Environmental Product Declaration

Under PCR 2012:01 Construction products and construction services

Environmental Product Declaration in accordance with ISO 14025 and EN 15804 for:

Pre-painting of Aluminium & Galvanized Steel Coils by United Metal Coating

Program:	The International EPD® System www.environdec.com
Program operator:	EPD International AB
EPD registration number:	S-P-01371
Issue date:	2018/09/10
Validity date:	2023/09/10 An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.
Geographical scope:	Global

GENERAL INFORMATION

Service Provider

United Metal Coating L.L.C.

Dubai Industrial Park
P.O. 181837, Dubai
United Arab Emirates

United Metal Coating LLC has been founded in the year 2007 in Dubai and begun commercial operations in the year 2009. UMC is a part of AJ Group of companies with diversified interests in building and industrial sector in U.A.E for more than two decades.

UMC has set up its first coil coating line with an annual production capacity of 25,000 Metric Tons of Pre-Painted Aluminium coils (Equivalent of 70,000 Metric Tons of Pre-Painted Galvanized Steel coils). UMC has increased the production capacity by adding the second coil coating line to achieve annual production capacity of 50,000 Metric Tons of Pre-Painted Aluminium coils (Equivalent of 140,000 Metric Tons of Pre-Painted Galvanized Steel coils).

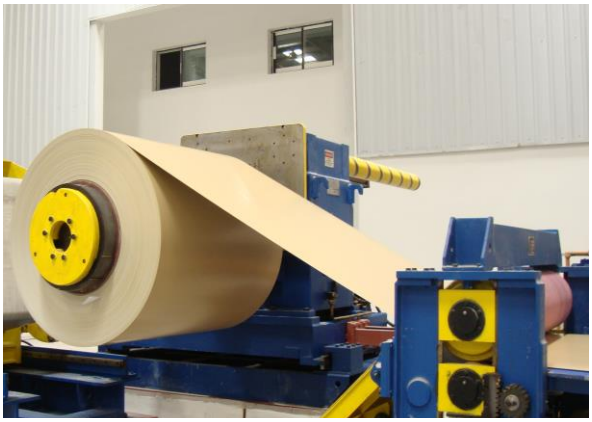
Service

The services described and analysed in this declaration comprises the **Pre-Painting of Aluminium and Galvanized Steel Coils** in the facilities of UMC in Dubai, including international shipments of materials and finished products.

Pre-Painted aluminium and galvanized steel products are used in a wide variety of applications, mainly in the building and construction sectors, but also in many other industries. The painting of coils not only enhance the appearance of buildings where these metal products are used, but also makes final products more durable and resistant to corrosion.

Applications of pre-painted aluminium and galvanized steel coils:

- Roofing & Claddings of commercial & residential buildings, airports, stadiums and shopping malls.
- Facade & Awnings
- Interior ceilings
- Cold storage
- Rolling shutters
- Lighting industries
- Automobile
- Home appliances
- Signage boards
- Truck bodies
- Hospitals and Hygiene End uses



Various types of coating systems used for the manufacturing of pre-painted aluminium and galvanized steel coils by United Metal Coating:

- Regular Modified Polyester coating
- High Durable Polyester coating
- High Build Poly Urethane Poly Amide coating consisting thickness up to 200 microns
- PVDF/FluoroPolymer – 2/3/4 Layer Coating thickness up to 150 microns
- Poly Urethane Poly Amide
- Plastisol Smooth Finish Coating
- SMP Coating
- Anti-Bacterial /Hygiene coating for Hospital, Clinics & Food Processing Industries
- Printed Design in Oak, Wall nut, Cherry wood finish, Marble finish
- Bright Finish Aluminum coated products for decorative end applications
- Thermal Reflection Coating

Declared Unit

This EPD presents the impact of the painting service of aluminium or galvanized steel coils to produce 1m2 of pre-painted metal.

This EPD covers all service stages, from "cradle to grave" of the service itself, but shall be noticed that, when referring to the final product where the declared unit is intended to be used, the scope of this EPD covers "cradle to gate" stages.

Simplified Service Process. Boundaries.

A simplified model of the process of coil pre-painting is described, enumerating the main activities included in the system boundaries.

In the boundaries of this EPD, the end of the service is at the gate of the product manufacturer, who will use the pre-painted metal in its own construction (or other sectors) product. According to the PCR *2012:01 Construction products and construction services*, the stages included in this EPD covers "Product Stage" and "Construction process stage".

It is relevant to consider that pre-painted galvanized steel and aluminium waste processing is not relevant since coated galvanized steel and aluminium products at the end of their life do not need any treatment before recovery/disposal processes.

It shall also be noticed that this EPD refers to the painting service, not the surface where the coating is applied. For this reason, raw materials in Module A1 do not include the coils themselves, but the paint and other substances incorporated during the service

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

Modules from A5 to D are not included (X refers to considered stage, NR refers to not relevant stage and ND to not declared stage).

Possible scopes of the LCA defined in PCR 2012:01 "Construction products and construction services":

Product 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
A1	**A2**	**A3**	**A4**	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	**X**	**X**	**X**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

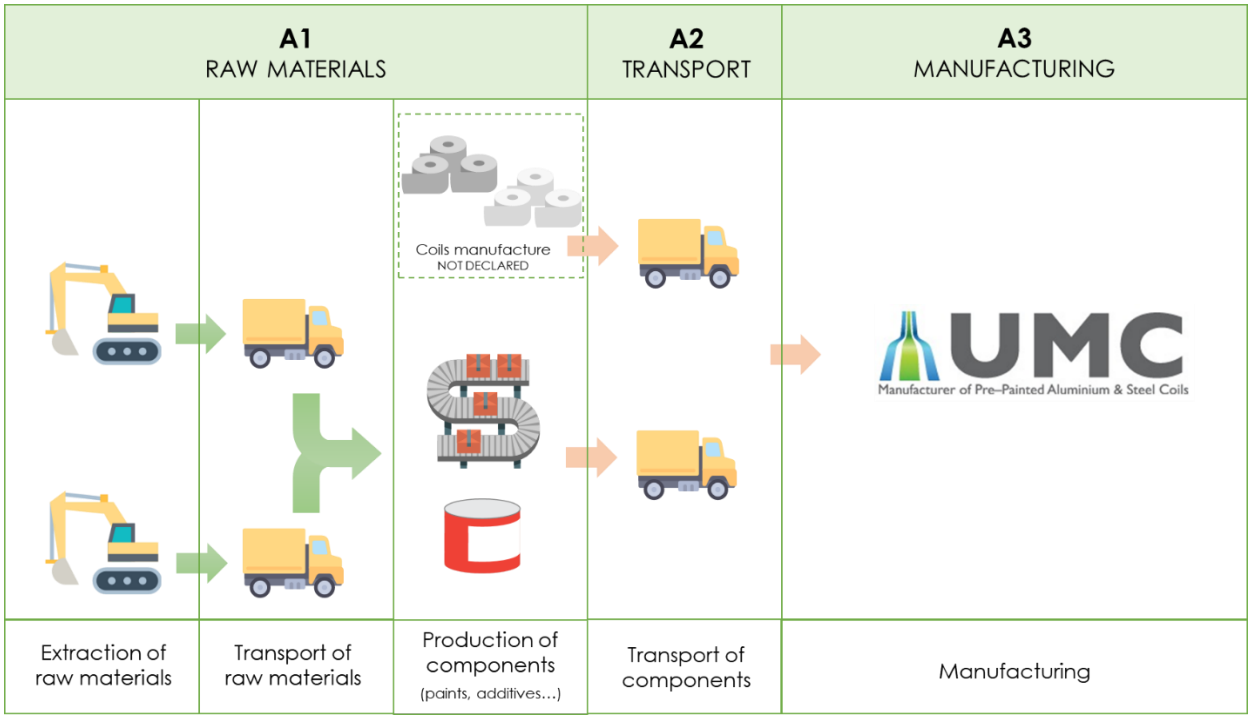
X = Included, ND=Module not declared, NR= Module not relevant

In the following schemes, the modules are linked to the real phases of the service.

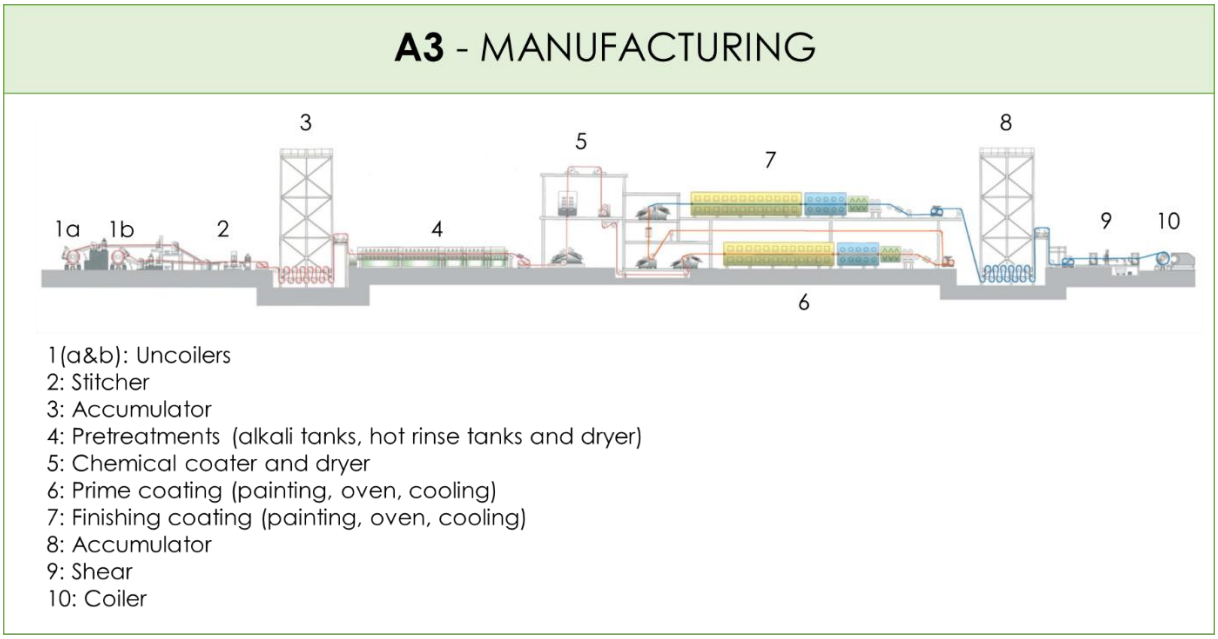
Product Stage

The raw materials such as aluminium coils, galvanized steel coils, paints and other components are transported to the factory where Pre-Painted coils are manufactured. The manufacture of coils is out of the system boundaries.

Once the raw material and other components are manufactured, they are transported to the facilities of UMC, where the coil pre-painting process is performed. According to the PCR that is the A3 stage "manufacturing". As stated, the coils themselves are not declared in this EPD and not included in the performed analysis.



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



Content declaration

The following list includes the main components and materials used in the manufacture of the Pre-Painted coils.

Material	Weight	Unit
Paints (electrostatic painting)	1,03 e-1	kg/m^2 of coil
BUTYL GLYCOL - NC-185	1,06 e-3	kg/m^2 of coil
NAPTHA-100 C9 RD180	1,37 e-3	kg/m^2 of coil
Other solvents	1,11 e-3	kg/m^2 of coil
Thinners	5,33 e-3	kg/m^2 of coil
Other chemicals	2,34 e-3	kg/m^2 of coil

Substances listen 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)	0.17%	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

Technical Information

Transport to the construction site Stage – A4

The Pre-painting of aluminium & galvanized steel coils service is provided to customers all over the world. To create a scenario of the A4 phase, all the coils sold during a whole year has been analysed as representative of the international transport. The transport means are international cargo ships and >32t trucks, as described in the following table.

[1] REGULATION (EC) N° 1272/2008

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)	50.000.000
	Fuel type and consumption	Litres of heavy fuel oil per km	0,24
	Distance to construction site	Km	See detailed table
	Capacity utilization	%	See detailed table
	Bulk density of transported products	Kg/m3	n/a
	Volume capacity utilisation factor	n/a	1
A4 – Truck	Vehicle type used for transport	> 32t Truck	n/a
	Vehicle load capacity	Kg	29.960 kg
	Fuel type and consumption	Litres of diesel per km	0,38
	Distance to construction site	Km	See detailed table
	Capacity utilization	%	See detailed table
	Bulk density of transported products	Kg/m3	n/a
	Volume capacity utilisation factor	n/a	1

For every destination, the total amount of products delivered to customers have been taken to account according to the following detailed table:

Mean of transport	Destination[2]	Distance	% of UF
Cargo ship	1	4491 nm	0.36
	3	6310 nm	0.67
	4	3141 nm	0.45
	5	6310 nm	0.40
	6	1135 nm	1.00
	7	2828 nm	0.36
	8	447 nm	1.37
	9	3197 nm	1.53
	10	5088 nm	0.72
	14	4418 nm	0.09
	15	6567 nm	0.20
	16	4155 nm	0.18
	17	3788 nm	1.54
	19	8181 nm	0.54
Truck	2	940 km	0.31
	3	200 km	0.67
	4	220 km	0.45
	5	720 km	0.40
	6	1450 km	1.00
	7	325 km	0.36
	10	300 km	0.72
	11	420 km	1.65
	12	654 km	1.47
	13	1000 km	13.66

[2] Final destination name hidden for confidential purposes

	14	420 km	0.09
	15	1000 km	0.20
	17	200 km	1.54
	18	60 km	73.49
	19	700 km	0.54

Calculation rules

Version 3,2 of software Air.e LCA™ with ecoinvent™ 3.4 database have been used for LCA modelling and impacts calculations.

CML 2001 rev 4.7 has been used for impacts methods.

Annual Statistics 2017 report from Dubai Electricity and Water Authority has been used to create the model of Dubai electricity mix.

All processes in main facilities related to the service have been included in the assessment.

Minor components not directly related to the service, with less than 1% impact, such as office supplies, have been excluded from the assessment.

Only main transport means have been included for materials purchases and delivery of coils. "Last mile" transport has been excluded. As far as final destinations of coils are not known in detail, transport distances has been calculated from factory to city purchaser. Short distance transport of coils to Dubai port has been excluded of the assessment. Operation in port has also been excluded.

Road distances calculated using Google Maps. Maritime distances calculated using MarineTraffic Voyage Planner.

All transport of components has been included in the LCA considering real distances travelled by materials using during 2017. Transport of raw materials needed to manufacture components are estimated in a global scale according to ecoinvent™ criteria.

The Polluter Payer Principle and the Modularity Principle had been followed.

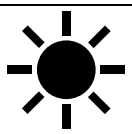
ENVIRONMENTAL PERFORMANCE

In the following tables, the environmental performance of the declared unit is presented for every sub-phase.

Potential Environmental Impact

	A1-A3 Product stage	A4 Distribution	**Total**
Global Warming Potential (GWP100) (kg of CO_2 equivalent)	1,42	0,06	**1,48**
Ozone depletion (kg of CFC11 equivalent)	2,8e-7	0,01-7	**2,81e-7**
Acidification of land and water (kg of SO_2 equivalent)	6,1e-3	0,44e-3	**6,64e-3**
Eutrophication (kg of PO_4^{3-} equivalent)	1,47e-3	5,90e-5	**1,53e-3**
Photochemical ozone creation (kg of C_2H_4 equivalent)	4,94e-4	0,17e-4	**5,11e-4**
Depletion of abiotic resources (elements) (kg of Sb equivalent)	493,93	16,40	**510,33**
Depletion of abiotic resources (fossil) MJ net calorific value	23,16	0,93	**24,09**

Use of resources

	A1-A3 Product stage	A4 Distribution	**Total**
Use of RENEWABLE primary energy excluding renewable primary energy resources used as raw materials	1,13	0,08	**1,21**
Use of RENEWABLE primary energy resources used as raw materials	<0,01	<0,01	**<0,01**
Total use of RENEWABLE primary energy resources (primary energy and primary energy resources used as raw materials)	1,13	0,08	**1,21**

Data in MJ, net calorific value

	A1-A3 Product stage	A4 Distribution	**Total**
Use of NON- RENEWABLE primary energy excluding non- renewable primary energy resources used as raw materials	23,85	0,95	**24,8**
Use of NON-RENEWABLE primary energy resources used as raw materials	<0,01	<0,01	**<0,01**
Total use of NON-RENEWABLE primary energy resources (primary energy and primary energy resources used as raw materials)	22,85	0,95	**23,8**

Data in MJ, net calorific value

	A1-A3 Product stage	A4 Distribution	**Total**
Use of secondary material	<0,01	<0,01	**<0,01**

Data in kg

	A1-A3 Product stage	A4 Distribution	**Total**
Use of net fresh water	1,87	0,06	**1,93**

Data in m3

	A1-A3 Product stage	A4 Distribution	**Total**
Use of RENEWABLE secondary fuels	<0,01	<0,01	**<0,01**
Use of NON-RENEWABLE secondary fuels	<0,01	<0,01	**<0,01**

Data in MJ, net calorific value

PROGRAMME-RELATED INFORMATION AND VERIFICATION

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com
EPD registration number:	S-P-01371
Published:	2018/09/10
Valid until:	2023/0910
Product Category Rules:	PCR 2012:01 Construction Products and Construction Services. Version 2.2
Product group classification:	UN CPC 88211
Reference year for data:	2017
Geographical scope:	Global

Product category rules (PCR): PCR 2012:01 Construction products and Construction services. Version 2.2, 2017-05-30 CEN standard EN 15804 served as the core PCR
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025:2006: ☐ EPD Process Certification ☑ EPD Verification
Third party verifier: Marcel Gómez. Marcel Gómez Consultoría Ambiental - ambiental.info@marcelgomez.com Accredited by: The International EPD System

MANDATORY STATEMENTS

Explanatory material can be obtained from EPD owner and/or LCA author. Contact information can be found below.

EPDs of construction products may not be comparable if they do not comply with EN 15804.

EPDs within the same product category but from different programmes may not be comparable.

CONTACT INFORMATION

EPD owner:	United Metal Coating L.L.C. Dubai Industrial Park P.O. 181837, Dubai, UAE www.umcuae.ae Tel +971 4 425 3976 info@umcuae.ae
LCA author:	S. Beskirajan, GCAS Quality Certifications P.O.Box 65561, Dubai, UAE www.gcasquality.com info.dubai@gcasquality.com R. Jiménez, Solid Forest S.L. CP28703, San Sebastián de los Reyes, SPAIN www.solidforest.com info@solidforest.com
Programme operator:	EPD International AB info@environdec.com

REFERENCES

This declaration has been developed referring to the International EPD® System, following the General Programme Instructions of the International EPD® System, version 2.5, PCR 2012:01 "Construction products and construction services". Further information and the document itself are available at: www.environdec.com.

LCA Report: Life Cycle Inventory of Coating & Painting of Aluminum & Steel Coils by United Metal Coating

Software: Air.e LCA rev. 3.2.12 (www.solidforest.com)

Main database: Ecoinvent 3.4 (www.ecoinvent.org)

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 procedure

VERIFICATION REPORT FOR EPD OF CONSTRUCTION PRODUCT IN THE INTERNATIONAL EPD® SYSTEM

INTRODUCTION

This document serves as the verification report template of Environmental Product Declarations (EPD) of construction products in the International EPD® System.

This template is mandatory to use for verification of EN 15804-compliant EPDs for construction products in the International EPD® System for both EPD verification and EPD Process Certification. A signed copy of this verification report shall be submitted to the Secretariat as a part of the EPD registration and publication. The verification report shall be available to any person upon request.

This is a living document based on the ECO Platform Guidance Paper Verification Version 1.1 dated October 2015. See www.environdec.com for the latest version.

EPD INFORMATION

Registration number of EPD(s): *As provided by the Secretariat*	S-P-01371
Product name(s):	Pre-painting of Aluminium & Galvanized Steel Coils
EPD owner:	United Metal Coating
Product Category Rules (PCR): *Registration number, name and version*	2012:01 Construction products and construction services v 2.2
EPD valid until: *As set by the verifier*	2023/09/10
Additional comments from verifier:	Click to add text.

VERIFICATION STATEMENT

I hereby confirm that, following the checks performed, in accordance with the limits of the scope of our appointment, nothing has come to the verifier's attention to suggest any data errors or deviations from the requirements by the above-referenced EPD and its project report, in terms of

- the underlying data collected and used for the LCA calculations,
- the way the LCA-based calculations has been carried out to comply with the calculation rules,
- the presentation of environmental performance included in the EPD, and
- any other information included in the declaration

with respect to the procedural and methodological requirements in ISO 14020:2000, ISO 14025:2006, the General Programme Instructions of the International EPD® System, EN 15804:2012+A1:2013 and the reference PCR.

I confirm that, in accordance with the limits of the scope of our appointment, the company-specific data has been examined as regards plausibility and consistency. The declaration owner is responsible for its factual integrity and that the product does not violate relevant legislation.

I confirm that I have sufficient knowledge and experience of construction products, the construction industry, relevant standards and the geographical area of the EPD to carry out this verification.

I confirm that I have been independent in my role as verifier in accordance with the requirements in General Programme Instructions, i.e. I have not been involved in the execution of the LCA or in the development of the declaration, and have no conflicts of interest regarding this verification.

Name and organization of verifier:	Marcel Gómez Ferrer, Marcel Gómez Consultoria Ambiental
Date and location:	El Masnou (Spain), the 11th of September 2018
Signature: *Add as image or print and sign this document*	

Only in case of EPD Process Certification:

Signature of EPD process owner: *Add as image or print and sign this document*	