



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Charter Coating Service (2000) Ltd.

Suite 6-4604 13th Street NE
Calgary, Alberta, Canada T2E 6P1

Fulfills the requirements of

ISO/IEC 17025:2017

In the field of

TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 08 November 2022
Certificate Number: L2337



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Charter Coating Service (2000) Ltd.

Suite 6-4604 13th Street NE
Calgary, Alberta, Canada
T2E 6P1
Amal Al-Borno
403 250 3027

TESTING

Valid to: **November 08, 2022**

Certificate Number: **L2337**

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Flexibility	CSA Z245.20 Section 12.11, ISO 21809-1 Annex I, ISO 21809-2 Annex A.13, NACE TM0404 Section 12, NACE TM0304 Section 12, NACE SP0394 Appendix H, Procedure A, API 5L7 Appendix 13, API 5L9 Appendix I.1 Mandrel Method	Coated Panel	Flexibility Machine and Mandrel
Mandrel Bend	ASTM D522/D522M ISO 6860	Coated Panel	Mandrel
Impact Resistance	CSA Z245.20 Section 12.12, ASTM G14, ASTM D2794, ISO 21809-1 Annex E, ISO 21809-2 Annex A.14, ISO 21809-3 Annex D, NACE SP0394 Appendix I, API 5L9 Appendix J, API 5L7 Appendix 14	Coated Panel or External Coated Pipe	Impact Testing Equipment
Gel Time of Epoxy Powder	CSA Z245.20 Section 12.2, ISO 21809-1 Annex J	Epoxy Powder	Hot Plate, timer

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Soak Adhesion	CSA Z245.20 Section 12.14, ISO 21809-1 Annex L, ISO 21809-2 Annex A.16, ISO 21809-3 Annex I, NACE SP0394 Appendix J, API 5L9 Appendix J, API 5L7 Appendix 16	Coated Panel or External Coated Pipe	Hot water bath; thermometer
Peel Adhesion (Hanging Mass)	CSA Z245.21 Section 12.5, ISO 21809-1 Annex C	Coated Panel or External Coated Pipe	Hanging masses
Peel Adhesion (Constant Rate of Peel)	CSA Z245.21 Section 12.4, ISO 21809-3 Annex H, ISO 21809-1 Annex C, ISO 813 (Modified)	Pipe Ring, Layers of Coating or Coated Panel	Tensile Testing Machine
Interface Contamination	CSA Z245.20 Section 12.9, ISO 21809-2 Annex A.11, NACE SP0394 Appendix K, API 5L9 Appendix K	Coated Panel or External Coated Pipe	Microscope
Gouge Resistance	CSA Z245.20 Section 12.15, CSA Z245.21 Section 12.7, NACE TM0215	Coated Panel or External Coated Pipe	Gouge Tester
Lap Shear Strength	ASTM D1002, ISO 21809-3 Annex J	Coated Panel or External Coated Pipe	Tensile Testing Machine
Shore Hardness	ASTM D2240, ASTM D3363	Coated Panel or External Coated Pipe	Durometer Shore A and D
Taber Abrasion	ASTM D4060, ISO 9352	Coated Panel	Taber Abrasion Machine
Adhesion by Knife	ASTM D6677, ASTM D3359, ISO 21809-2 Annex A.4, ISO 21809-3 Annex Q, API 5L2 Appendix D	Coated Panel or External Coated Pipe	Knife
Pull - Off Adhesion	ASTM D4541 Method D, ASTM D7234 ISO 4624, API 5L7 Appendix 9	Coated Panel	Self-alignment adhesion tester Type IV
Penetration (Indentation) Resistance	ASTM G17, ISO 21809-1 Annex F, ISO 21809-3 Annex E	Coated Panel or External Coated Pipe	Blunt Rod
Water Vapour Transmission	ASTM D1653, ASTM E96 / ASTM E 96M	Coating Free Film	Environment Chamber
Water Absorption	ASTM D570, ISO 62	Coating Free Film	Environment Chamber

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Tensile Strength and Elongation	ASTM D638, ASTM D2370, ISO 527-3	Coating Free Film	Tensile Testing Machine

Environmental Simulation

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Cathodic Disbondment	CSA Z245.20 Section 12.8, CSA Z245.21 Section 12.3, ASTM G8; ASTM G42; ASTM G95; ASTM D 6676/D6676M, ISO 21809-1 Annex H, ISO 21809-2 Annexes A.9, A.10, A.15, ISO 21809-3 Annex G, NACE SP0394 Appendix F, API 5L9 Appendix G, API 5L7 Appendix 11, ISO 15711, NACE TM0115, NACE TM0404 Section 11, NACE TM0304 Section 11	Coated Panel or External Coated Pipe	Power source, CD voltage divider, salt solution cells
Water Resistance (20 to 95) °C	ASTM D870	Coated Panel or External Coated Pipe	Water Immersion Test
Chemical Resistance	API 5L7 Appendix 12, API 5L9 Appendix H, NACE TM0174 Procedure B	Coated Panel	Beaker
Chemical Resistance	ASTM D543 Procedure I	Coating Free Film	Mandrel and Autoclave
Chemical Resistance (Temperature) (20 to 200) °C	ASTM C6943, NACE TM0174 Procedure A	One Side Coated Panel	Standard Atlas Cell under atmospheric pressure
Chemical Resistance (pressure/temperature) (20 to 200) °C (Up to 2 000) psi	NACE TM0174 Procedure A	One Side Coated Panel	Pressurized Atlas Cell
Electrochemical Impedance Spectroscopy (EIS)	ISO 16773-2	Coated Panel	Impedance Measuring Equipment
Autoclave (20 to 350) °C (Up to 8 500) psi	NACE TM0185, API 5L7 Appendix 10	Coated Panel	Autoclave

Environmental Simulation

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Salt Spray	ASTM B117 ASTM G85 ISO 9227 ISO 11997-1	Coated Panel or External Coated Pipe	Salt Spray Chambers
UV Exposure	ASTM D4587 ASTM G154 ISO 16474-3 ASTM G151	Coated Panel or External Coated Pipe	UV Chamber (Condensation and/or UV Cycles)
Salt Spray / UV Exposure	ASTM D5894, ISO 11997-2	Coated Panel or External Coated Pipe	Salt Spray Chamber and UV Chamber
Xenon Exposure	ASTM G155	Coated Panel or External Coated Pipe	Xenon Test Chamber
Evaluation of Blistering	ASTM D714, ISO 4628-2	Coated Panel or External Coated Pipe	Visual Evaluation
Evaluation of Chalking	ASTM D4214, ISO 4628-6	Coated Panel or External Coated Pipe	Visual Evaluation
Evaluation of Checking	ASTM D660, ISO 4628-4	Coated Panel or External Coated Pipe	Visual Evaluation
Evaluation of Cracking	ASTM D661, ISO 4628-4	Coated Panel or External Coated Pipe	Visual Evaluation
Evaluation of Rusting	ASTM D610, ISO 4628-3	Coated Panel or External Coated Pipe	Visual Evaluation
Evaluation of Flaking	ASTM D772, ISO 4628-5	Coated Panel or External Coated Pipe	Visual Evaluation
Heat Ageing	CSA Z245.21 Section 12.6, ISO 21809-3 Annexes M & N	Free film, Coating Materials	Oven

Chemical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Glass Transition Temperature (T _g) and/or Heat of Fusion (ΔH)	ASTM D3418, ASTM E1356, CSA Z245.20 Section 12.7, ISO 21809-1 Annex D, ISO 21809-2 Annex 8, ISO 21809-3 Annex P, ISO 11357-2, ISO 11357-3, NACE SP0394 Appendix D, API 5L9 Appendix C, API 5L7 Appendix 5	Fusion Bonded Epoxy Powder or Applied Coating Sample; Liquid Epoxy or Applied Coating Sample	Differential Scanning Calorimetry (DSC)

Chemical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Infrared Spectra Analysis	ASTM E1252 Section 7.9; TWI-504-18	Organic Coating	Attenuated Total Reflectance - Fourier Transform Infrared Spectroscopy (ATR-FTIR)
Porosity of the Coating	CSA Z245.20 Section 12.10, ISO 21809-2 Annex A.12, API 5L9 Appendix K, API 5L7 Appendix 15	Applied Organic Coating	Microscope

Non-Destructive Testing

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Film Thickness	ASTM D7091, ISO 21809-1 Annex A, ISO 21809-3 Annex B	Organic Coating Coated Panel or Pipe	Thickness Gauge Non-Ferrous Substrate: (0 to 80) mils
Specular Gloss	ASTM D523	Coated Panel	Gloss Meter

Electrical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Holiday	NACE SP 0188, ASTM G62, ASTM D5162, ISO 21809-1 Annex B, ISO 21809-3 Annex C	Organic Coating Coated Panel or Pipe	Sponge and high voltage spark holiday detection

Note:

1. This laboratory offers commercial testing service.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. L2337.



R. Douglas Leonard Jr., VP, PILR SBU