



## SCOPE OF ACCREDITATION

**BC Hydro  
POWERTECH LABS INC.  
12388 88th Avenue  
Surrey, BC  
V3W 7R7**

Accredited Laboratory No. 576  
(Conforms with requirements of ISO/IEC 17025:2005)

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CLIENTS SERVED: All interested parties

FIELDS OF TESTING: Chemical/Physical, Electrical/Electronic,  
Mechanical/Physical

PROGRAM SPECIALTY AREA: Environmental

INITIAL ACCREDITATION DATE: 2005-01-13

SCOPE ISSUED ON: 2019-06-13

ACCREDITATION VALID TO: 2021-10-02

### **CONSTRUCTION**

#### **Road and Railway & Civil Constructions:**

##### **Dams**

USACE CERL TR 99/104 Greaseless Bushings for Hydropower Applications



## **ELASTOMERS AND PROTECTIVE AND OTHER COATINGS**

### **Paints; Varnishes; Inks; Coatings; and Allied Products:**

ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
ISO 9227	Corrosion tests in artificial atmospheres - Salt spray tests

### **Plastics; Resins and Rubbers:**

ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension Only for: 9, test method A
ASTM D572	Standard Test Method for Rubber - Deterioration by Heat and Oxygen Only for: 10.2 and 10.4
ASTM D785	Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials Only for: 11, procedure A, Rockwell Hardness Scale R & M
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness Only for: 3.0 and 9.2

## **ELECTRICAL PRODUCTS AND ELECTRONIC PRODUCTS**

### **Communications Equipment and Systems:**

#### **Components and Assemblies**

DNVGL-CG-0339	Environmental test specification for electrical, electronic and programmable equipment and systems Only for: Clause 6 Vibration tests, except for Table 9 Extreme vibration strain
IEC 60068-2-27	Environmental Testing – Part 2-27: Tests - Test Ea and guidance: Shock
IEC 60068-2-6	Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)
IEC 60068-2-64	Environmental testing - Part 2-64: Tests – Test Fh: Vibration, broadband random and guidance
IEC 60945	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results Only for: Clause 8.7 Vibration



IEC 61373

Railway applications - Rolling stock equipment - Shock and vibration tests

## **Telecommunications Equipment**

AeroMACS RCT WMF-T25-006-R010 WiMAX Forum® AeroMACS Radio Conformance Tests

## **Components and Assemblies:**

### **Electrical Rotating Machines**

- |           |   |
|-----------|---|
| IEEE 1043 | IEEE Recommended Practice for Voltage Endurance Testing of Form-Wound Bars and Coils                                |
| IEEE 1310 | IEEE Recommended Practice for Thermal Cycle Testing of Form-Wound Stator Bars and Coils for Large Rotating Machines |
| IEEE 1553 | IEEE Standard for Voltage Endurance Testing of Form-Wound Coils and Bars for Hydrogenerators                        |

### **Insulators**

- |            |   |
|------------|---|
| ANSI C29.1 | American National Standard for Electrical Power Insulators - Test Methods<br>Only for: Clause 4.2 Low-Frequency Dry Flashover Voltage Tests<br>Clause 4.3 Low-Frequency Wet Flashover Voltage Tests<br>Clause 4.4 Low-Frequency Dry Withstand Voltage Tests<br>Clause 4.5 Low-Frequency Wet Withstand Voltage Tests<br>Clause 4.7 Impulse Flashover Voltage Tests<br>Clause 4.8 Impulse Withstand Voltage Tests<br>Clause 4.9 Radio Influence Voltage |
|------------|---|

### **Switches and Controls**

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|------------------|---|
| ANSI/NEMA C37.54 | Indoor Alternating Current High-Voltage Circuit Breakers Applied as Removable Elements in Metal-Enclosed Switchgear - Conformance Test Procedures<br>Only for: Clause 3.5 Lightning Impulse Withstand Voltage Tests<br>Clause 3.6 Continuous Current Carrying Tests<br>Clause 3.8 Load Current Switching Tests<br>Clause 3.9 Short Time Current Carrying Tests<br>Clause 3.10 Short-Circuit Current Tests<br>Clause 6.2 Power Frequency Withstand Voltage Tests |
| ANSI/NEMA C37.55 | Switchgear - Medium Voltage Metal-Clad Assemblies - Conformance Test Procedures<br>Only for: Clause 5.5.2 Power-Frequency Withstand Voltage Tests<br>Clause 5.5.3 Lightning Impulse Withstand Tests<br>Clause 5.7 Continuous Current Test   |



ANSI/NEMA C37.57	Clause 5.8 Short-Time Withstand Current Test Clause 5.9 Momentary Withstand Current Test Metal-Enclosed Interrupter Switchgear Assemblies - Conformance Testing Only for: Clause 4.5.2 Power-Frequency Withstand Voltage Tests Clause 4.5.3 Lightning-Impulse Withstand Test Clause 4.7 Continuous Current Test Clause 4.8 Short-Time Withstand Current Test Clause 4.9 Momentary Withstand Current Test
ANSI/NEMA C37.58	Indoor AC Medium-Voltage Switches for Use in Metal-Enclosed Switchgear - Conformance Test Procedures Only for: Clause 4.5 Lightning Impulse Withstand Test Clause 4.6 Continuous Current Test Clause 4.7.2 Momentary Withstand Current Test Clause 4.7.3 Short-Time Withstand Current Test Clause 4.9 Load-Switching Current Test (If Rated)
CSA C22.2 No. 31	Medium Voltage Metal-Clad Assemblies Only for: Clause 6.1 Temperature Clause 8.5.1 Dielectric strength tests Clause 8.5.2 Impulse tests Clause 8.5.3 Corona-extinction tests Clause 8.5.4 Short-circuit withstand rating
CSA-C22.2 No. 253/ UL 347	Medium-Voltage AC Contactors, Controllers, and Control Centers Only for: Clause 6.2.201 Impulse withstand tests Clause 6.2.202 Power-frequency voltage withstand tests Clause 6.5 Temperature Rise Test Clause 6.6 Short-Time, Momentary and Peak Withstand Current Bus Tests Clause 6.102 Make and Break Capacity Test Clause 6.103 Overload Test Clause 6.104 Fault Interruption Test Clause 6.202 Short Time Capability
IEC 62271-111/ IEEE C37.60	High-voltage switchgear and controlgear - Part 111: Automatic circuit & reclosers and fault interrupters for alternating current systems up to 38 kV Only for: Clause 6.2 Dielectric tests Clause 6.4 Measurement of the resistance of circuits Clause 6.5 Temperature-rise tests Clause 6.6 Short time withstand current and peak withstand current tests Clause 6.101 Line charging current and cable charging current interruption tests Clause 6.102 Making current capability Clause 6.103 Rated symmetrical interrupting current tests Clause 6.106 Partial discharge (corona) tests Clause 6.111.3 Simulated surge arrester operation test Clause 6.112 Condition of recloser/FI after each test of 6.101, 6.103 and 6.104



IEEE 386	IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems above 600 V Only for: Clause 7.6 Short-time current test Clause 7.7 Switching test Clause 7.8 Fault-closure test
IEEE C37.09	Standard Test Procedure For AC High-Voltage Circuit Breakers Rated On A Symmetrical Current Basis Only for: Clause 4.1 Maximum voltage tests Clause 4.2 Power Frequency Clause 4.3 Continuous Current-Carrying Tests Clause 4.4.3 Power Frequency Withstand Voltage Tests Clause 4.4.4 Full-wave lightning impulse withstand voltage tests Clause 4.4.5 Impulse voltage test for interrupters and resistors Clause 4.4.6 Chopped wave lightning impulse withstand voltage tests Clause 4.4.7 Switching impulse voltage withstand tests Clause 4.5 Standard operating duty (standard duty cycle) Clause 4.6 Interrupting time Clause 4.7 TRV Clause 4.8 Short-circuit current interrupting Clause 4.9.1 Load current switching test conditions Clause 4.9.2 Load current endurance switching test Clause 4.12 Out-of-phase switching current
IEEE C37.09a	Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Amendment 1 - Capacitance Current Switching Only for: Clause 4.10 Capacitance current switching tests
IEEE C37.20.2	Standard for Metal-Clad Switchgear Only for: Clause 6.2.1 Dielectric tests Clause 6.2.2 Rated continuous current tests Clause 6.2.3 Momentary withstand current tests Clause 6.2.4 Short-time withstand current tests Clause 6.2.5 Auxiliary equipment primary disconnecting device momentary current withstand test
IEEE C37.20.3	Standard for Metal-Enclosed Interrupter Switchgear Only for: Clause 6.2 Dielectric tests Clause 6.5 Temperature-rise tests Clause 6.6 Short-time withstand current and peak withstand current tests Clause 6.14.1 Test for bus-bar insulation
IEEE C37.20.4	IEEE Standard for Indoor AC Switches (1 kV to 38 kV) for Use in Metal-Enclosed Switchgear Only for: Clause 6.6 Short-time withstand current and peak withstand current (formerly momentary) tests Clause 6.13 Fault-making test Clause 6.14 Load-switching current test Clause 6.15 Cable-charging current switching test (optional) Clause 6.16 Unloaded-transformer switching test (optional) Clause 6.17 Direct-acting fuse-tripping current test (optional)



IEEE C37.20.7	IEEE Guide for Testing Metal-Enclosed Switchgear Rated Up to 38 kV for Internal Arcing Faults Only for: 5 Arcing Fault
IEEE C37.23	Metal-Enclosed Bus Only for: Clause 6.2.1.1 Power Frequency Withstand Voltage Tests Clause 6.2.1.2 Lightning impulse withstand voltage tests Clause 6.2.1.3 Test for bus-bar insulation, bus-joint insulation, and bus-tap insulation Clause 6.2.2 Continuous-current Clause 6.2.3 Momentary withstand current Clause 6.2.4 Short-time withstand current
IEEE C37.30.1	Standard Requirements for AC High-Voltage Air Switches Rated Above 1000 V Only for: Clause 8.1.1 Power frequency withstand voltage tests Clause 8.1.2 Lightning impulse dry withstand voltage tests Clause 8.1.3 Power frequency and lightning impulse open gap withstand voltage tests Clause 8.1.4 Switching impulse voltage test of switches rated 362 kV and above Clause 8.2 Temperature rise tests Clause 8.3 Short-time Withstand Current Tests Clause 8.4 Fault-making current test Clause 8.7 Corona tests
IEEE C37.41	ANSI/IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses and Accessories Only for: Clause 8.2 Power-frequency dry-withstand voltage tests Clause 8.3 Power-frequency wet-withstand voltage tests on outdoor devices Clause 8.5 Lightning impulse-withstand voltage tests Clause 9 Interrupting tests Clause 11 Temperature-rise tests Annex A.4 Short-time withstand current tests for disconnecting switches Annex A.5 Load-break tests
IEEE C37.42	IEEE Standard Specifications for High-Voltage (> 1000 V) Expulsion-Type Distribution-Class Fuses, Fuse and Disconnecting Cutouts, Fuse Disconnecting Switches, and Fuse Links, and Accessories Used with These Devices Only for: Clause 3.3.1 Dielectric tests Clause 3.3.2 Interrupting [breaking] Clause 3.3.5 Short-time current tests for disconnecting cutouts Clause 3.3.6 Temperature-rise tests
IEEE C37.45	IEEE Standard for Design Test Specifications for High Voltage (> 1000 V) Distribution Class Enclosed Single-Pole Air Switches Only for: Clause 8.1 Dielectric tests Clause 8.3 Short-time current tests Clause 8.4 Temperature-rise tests



IEEE C37.46	Specifications for High-Voltage (>1000 V) Expulsion and Current-Limiting Power Class Fuses and Fuse Disconnecting Switches Only for: Clause 4.1 Dielectric tests Clause 4.2 Interrupting [breaking] Clause 4.4 Temperature-rise
IEEE C37.66	IEEE Standard Requirements for Capacitor Switches for AC Systems (1 kV to 38 kV) Only for: Clause 6.2 Insulation (dielectric) tests Clause 6.3 Short-time current tests Clause 6.4 Rated fault-making current tests
IEEE C37.74	Standard Requirements for Subsurface, Vault, and Pad-Mounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV Only for: Clause 6.7.2 Dielectric tests Clause 6.7.3 Continuous current test Clause 6.7.4 Short-circuit withstand current tests Clause 6.7.5 Switching tests Clause 6.7.6 Thermal runaway test Clause 6.7.7 Partial discharge tests Clause 6.7.8 DC withstand voltage test
IEEE/IEC 62271-37-013	IEEE/IEC International Standard for High-voltage switchgear and controlgear -- Part 37-013: Alternating-current generator circuit-breakers Only for: Clause 6.2.2.1 Rated power frequency withstand voltage (dry) Clause 6.2.6.2 Lightning impulse voltage test Clause 6.2.12 Sound level tests Clause 6.5 Temperature rise test Clause 6.6 Short-time withstand current and peak withstand current tests Clause 6.103 System-source short-circuit current making and breaking tests Clause 6.104 Load Current Breaking Tests Clause 6.105 Generator-source short-circuit current making and breaking tests Clause 6.106 Out-Of-Phase Current Switching Tests

## **Transformers**

ASTM D3612	Standard test Method for Analysis of Gases Dissolved in Electrical Insulating Oil by Gas Chromatography Except for: Propane and Propylene
IEC 61869-1	Instrument transformers - Part 1: General requirements Only for: Clause 7.2.2 Temperature-rise test Clause 7.2.3 Impulse voltage withstand test on primary terminals Clause 7.2.4 Wet test for outdoor type transformers Clause 7.3.1 Power-frequency voltage withstand tests on primary terminals





	Clause 7.3.2 Partial discharge measurement
	Clause 7.3.4 Power-frequency voltage withstand tests on secondary terminals
	Clause 7.3.6 Verification of markings
	Clause 7.4.1 Chopped impulse voltage withstand test on primary terminals
IEC 61869-3	Instrument transformers - Part 3: Additional requirements for inductive voltage transformers Only for: Clause 7.2.2 Temperature-rise test
	Clause 7.2.3 Impulse voltage withstand test on primary terminals
IEEE C57.12.90	Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers Only for: Clause 5 Resistance measurements Clause 6 Polarity and phase-relation tests Clause 7 Ratio tests Clause 8 No-load losses and excitation current Clause 9 Load losses and impedance voltage Clause 10 Dielectric tests Clause 11 Temperature-rise tests Clause 12 Short circuit tests Clause 13 Audible sound emissions
IEEE C57.12.91	Standard Test Code for Dry-Type Distribution and Power Transformers Only for: Clause 5 Resistance measurements Clause 6 Polarity and phase relation tests Clause 7 Ratio tests Clause 8 No load losses and excitation current Clause 9 Load losses and impedance voltage Clause 10 Dielectric tests Clause 11 Temperature tests Clause 12 Short circuit tests Clause 13 Audible Sound Level Measurements
IEEE C57.13	Standard Requirements for Instrument Transformers Only for: Clause 8.2 Impedance excitation, and composite error measurements Clause 8.3 Polarity Clause 8.4 Resistance measurements Clause 8.6 Partial discharge measurement Clause 8.9 Measurement of Open-Circuit Voltage of Current Transformers Clause 9.3 Impedance measurements Clause 9.4 Polarity Clause 10.2 Impedance measurements Clause 10.3 Polarity Clause 11.2 Temperature rise tests Clause 11.4 Partial discharge measurement Clause 12.2 Current transformer temperature rise tests





## **ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY**

### **Environmental**

#### **Oil**

##### **(Total PCB in Oil)**

ACTP-5	PCB in Waste Liquids by Gas Chromatography
ASTM D4059	Standard Test Method for Analysis of Polychlorinated Biphenyls in Insulating Liquids by Gas Chromatography

#### **Soil/Sediment**

##### **(PCB in Soil)**

ACTP-6	PCB Content in Soil Samples by Gas Chromatography
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#### **Water (Inorganic)**

ACTP 8	pH Value (APHA 4500-H+)
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#### **Water (Organic)**

##### **(PCB in Water)**

ACTP-7	PCB in Aqueous Samples by Gas Chromatography
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### **Occupational Health and Safety:**

#### **Asbestos**

ACTP 10	Asbestos (Bulk) by PLM (NIOSH 9002, EPA 600/R-93/116 Standard, Clauses 2.1, 2.2 & 2.3)
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## **MACHINERY**

### **Transportation, Agricultural and Construction Vehicles and Components:**

#### **Automobiles, Light Trucks, Vans & Trailers**



ANSI HGV 2

Compressed hydrogen gas vehicle fuel containers  
Only for: Clause 11.3 Leak Test  
Clause 12.4 Burst Test  
Clause 12.5 Cycle Test  
Clause 18.3.2 Ambient Cycling Test  
Clause 18.3.3 Environmental Test  
Clause 18.3.4 Extreme Temperature Cycling  
Clause 18.3.5 Hydrostatic Burst Test  
Clause 18.3.6 Flaw Tolerance Test  
Clause 18.3.7 Drop Test  
Clause 18.3.8 Fire Test  
Clause 18.3.9 Accelerated Stress Rupture Test  
Clause 18.3.10 High Strain Rate Impact Test  
Clause 18.3.11 Permeation Test  
Clause 18.3.12 Boss Torque Test  
Clause 18.3.13 Hydrogen Gas Cycling Test  
Clause 18.3.14 Leak Before Break Test  
Clause 18.5.2 Ambient Cycling Test  
Clause 18.5.3 Hydrostatic Burst Test  
Clause 18.5.4 Container test for performance durability  
Clause 18.5.5 High strain rate impact test  
Clause 18.5.6 Permeation test  
Clause 18.5.7 Container test for expected on-road performance

ANSI HGV 3.1

Fuel system components for compressed hydrogen gas powered vehicles  
Only for: Clause 5.3 Hydrostatic strength  
Clause 5.4 Leakage  
Clause 5.5 Excess torque resistance  
Clause 5.6 Bending moment  
Clause 5.7 Continuous operation  
Clause 5.8.1 Salt spray exposure  
Clause 5.9 Ultraviolet resistance of external surfaces  
Clause 5.12 Abnormal electrical voltages  
Clause 5.13 Vibration resistance  
Clause 5.15 Insulation resistance  
Clause 5.16 Pre-cooled hydrogen exposure  
Clause 8.4.1 Leakage  
Clause 8.4.2 Continuous operation  
Clause 10.4.1 Continuous operation  
Clause 10.4.2 Operating torque  
Clause 11.4.1 Automatic valve  
Clause 11.4.2 Automatic container valve  
Clause 13.4.3 Insulation resistance  
Clause 14.4.1 Hydrostatic strength  
Clause 14.4.2 External leakage  
Clause 14.4.3 Continuous operation  
Clause 14.4.4 Pressure impulse  
Clause 15.4.1 Hydrostatic strength



ANSI/CSA HGV 4.4	Clause 15.4.2 Continuous operation Clause 15.4.3 Opening and reseating characteristics Breakaway devices for compressed hydrogen dispensing hoses and systems Only for: 2.2 Leakage 2.3 Hydrostatic Strength 2.4 Separation Test 2.5.1 Oxygen Aging Test 2.6 Electrical Conductivity 2.7.1 Deformation 2.7.2 Strength Tests - Impact Test 2.7.3 Drop Test 2.8.1 Pressure Cycle Test
ANSI HPRD 1	Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers Only for: 7.2 Pressure Cycling 7.3 Accelerated Life 7.4 Thermal Cycling 7.7 UV exposure 7.8.1 Atmospheric exposure (oxygen ageing) 7.10 Impact due to drop and vibration 7.11 Leakage 7.12 Bench top activation 7.13 Flow capacity 7.14 High Pressure activation and flow rate
ANSI NGV 2	Compressed natural gas vehicle fuel containers Only for: Section 11.3 Leak Test Section 12.4 Burst Test Section 12.5 Cycle Test Section 19.3 Ambient Cycling Test Section 19.4 Environmental Test Section 19.5 Extreme Temperature Cycling Section 19.6 Hydrostatic Burst Test Section 19.7 Composite Flaw Tolerance Test Section 19.8 Drop Test *Section 19.9 Bonfire Test Section 19.10 Accelerated Stress Rupture Test *Section 19.11 Penetration Test Section 19.12 Permeation Test Section 19.13 Natural Gas Cycling Test Section 19.14 Leak Before Break Test
ANSI NGV3.1/ CSA 12.3	Fuel System Components for Natural Gas Powered Vehicles Only for: 5.2 Hydrostatic Strength 5.7.2 Salt spray exposure – Salt spray test only 5.8.2 Atmospheric Exposure Test - Oxygen Aging 5.11 Vibration resistance 5.14 Ultraviolet Resistance of External Surfaces



ANSI PRD 1	Pressure relief devices for natural gas vehicle (NGV) fuel containers Only for: 7.7 UV resistance 7.10.2 Impact due to drop and vibration – vibration 7.14.1 Atmospheric exposure - Oxygen Aging
ANSI/CSA HGV 4.10	Standards For Fittings for compressed hydrogen gas and hydrogen rich gas mixtures Only for: 2.3 External Leak Test 2.4 Hydrostatic Burst Test 2.5 Hydraulic Cyclic Endurance Test 2.6 Gas Cyclic Endurance Test 2.8 Explosive Decompression 2.9 Make or Break Test 2.10 Thermal Shock
CSA B51 Part 2	High-Pressure Cylinders for the On-board Storage of Natural Gas as a Fuel for Automotive Vehicles Only for: Clause 14.12 Hydrostatic Pressure Burst Test
EC 79	Implementing Regulation (EC) No 79/2009 of the European Parliament and of the Council on type-approval of hydrogen-powered motor vehicles Annex IV Only for: Part 2, Para. 4.2.1 Burst test Part 2, Para. 4.2.2 Ambient temperature pressure cycle test Part 2, Para. 4.2.3 Leak-before-break (LBB) performance test *Part 2, Para. 4.2.4 Bonfire test *Part 2, Para. 4.2.5 Penetration test Part 2, Para. 4.2.6 Chemical exposure test Part 2, Para. 4.2.7 Composite flaw tolerance test Part 2, Para. 4.2.8 Accelerated stress rupture test Part 2, Para. 4.2.9 Extreme temperature pressure cycle test Part 2, Para. 4.2.10 Impact damage test Part 2, Para. 4.2.11 Leak test Part 2, Para. 4.2.12 Permeation test Part 2, Para. 4.2.13 Boss torque test Part 2, Para. 4.2.14 Hydrogen gas cycling test Part 3, Para. 4.1.1.2(b) Hydrogen compatibility test (non-metallic materials) Part 3, Para. 4.1.2 Ageing test Part 3, Para. 4.2.1 Corrosion resistance test (Test a only) Part 3, Para. 4.2.2 Endurance Part 3, Para. 4.2.3 Hydraulic pressure cycle test Part 3, Para. 4.2.4 Internal leakage test Part 3, Para. 4.2.5 External leakage test
UNECE R110	Uniform provisions concerning the approval of: I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system II. Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG)



in their propulsion system  
Annex 3A, Appendix A  
Only for: Para. A.6 Leak Before Break Test  
Para. A.7 Extreme Temperature Cycling  
Para. A.10 Leak Test  
Para. A.11 Hydraulic Test  
Para. A.12 Hydrostatic pressure burst test  
Para. A.13 Ambient temperature pressure cycling  
Para. A.14 Acid environment test  
\*Para. A.15 Bonfire test  
\*Para. A.16 Penetration tests  
Para. A.17 Composite flaw tolerance tests  
Para. A.18 High temperature creep test  
Para. A.19 Accelerated stress rupture test  
Para. A.20 Impact damage test  
Para. A.21 Permeation test  
Para. A.25 Boss torque test  
Para. A.24 (a) Pressure relief device requirements - 24 hr  
temperature and pressure hold  
Para. A.24 (b) Pressure relief device requirements - Pressure  
Cycling  
Para. A.27 Natural gas cycling test

UNECE R134

Uniform provisions concerning the approval of motor vehicles and  
their components with regard to the safety-related performance of  
hydrogen-fuelled vehicles (HFCV)  
Only for: Para. 5.1 Verification tests for baseline metrics  
Para. 5.2 Verification tests for performance durability (sequential  
hydraulic tests)  
Para. 5.3 Verification test for expected on-road performance  
(sequential pneumatic tests)  
Para. 5.4 Verification test for service terminating performance in  
fire  
Para. 9.3.2.1 Rupture test in batch testing  
Para. 9.3.2.2 Ambient temperature pressure cycling test in batch  
testing  
Annex 3, Para. 2 Test procedures for baseline performance  
metrics  
Annex 3, Para. 3 Test procedures for performance durability  
Annex 3, Para. 4 Test procedures for expected on-road  
performance  
Annex 3, Para. 5 Test procedures for service termination  
performance in fire  
Annex 4, Para. 1.1 Pressure cycling test  
Annex 4, Para. 1.2 Accelerated life test  
Annex 4, Para. 1.3 Temperature cycling test  
Annex 4, Para. 1.7 Drop and vibration test  
Annex 4, Para. 1.8 Leak test  
Annex 4, Para. 1.9 Bench top activation test  
Annex 4, Para. 1.10 Flow rate test



	Annex 4, Para. 2.1 Hydrostatic strength test
	Annex 4, Para. 2.2 Leak test
	Annex 4, Para. 2.3 Extreme temperature pressure cycling test
	Annex 4, Para. 2.4 Salt corrosion resistance test
	Annex 4, Para. 2.6(a) Atmospheric exposure test (oxygen)
	Annex 4, Para. 2.7 Electrical tests
	Annex 4, Para. 2.8 Vibration test
	Annex 4, Para. 2.10 Pre-cooled hydrogen exposure test
ISO 19880-3	Gaseous hydrogen - Fuelling stations - Part 3: Valves Only for: 5 General test methods 6 Check valves 7 Excess flow valves 8 Flow control valves 9 Hose breakaway devices (Except for 9.2.13 Twisting test) 10 Manual valves 11 Pressure safety valves (PSV) 12 Shut-off valves
UN GTR No. 13	Global technical regulation on hydrogen and fuel cell vehicles Part II Only for: Para. 5.1.1 Verification tests for baseline metrics Para. 5.1.2 Verification tests for performance durability (hydraulic sequential tests) Para. 5.1.3 Verification test for expected on-road performance (pneumatic sequential tests) Para. 5.1.4 Verification test for service terminating performance in fire Para. 6.2.2 Test procedures for baseline performance metrics Para. 6.2.3 Test procedures for performance durability Para. 6.2.4 Test procedures for expected on-road performance Para. 6.2.5 Test procedures for service terminating performance in fire Para. 6.2.6.1.1 Pressure cycling test Para. 6.2.6.1.2 Accelerated life test Para. 6.2.6.1.3 Temperature cycling test Para. 6.2.6.1.7 Drop and vibration test Para. 6.2.6.1.8 Leak test Para. 6.2.6.1.9 Bench top activation test Para. 6.2.6.1.10 Flow rate test Para. 6.2.6.2.1 Hydrostatic strength test Para. 6.2.6.2.3 Extreme temperature pressure cycling test Para. 6.2.6.2.4 Salt corrosion resistance test Para. 6.2.6.2.6(a) Atmospheric exposure test (oxygen) Para. 6.2.6.2.7 Electrical tests Para. 6.2.6.2.8 Vibration tests Para. 6.2.6.2.10 Pre-cooled hydrogen exposure test



## METALLIC ORES AND PRODUCTS

### Articles of Metal:

#### **Cast, Forged, Welded or Pressed Metal Components**

ASTM E18	Standard Test Methods for Rockwell Hardness of Metallic Materials
ASTM E384	Standard Test Method for Microindentation Hardness of Materials

## NONDESTRUCTIVE EXAMINATION

**ASME BPVC-V	ASME Boiler & Pressure Vessel Code, Section V: Nondestructive Examination Only for: Article 2 - Radiographic Examination Article 5 - Ultrasonic Examination Methods for Materials Article 6 - Liquid Penetrant Examination Article 7 - Magnetic Particle Examination
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### Notes:

**ISO/IEC 17025:2005:** General Requirements for the Competence of Testing and Calibration Laboratories.

**ACTP:** Internal Powertech Labs Inc. Procedure (Applied Chemistry Test Procedure)

**AeroMACS:** Aeronautical Mobile Airport Communication System

**ASTM:** ASTM International, previously American Society for Testing and Materials

**CSA:** Canadian Standards Association

**DNVGL:** Det Norske Veritas (Norway) and Germanischer Lloyd (Germany)

**EC:** European Environment Agency

**UNECE:** United Nations Economic Commission for Europe

**IEC:** International Electrotechnical Commission

**IEEE:** Institute of Electrical and Electronics

**UN GTR:** United Nations Global Technical Regulations

**USACE:** United States Army Corps of Engineers

(\*): These tests are performed in a temporary location (Justice Institute of BC (JI), 13500 256 St, Maple Ridge, BC V4R 1C9; Or Dewdney Creek North PIT #7004 (Off Coquihalla highway, Carolin Mines exit, between Hope and Coquihalla summit).

(\*\*): These tests can be performed in the laboratory permanent facility or on-site.





**Standards Council of Canada**  
**Conseil canadien des normes**

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Elias Rafoul, Vice-President  
Accreditation Services

Date: 2019-06-13

Number of Scope Listings: 71  
SCC 1003-15/669  
Partner File #0  
Partner: None