



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Charter Coating Service (2000) Ltd.
Suite 6-4604 13th Street NE
Calgary, AB Canada

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the fields of

TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations and/or tests to which this accreditation applies.

L2337

Certificate Number



ANAB Approval

Certificate Valid: 11/05/2018-11/08/2020
Version No. 002 Issued: 11/05/2018



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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 17025:2005

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 8, 2020

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 | |
| Mandrel Bend | ASTM D522/D522M ISO 6860 | Coated Panel | |
| 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 | |
| Gel Time of Epoxy Powder | CSA Z245.20 Section 12.12, ISO 21809-1 Annex J | Epoxy Powder | |

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 M, 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 | |
| Peel Adhesion (Hanging Mass) | CSA Z245.21 Section 12.5, ISO 21809-1 Annex C | Coated Panel or External Coated Pipe | |
| 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 | |
| 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 | |
| Gouge Resistance | CSA Z245.20 Section 12.15, CSA Z245.21 Section 12.7, NACE TM0215 | Coated Panel or External Coated Pipe | |
| Lap Shear Strength | ASTM D1002, ISO 21809-3 Annex J | Coated Panel or External Coated Pipe | |
| Hardness | ASTM D2240, ASTM D3363 | Coated Panel or External Coated Pipe | |
| Taber Abrasion | ASTM D4060, ISO 9352 | Coated Panel | |
| 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 | |
| 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 | |
| Water Absorption | ASTM D570, ISO 62 | Coating Free Film | |

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 | |

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 | |
| 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 | |
| Chemical Resistance | ASTM D543 Procedure I | Coating Free Film | |
| 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 – 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 | |
| Autoclave (20 – 350)°C (Up to 8 500) psi | NACE TM0185, API 5L7 Appendix 10 | Coated Panel | |

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 | |
| UV Exposure | ASTM D4587; ASTM G154 ISO 16474-3 ASTM G151 | Coated Panel or External Coated Pipe | Condensation and/or UV Cycles |
| Salt Spray / UV Exposure | ASTM D5894, ISO 11997-2 | Coated Panel or External Coated Pipe | |
| Xenon Exposure | ASTM G155, | Coated Panel or External Coated Pipe | |
| Evaluation of Blistering | ASTM D714, ISO 4628-2 | Coated Panel or External Coated Pipe | |
| Evaluation of Chalking | ASTM D4214, ISO 4628-6 | Coated Panel or External Coated Pipe | |
| Evaluation of Checking | ASTM D660, ISO 4628-4 | Coated Panel or External Coated Pipe | |
| Evaluation of Cracking | ASTM D661, ISO 4628-4 | Coated Panel or External Coated Pipe | |
| Evaluation of Rusting | ASTM D610, ISO 4628-3 | Coated Panel or External Coated Pipe | |
| Evaluation of Flaking | ASTM D772, ISO 4628-5 | Coated Panel or External Coated Pipe | |
| Heat Ageing | CSA Z245.21 Section 12.6, ISO 21809-3 Annexes M & N | Coated Panel or Pipe Ring | |

Chemical

| Specific Tests and/or Properties Measured | Specification, Standard, Method, or Test Technique | Items, Materials or Product Tested | Key Equipment or Technology |
|---|---|---|---|
| Differential Scanning Calorimetry (DSC) | 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 | Glass Transition Temperature (T _g), Heat of Fusion (ΔH) |
| Fourier Transform Infrared Spectroscopy (FTIR) (600 to 4 000)cm ⁻¹ | ASTM E1252 | Organic Coating | Transmission, ATR |
| 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 | |

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 | Non Ferrous Substrate: (0 to 80) mils |
| Specular Gloss | ASTM D523 | Coated Panel | |

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.



Vice President

