Unit

The Declared Unit of the Life Cycle Assessment is 1 ton of Hot Dip Galvanized Steel Coil.

All direct and indirect environmental impacts, as well as the use of resources, are reported referred to this unit. This EPD presents separately the environmental impacts associated to the LCA of all the Hot Dip Galvanized Steel Coil.

5.2 Time representativeness

Manufacturing facility specific data from Al Ghurair Iron & Steel LLC are based on 1 year average for process 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 3.16.3.4 of software Air.e LCA™ with Ecoinvent™ 3.9.1 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.

It covers transportation of Hot Rolled Steel Coils (HRC) & Cold Rolled Full Hard Steel Coils (CRFH), production & transportation of other materials such as Zinc, Chrome Passivator etc..., galvanizing processes and up to the distribution of final product to the customer. Use and final disposal is not included in this LCA.

AGIS buys the raw materials (Hot Rolled Steel Coils (HRC), Cold Rolled Full Hard Steel Coils (CRFH), Zinc and Chemicals) from external suppliers. From this point AGIS controls all the process: slitting, pickling, cold rolling, galvanizing, CRS, CTL and packing, etc. AGIS buy raw materials from Europe, Asia, Australia, Japan and GCC countries.

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): Production of the product starts with mainly raw material production and transportation from different parts of the world and some locally sourced. 'Raw material supply' includes raw material extraction before production. 10 to 25% recycled material used in the raw material (Steel).

Core Processes (A2: Transportation): Transport is relevant for delivery of raw materials to the plant 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 production of Hot Dip Galvanized Steel Coil. After the slitting, pickling, cold rolling, galvanizing, CRS and CTL, the Hot Dip Galvanized Steel Coils are packaged (A3).



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 3.5-7.5t & >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, 3.5-7.5t 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)

95% of the steel is removed during demolition with diesel consumption of machineries: 60.8 liters/hour; capacity approx. 15 m³/h) and 40% is dismantled with hydraulic excavator and tongs (diesel consumption of excavator: 36.1 liters/hour; capacity approx. 20 m³/h). The ratio of steel to concrete content is 4.8 %, corresponding to 120 kg reinforcing steel per m³ reinforced concrete (Source: German Environment Agency). Calculated diesel consumption for the demolition of 1 kg steel is 0.0013 liters.

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 3.5-7.5t	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 steel coil which is to be disposed of in a landfill.

Reuse, Recycling, and Recovering Potential (module D)

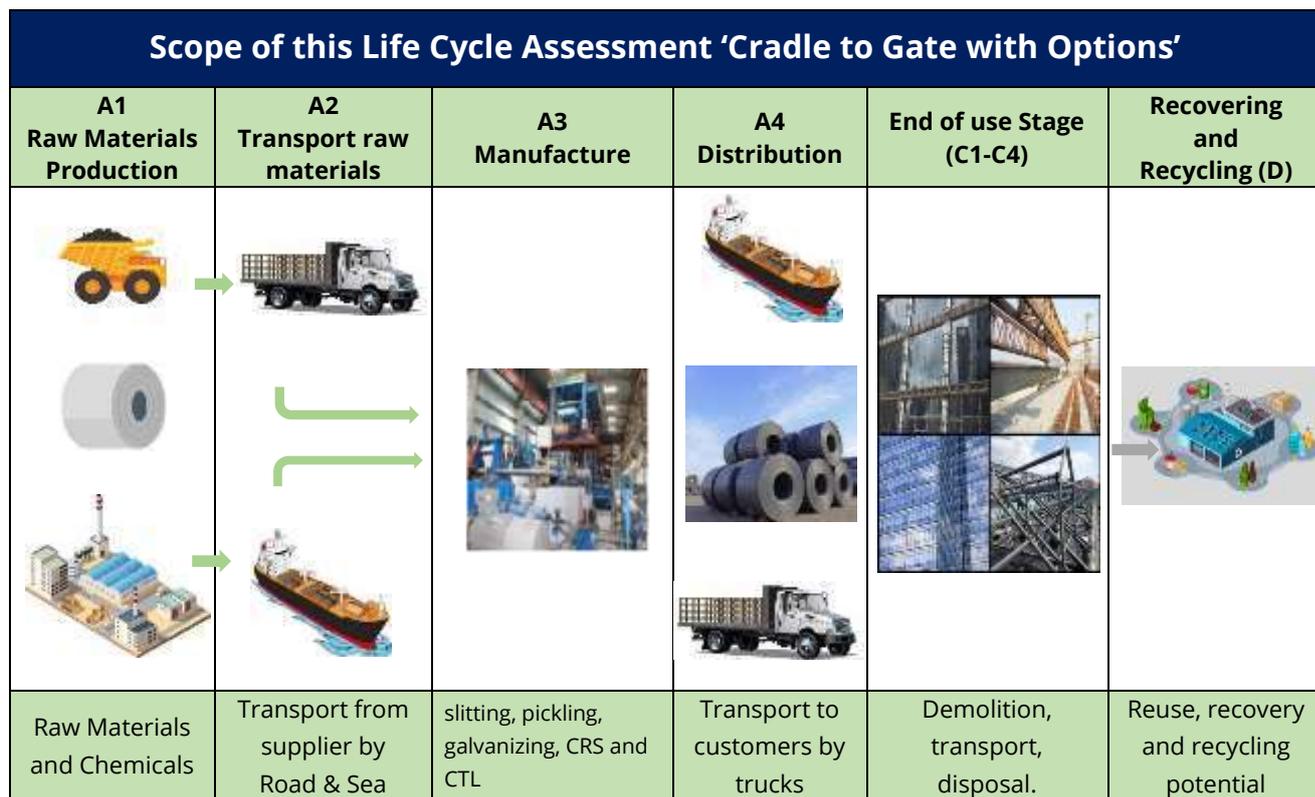
This module accounts for the benefits from the recycling potential of all the used packaging materials and steel.

Manufacturing and System Boundaries Diagram

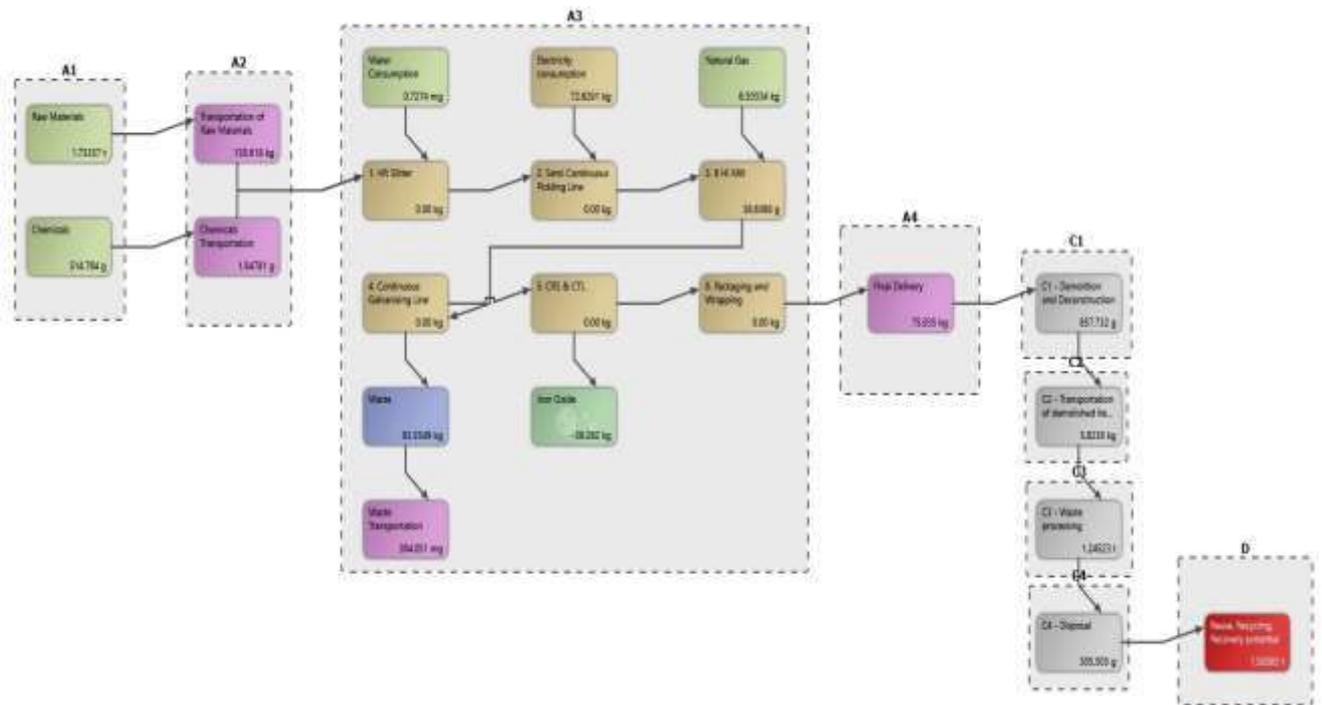
	Production Stage				Construction Process Stage	Use Stage							End of Life Stage				Resource Recovery Stage
	Raw Materials	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-construction Demolition	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

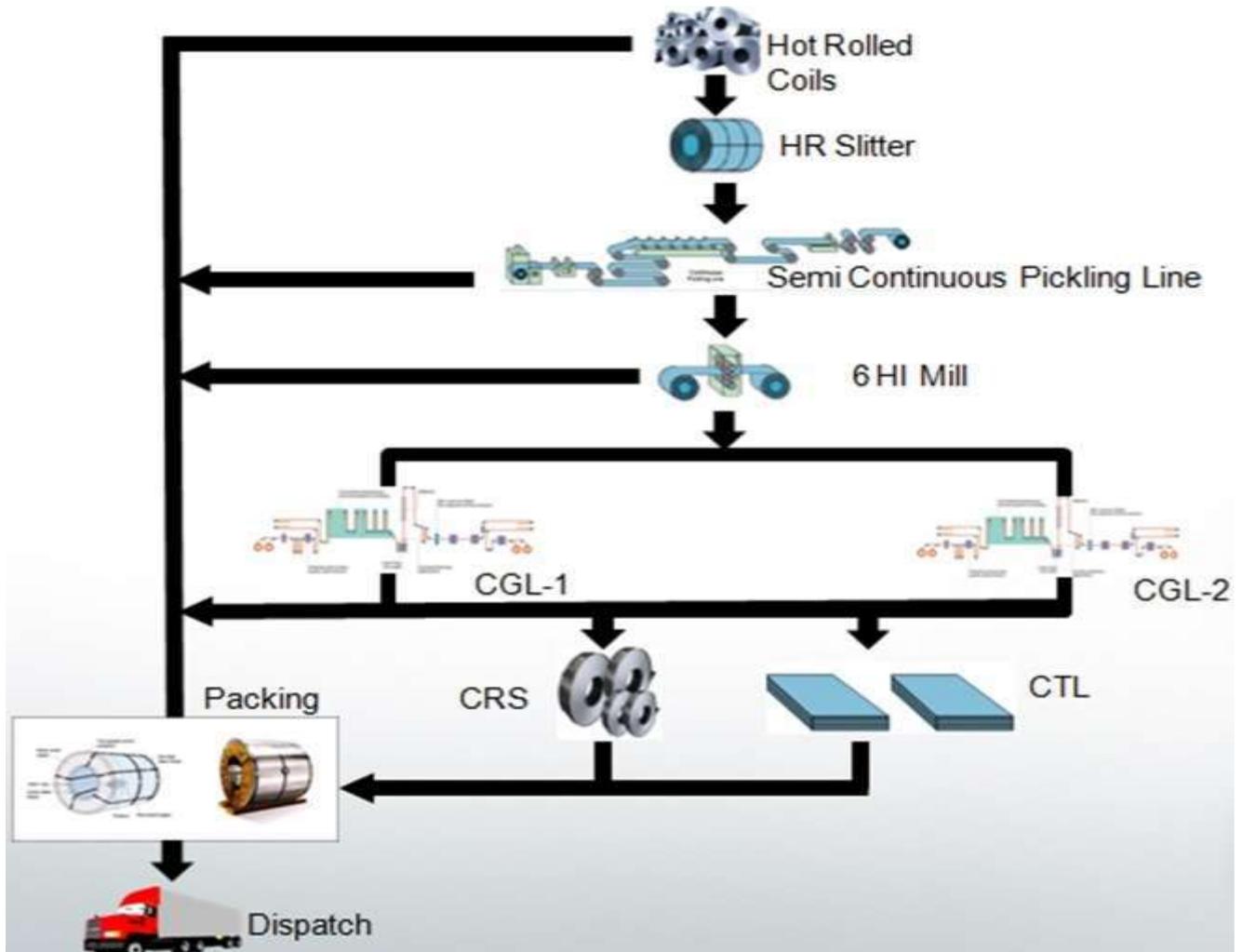
Modules from A5 to B7 are not included (X refers to considered stage; N refers to not relevant stage and ND to not declared stage).

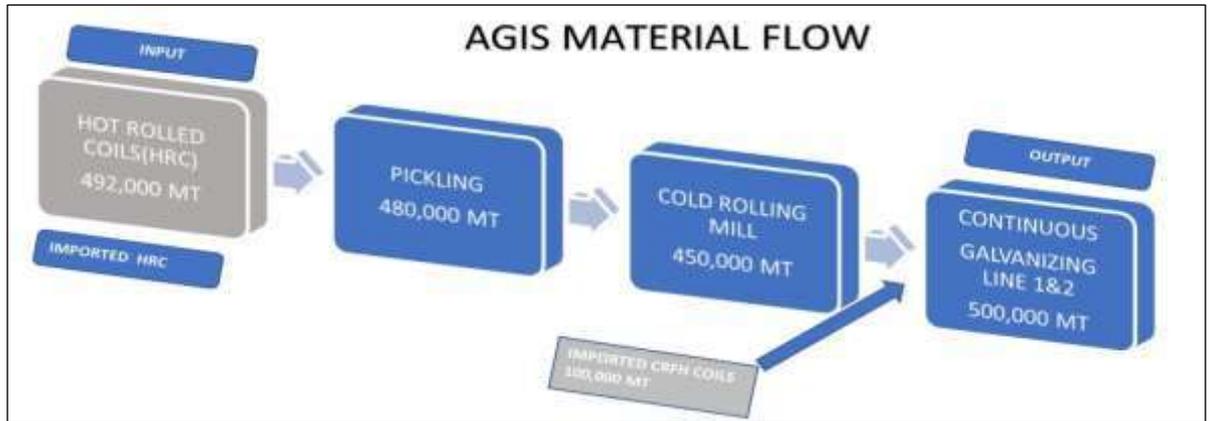


5.5 The following diagram is a more detailed description of the modules.



The following diagram is a more detailed description of the A3 phase.





5.6 Content Declaration

Product Components	Weight Kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	970.50	10-25	0
Zinc	29.38	0	0
Chrome Passivator	0.12	0	0
Total	1000.00	10-25	0

Packaging Materials			
Packaging Materials	Weight Kg	Weight % (Versus the Product)	Weight biogenic carbon, kg C/kg
Wooden Pallet*	274000	0.056	0
Steel Strap	133000	0.028	0
Bags/LDPE	153000	0.032	0
Total	560000	0.116	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 square meter. 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 Abu Dhabi, United Arab Emirates, has been used for this LCA.

Calculation Rules: Datasets from Ecoinvent 3.9.1 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:

- Iron Oxide
- Zinc Oxide

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).

Hot Dip Galvanized Steel Coil

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	1.73E+03	1.31E+02	1.21E+02	7.59E+01	ND	ND	8.57E-01	5.82E+00	1.24E+03	3.05E-01	-1.58E+03
Climate change (GWP) – biogenic	kg CO2e	1.97E+00	1.83E-02	2.14E+00	8.54E-03	ND	ND	2.84E-04	0.00E+00	3.51E+00	1.40E-04	-9.65E-01
Climate change (GWP) – LULUC	kg CO2e	1.20E+00	7.45E-02	6.56E-02	3.49E-02	ND	ND	2.45E-04	0.00E+00	2.03E+00	1.08E-04	-7.13E-01
Climate change (GWP) – total	kg CO2e	1.73E+03	1.31E+02	1.23E+02	7.59E+01	ND	ND	8.58E-01	5.82E+00	1.25E+03	3.06E-01	-1.58E+03
Ozone depletion	kg CFC11e	6.98E-05	2.16E-05	7.62E-06	1.01E-05	ND	ND	5.80E-08	0.00E+00	7.40E-05	8.81E-09	-6.21E-05
Acidification	mol H+e	7.32E+00	3.55E+00	7.74E-01	1.66E+00	ND	ND	4.76E-03	2.05E-03	5.89E+00	2.30E-03	-6.03E+00
Eutrophication, aquatic freshwater	kg PO4e	2.27E+00	1.04E-02	4.65E-01	4.88E-03	ND	ND	1.26E-04	0.00E+00	1.60E+00	7.82E-05	-1.96E+00
Eutrophication, aquatic freshwater	Kg P eq	7.39E-01	3.40E-03	1.52E-01	1.59E-03	ND	ND	4.10E-05	0.00E+00	5.20E-01	2.55E-05	-6.38E-01
Eutrophication, aquatic marine	kg Ne	1.67E+00	8.77E-01	3.07E+00	4.11E-01	ND	ND	9.23E-04	1.02E-03	1.12E+00	8.66E-04	-1.40E+00
Eutrophication, terrestrial	mol Ne	1.78E+01	9.74E+00	2.24E+00	4.57E+00	ND	ND	8.34E-03	1.15E-02	1.21E+01	9.43E-03	-1.49E+01
Photochemical ozone formation	kg NMVOCe	7.32E+00	2.52E+00	4.02E-01	1.18E+00	ND	ND	7.75E-03	3.03E-03	4.44E+00	3.28E-03	-6.61E+00
Abiotic depletion, minerals & metals	kg Sbe	4.10E-02	1.49E-04	1.71E-04	6.98E-05	ND	ND	5.78E-07	0.00E+00	1.14E-02	4.22E-07	-3.60E-03
Abiotic depletion of fossil resources	MJ	1.68E+04	1.47E+03	2.72E+03	6.88E+02	ND	ND	5.98E+01	0.00E+00	1.50E+04	8.05E+00	-1.40E+04
Water use	m3e depr.	6.63E+02	3.31E+00	5.79E+03	1.55E+00	ND	ND	1.03E-01	0.00E+00	8.05E+02	3.53E-01	-4.01E+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	1.50E-04	3.41E-06	1.00E-05	1.63E-04	ND	ND	3.27E-08	1.08E-08	8.00E-05	4.91E-08	-1.40E-04
Ionizing radiation, human health	kBq U235e	6.69E+01	6.29E+00	3.72E+00	7.69E+01	ND	ND	1.17E-02	0.00E+00	1.01E+02	4.63E-03	-3.93E+01
Eco-toxicity (freshwater)	CTUe	1.56E+04	4.05E+02	8.30E+03	2.43E+04	ND	ND	2.84E+01	1.74E-02	7.09E+03	3.12E-01	-4.68E+03
Human toxicity, cancer effects	CTUh	8.66E-06	4.39E-08	4.25E-07	9.13E-06	ND	ND	3.11E-10	2.00E-10	2.00E-05	8.69E-11	-7.56E-06
Human toxicity, non-cancer effects	CTUh	2.00E-05	3.76E-07	1.00E-05	3.04E-05	ND	ND	6.21E-09	3.85E-09	1.00E-04	1.21E-09	-1.00E-05
Land use related impacts/soil quality	Dimensionless	7.50E+03	1.84E+02	9.58E+02	8.64E+03	ND	ND	3.02E+00	0.00E+00	5.74E+03	5.11E+00	-6.44E+03

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 CO ₂ e	1.73E+03	1.31E+02	1.21E+02	7.59E+01	ND	ND	8.57E-01	5.82E+00	1.24E+03	3.05E-01	-1.58E+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	1.22E+03	9.27E+00	7.91E+01	4.34E+00	ND	ND	1.11E-01	0.00E+00	1.30E+03	6.62E-02	-8.57E+02
Renewable PER used as materials	MJ	3.70E+00	4.10E-02	4.08E-01	1.92E-02	ND	ND	5.04E-04	0.00E+00	4.63E+00	2.72E-04	-2.40E+00
Total use of renewable PER	MJ	1.22E+03	9.31E+00	7.95E+01	4.36E+00	ND	ND	1.12E-01	0.00E+00	1.30E+03	6.65E-02	-8.59E+02

Non-renew. PER used as energy	MJ	1.68E+04	1.47E+03	3.13E+03	6.88E+02	ND	ND	5.98E+01	0.00E+00	1.50E+04	8.05E+00	-1.40E+04
Non-renew. PER used as materials	MJ	5.90E-03	2.45E-05	4.33E-04	1.15E-05	ND	ND	2.98E-07	0.00E+00	3.35E-03	5.69E-06	-5.19E-03
Total use of non-renewable PER	MJ	1.68E+04	1.47E+03	3.13E+03	6.88E+02	ND	ND	5.98E+01	0.00E+00	1.50E+04	8.05E+00	-1.40E+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	5.83E+02	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	8.21E+07	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	2.71E+07	0.00E+00
Non-hazardous 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
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	-5.15E+08
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".

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 2.10E+04 (20958.37) MJ. In A1 – A3, the raw material (steel) (80.02%), production process (12.96%) has the highest impacts. A total credit of -1.40E+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 1.98E+03 (1983.85) kg CO2 eq. In A1 – A3, the raw material (steel) (87.31%) followed by transportation A2 (6.58%) has the highest impacts. A total credit of -1.58E+03(1582.86) kg CO2 eq is taken in the module D.
Water use	Indicator of the relative amount of water used, based on regionalized water scarcity factors.	The total cradle to gate impact is 3.66E+01 (6.459.71) m3e depr. In A1 – A3, the production (89.69%) A total credit of -4.01E+02(401.348) kg CO2 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 (Hot Rolled Steel Coils)

AGIS has purchased Hot Rolled Steel coils total of 524842 MT during the period of January to December 2023. From which 393869 MT has recycle content between 10 to 25% as declared by their manufacturers.

Recycling Initiative – Processing Stage

Spent Acid, Rinse Water, Regenerated Acid used in the galvanizing process are recycled internally.

Recycling Content – End of Life

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

8.2 Information related to Sector EPD

This is not a sector EPD.

8.3 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-202406-35
Date of Publication	17.06.2024
Valid until	16.06.2029
Geographical Scope	Global
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 standard 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

10.0 CONTACT INFORMATION

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Verifier Details	Name: Mr.Luis Manuel Location: San Adrián, Spain Accredited by: International Climate Intelligence System	

11.0 REFERENCES

LCA Report: Life Cycle Inventory of Hot Dip Galvanized Steel Coil.

Software: Air.e LCA Version 3.16.3.4 www.solidforest.com

Main database: Ecoinvent 3.9.1 www.ecoinvent.org

Geographical scope of the EPD: Global

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

GALVANISED STEEL FOR ALL APPLICATIONS



AGIS

Al Ghurair Iron & Steel LLC

الغريير للحديد والاعستيل (ذ.م.م.)