

SCOPE OF ACCREDITATION

ACTIVATION LABORATORIES LTD.
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Ancaster, ON
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Accredited Laboratory No. 266
(Conforms with requirements of CAN-P-1578 , CAN-P-1579 , CAN-P-1585, CAN-P-4E (ISO/IEC 17025:2005))

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CLIENTS SERVED: All interested parties

FIELDS OF TESTING: Chemical/Physical, Mechanical/Physical

FORENSICS DISCIPLINE(S): Forensic Chemistry / Trace Evidence

PROGRAM SPECIALTY AREA: Environmental, Forensic, Mineral Analysis

ISSUED ON: 2012-01-03

VALID TO: 2014-02-27

ANIMAL AND PLANTS (AGRICULTURE)

Other

(Vegetation)

QOP AquaGeo Multi-Element Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry (

Cu, Pb, Ag, Ni)

ELASTOMERS AND PROTECTIVE AND OTHER COATINGS**(Paints and Organic Coatings)**

ASTM B499	Standard Test Method for measuring coating thickness by magnetic method non-magnetic coating on magnetic base
ASTM D1308	Standard test method for effect of household chemicals on clear and pigmented organic finishes
ASTM D1735	Standard test method for water resistance of coatings using water fog apparatus
ASTM D3359	Standard test method for measuring adhesion by tape test
ASTM D3363	Standard test method for film hardness by pencil test
ASTM D4060	Standard test method for abrasion resistance of organic coatings by the Taber abraser
QOP Humidity	Procedure for humidity testing (Exposure of parts or base material to humidity at a specified temperature for a specified time)
QOP Salt Spray	Procedure for salt spray testing (fog testing) (Salt spray exposure to various parts for a specified amount of time or during cyclical corrosion testing)

Plastics; Resins and Rubbers:**Plastics**

ASTM D2240, Type A and D only	Standard test method for rubber property, Durometer hardness
ASTM D395, Method B only	Standard test method for rubber property - compression set
ASTM D471, Except for Sections 13 and 16	Standard test method for rubber property - effect of liquids
QOP Humidity	Procedure for Humidity Testing (Exposure of parts or base material to humidity at a specified temperature for a specified time)
QOP SpecGrav, Method A only	Test Method for Specific Gravity and Density of Plastics (Determining the specific gravity of various plastics and rubbers)

ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY**Environmental****Air Filter**

(Major Ions - Air Filter/IC aqueous extraction)

QOP Porous Media Anions	Preparation and Determination of Inorganic Anions on Porous Media Chloride Fluoride Nitrate Sulfate
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(Metals - Air Filter/ICP-MS)

QOP Air Filter - ICP/MS	Air Filters Spiked with Metals-Cellulose ester and Quartz Filters - Using ICPMS Cadmium Copper Lead Zinc
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Soil/Sediment

(BTEX in Soil/Sediment/SPME-GC/MS)

QOP BTEX	GC/MS analysis of benzene, toluene, ethylbenzene and xylenes Benzene Ethylbenzene m/p-xylene o-xylene Toluene
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(Cyanide - Soil/Sediment / Automated UV digestion/colourimetric)

QOP Cyanide	Automated analyzer method for the determination of Total CN in water/soil
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(Mercury - Soil/Cold Vapour FIMS)

QOP Hg FIMS	Mercury Analysis by Aqua Regia Leach and Flow Injection Cold Vapour Atomic Absorption Spectrophotometry (Hg)
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(Metals - Soil/ICP - digestion)

QOP AquaGeo	Multi-Element Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry Cadmium Chromium Cobalt
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Copper
Lead
Nickel
Zinc

(Metals - Soil/ICP-MS)

QOP Ultra Trace 1 Trace elements by aqua regia digestion and ICP/MS
Antimony
Arsenic
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Nickel
Zinc

(PAH - Soil/GC-MS extraction)

QOP PAH GC/MS - analysis of polyaromatic hydrocarbons
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Fluoranthene
Indeno (1,2,3 - cd) Pyrene
Phenanthrene
Pyrene

(Perchlorate - Soil/Sediment / LC/ESI/MS)

QOP Perchlorate - EPA 331.0 Determination of Perchlorate in Water and Other Matrixes using LC/ESI/MS as described by EPA method 331.0

(Ra-226 - Soil/High Resolution Alpha Spectrometry)

QOP Ra-226 RA-226 for water and soil using High Resolution Alpha Spectrometry

(VOC in Soil/Sediment/SPME-GC/MS)

QOP VOC GC/MS analysis of volatile organic compounds

1,1-dichloroethylene
1,2-dichlorobenzene
1,2-dichloroethane
1,4-dichlorobenzene
Bromodichloromethane
Bromoform
Carbon Tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroform
Dichloromethane
Tetrachloroethylene
Trichloroethylene

Water (Inorganic)

(Alkalinity - Water/Titrimetric)

QOP Alkalinity Titration method for the determination of alkalinity of water

(Ammonium - Water/pH/mV meter with ion selective electrode)

QOP Ammonia Electrode method for the determination of ammonia in water

(BOD - Water/Incubation/dissolved O₂ meter)

QOP BOD Biochemical oxygen demand of water - a method for measuring organic pollutants in water

(COD - Water/Digestion/Colourimetric)

QOP COD Spectrophotometer method for the Detection of Chemical Oxygen Demand

(Conductivity - Water/Conductivity meter)

QOP Conductivity Electrode method for measuring the conductivity of water

(Cyanide - Water/Automated UV digestion/colourimetric)

QOP Cyanide Automated analyzer method for the determination of Total CN in water/soil

(DOC - Water/TOC instrument)

QOP TOC,
Verbatim United States
Pharmacopeia <643>

Determination of Total Organic Carbon and Dissolved Organic
Acid

(Hydride Metals - Water/ICP-MS)

QOP HydroGeo

Hydrogeochemistry by ICP/MS
Total Antimony
Total Arsenic
Total Selenium

(Ions - Water/Ion Chromatography)

QOP Anions, EPA 300.1

Determination of Inorganic anions in water by IC as described by
EPA Method 300.1

Dissolved Orthophosphate
Dissolved Bromide
Dissolved Fluoride
Dissolved Nitrate
Dissolved Nitrite
Dissolved Sulfate
Dissolved Chloride

(Mercury - Water/Cold Vapour AA)

QOP Hg FIMS

Mercury Analysis by Aqua Regia Leach and Flow Injection Cold
Vapour Atomic Absorption Spectrophometry (Hg)

(Metals - Water/ICP-MS)

QOP HydroGeo

Hydrogeochemistry by ICP/MS
Dissolved Aluminum
Dissolved Barium
Dissolved Beryllium
Dissolved Boron
Dissolved Cadmium
Dissolved Calcium
Dissolved Chromium
Dissolved Cobalt
Dissolved Copper
Dissolved Iron
Dissolved Lead
Dissolved Magnesium
Dissolved Manganese
Dissolved Molybdenum

Dissolved Nickel
Dissolved Silver
Dissolved Strontium
Dissolved Thallium
Dissolved Tin
Dissolved Titanium
Dissolved Uranium
Dissolved Vanadium
Dissolved Zinc
Potassium
Sodium

(Metals - Water/ICP-OES)

QOP Water

Determination of Multi-Elements in waters using inductively coupled plasma atomic emission spectrometry

Dissolved Aluminum
Dissolved Barium
Dissolved Beryllium
Dissolved Boron
Dissolved Cadmium
Dissolved Calcium
Dissolved Chromium
Dissolved Cobalt
Dissolved Copper
Dissolved Iron
Dissolved Lead
Dissolved Magnesium
Dissolved Manganese
Dissolved Molybdenum
Dissolved Nickel
Dissolved Phosphorus
Dissolved Silica
Dissolved Silver
Dissolved Strontium
Dissolved Thallium
Dissolved Tin
Dissolved Titanium
Dissolved Uranium
Dissolved Vanadium
Dissolved Zinc

(Perchlorate - Water / LC/ESI/MS)

QOP Perchlorate - EPA 331.0 Determination of Perchlorate in Water and Other Matrices using

Total Manganese
Total Nickel
Total Phosphorus
Total Selenium
Total Silica
Total Vanadium
Total Zinc

(TSS - Water/Gravimetric)

QOP TSS Filter method for the measurement of total suspended solids in water by gravimetry

(Turbidity - Water/Nephelometric)

QOP Turbidity Turbidimeter method for the measurement of turbidity of water

Water (Microbiology)

(E.coli - Water)

QOP Microbiology Coliforms, HPC Microbiology Testing of Water
Escherichia Coli (using MF Method)
Total coliforms (using MF Method)

(Fecal coliforms - Water)

QOP Microbiology Coliforms, HPC Microbiology Testing of Water
Fecal Coliforms (using MF Method)

(Heterotrophic Plate Count - Water)

QOP Microbiology Coliforms, HPC Microbiology Testing of Water
Heterotrophic Plate Count (using PP Method)

Water (Organic)

(BTEX in water/SPME-GC/MS)

QOP BTEX GC/MS analysis of benzene, toluene, ethylbenzene and xylenes
Benzene
Ethylbenzene
m/p-xylene

QOP Uranium Urine

Total uranium concentration in urine by ELAN 6000-6100
ICP/MS**METALLIC ORES AND PRODUCTS****Articles of Metal:****(Chemical Tests)**

QOP Carbon& Sulphur	Total Sulphur Content in Metals by the Combustion Instrumental Method (Sulphur Content by Combustion/IR)
QOP ICP MET	Multi-Element Chemical Analysis of Metallic Material using (ICP-AES) for alloys of Steel, Stainless Steel, Copper, Aluminum, Nickel (Chemical analysis of metals for the following elements: Mn, P, Si, Cr, Ni, Mo, Cu, V, Al, , Co, Zr, Cb, Nb, Ta, W, Mg, Fe, Sn, Sb, Ag, Bi, Sr, Cd)

(Laboratory Corrosion Tests)

ASTM G34	Standard test method for exfoliation corrosion susceptibility in 2xxx and 7xxx series aluminium alloys (EXCO Test)
ASTM A763	Standard practice for detecting susceptibility to intergranular attack in ferritic stainless steel
ASTM B154	Standard test method for mercurous nitrate test for copper and copper alloys
ASTM B368	Standard Test Method for Copper Accelerated Acetic Acid salt Spray (Fog) test (CASS Test)
ASTM D1654	Standard Test Method for the Evaluation of painted or Coated Specimens subjected to corrosive Environment
ASTM D1735	Standard practice for water resistance of coating using water fog apparatus
ASTM D610	Evaluating the degree of rust on painted steel surfaces
ASTM D714	Test method for Evaluating Degree of Blistering in Paints
ASTM G110	Standard practice for intergranular corrosion resistance of heat treatable aluminum alloys by immersion in sodium chloride + hydrogen peroxide solution
ASTM G28	Standard test method for detecting susceptibility to intergranular corrosion in wrought, nickel-rich, chromium-bearing alloys
ASTM G46	Standard guide for examination and evaluation of pitting corrosion
ASTM G48, method A and B only	Standard test method for pitting and crevice corrosion resistance of stainless steels and related alloys by use of ferric chloride solution
ASTM G66	Standard test method for visual assessment of exfoliation corrosion susceptibility of 5xxx series aluminium alloys (ASSET Test)
ASTM G67	

	Standard test method for determining the susceptibility to intergranular corrosion of 5xxx series aluminium alloys by mass loss after exposure to nitric acid (NAMLT test)
ASTMD2247	ASTMD2247
QOP Humidity	Procedure for Humidity Testing (Exposure of parts or base material to humidity at a specified temperature for a specified time)
QOP Corrosion Resistance	Procedure for Detecting Susceptibility to Intergranular attack in Austenic Stainless Steels (Testing various materials for their susceptibility to Intergranular Attack based on ASTM A262)
QOP Salt Spray	Procedure for Salt Spray Testing (Fog Testing) (Salt Spray exposure to various parts for a specified amount of time or during cyclical corrosion testing)

(Mechanical Tests)

ASTM A370	Standard test methods and definitions for mechanical testing of steel products
QOP Brinell	Test method for determining of the Brinell hardness of metallic materials (Brinell hardness tests on different metals)
QOP Guided Bend	Guided bend tests for ductility of welds (Bend testing of welds)
QOP Rockwell	Rockwell hardness testing of metallic materials
QOP Semi Guided Bend	Bend test for ductility of metallic materials
ASTM F606, Except for section 7 (Embrittlement test)	Standard test method for mechanical properties of externally and internally threaded fasteners, washers, and rivets
QOP Impact	Test method for Charpy V-notch impact testing (Charpy impacts testing at various temperatures)
QOP Tension	Test method for tension testing of metallic materials (Tensile testing of metals; may or may not include yield, load, elongation)

(Metallic Coatings)

ASTM A239	Standard practice for the thinnest spot in a zinc coating
ASTM A90	Standard test method for weight of coating on zinc coated iron or steel articles
ASTM B137	Standard test method for measurement of coating mass per unit area on anodically coated aluminum
ASTM B428	Standard test method for weight of coating on aluminium coated iron or steel articles
ASTM B489	Standard practice for bend test for ductility of electrodeposited and autocatalytically deposited metal coatings on metals
ASTM B578	Standard test method for microhardness of electroplated coating
ASTM B680	Standard test method for seal quality of anodic coating on aluminum by acid dissolution
ASTM D3170	Test Method for Chip Resistance of Coatings
QOP Humidity	Procedure for Humidity Testing (Exposure of parts or base material to humidity at a specified temperature for a specified time)

QOP Plating - Coating	Test Method for Plating Thickness Measurement (Using microscopic examination or instrumentation to determine the coating thickness on various materials)
QOP Salt Spray	Procedure for Salt Spray Testing (Fog Testing) (Salt Spray exposure to various parts for a specified amount of time or during cyclical corrosion testing)

(Metallography)

ASTM A247	Standard test method for the microstructure of graphite in iron castings
ASTM A262, Method A only	Standard tests method for oxalic acid etch test for austenitic stainless steel
ASTM A923	Standard test method for detecting detrimental intermetallic phase in duplex stainless steel
ASTM B390	Standard practice for evaluating apparent grain size and distribution of cemented tungsten carbides
ASTM E1077	Standard test method for estimating the depth of decarburization of steel
ASTM E340	Standard test method for macroetch metals and alloy
ASTM F788	Standard specification for surface discontinuities of bolts, screws, and studs
QOP Grain Size	Test method for Determining Average Grain Size (Examination of metals for their non-metallic inclusions, grain size, case depth, etc.)
QOP Macro Etch	Test Method for the Macroetch Testing, Inspection and Rating of Steel Products (General and weld macrostructure examination)
QOP Micro	Microstructural Evaluations of Metals and Alloys, Determination of Inclusion Content and Volume Fraction by Systematic Point Count, evaluation of microstructure
QOP Microhardness	Method for Performing Microhardness Traverse (Vickers hardness of surfaces of different metals and coatings)
QOP Microhardness	Vickers Microhardness Testing of Metallic Materials
QOP Plating - Coating	Test Method for Plating Thickness Measurement (Using microscopic examination or instrumentation to determine the coating thickness on various materials)
QOP Section	Test Method for Sectioning Grinding, Polishing and Etching Samples for Micro/Macro Structural Examination

Metallic Ores:

Rocks and Ores

Refer to minor sub-heading: *Sediments*

Sediments

QOP H2O:	Gravimetric Determination of H2O+/H2O-Water of Soils and Rocks (Gravimetric Package 4F: H2O+/H2O-)
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QOP Hg FIMS

Mercury Analysis by Aqua Regia Leach and Flow Injection Cold Vapour Atomic Absorption Spectrophotometry (Package 1G: Hg)

Mineral Analysis Testing

(CAN-P-1579)

Contract Settlement Assaying

Refer to minor sub-heading: *Geotechnical Testing*

Geotechnical Testing

Refer to minor sub-heading: *Mineral Assaying*

Mineral Assaying

QOP 1B2 ICP-MS	Platinum Group Elements using NiS Fire Assay and ICP-MS (Ir, Ru, Rh, Pt, Pd, and Re by Fire Assay with ICP-MS finish)
QOP AA - Au	Procedure for the analysis of Gold and/or Silver by Fire Assay with AA or Gravimetric finish
QOP AquaGeo	Multi-Element Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry for Mineral Analysis of Cd, Cu, Mo, Ni, Pb, Zn
QOP ASSAY	Assay Analysis Using Aqua Regia Extraction and Inductively Coupled Plasma Atomic Emission Spectrometry for Mineral Analysis of Co, Cu, Ni, Pb, Zn
QOP FUSION XRF	Fusion XRF using PHILIPS PW 2400 XRF Spectrometer (Quantify 15 analytes by X-ray Fluorescence which are fused with Lithium and reported in the oxide form - SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , MnO, MgO, CaO, Na ₂ O, K ₂ O, TiO ₂ , P ₂ O ₅ , Cr ₂ O ₃ , Co ₃ O ₄ , NiO, Zn, Sn and Cu)
QOP INAAGEO	Procedures for Instrumental Neutron Activation Analysis (INAA) for Mineral Samples As, Au, Cr, Co, Sb, Sc, Sn, Ta, U (238), U (235 by DNC, Delayed Neutron Counting), W
QOP PGE ICP-MS	PGE Analysis using ICP-MS (Au, Pt, Pd by Fire Assay with ICP/MS finish)
QOP Sodium Peroxide	Multi-Element Analysis using Sodium Peroxide Extraction and Inductively Couple Plasma Atomic Emission Spectrometry (for Aluminum, Arsenic, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Silicon, Sulphur, Titanium and Zinc)
QOP TOTAL	Multi-Element Analysis Using Hydrofluoric/Nitric/Perchloric/Hydrochloric Acid Digestion and Inductively Coupled Plasma Atomic Emission Spectrometry (for Cu, Mo, Ni, Pb, Zn)
QOP Total Assay	Total Assay Digestion using Hydrofluoric/HNO ₃ /Perchloric/HCl Acid with Inductively Coupled Plasma Atomic Emission Spectrometry (for Cu, Co, Fe, Mo, Ni, Pb and Zn)
QOP TRACE XRF	Trace Element analysis using XRF Spectrometer (Quantify 14

	analytes by pressing into a disk and using X-ray Fluorescence spectrophotometry - Rb, Sr, Y, Zr, Nb, Mo, Th, U, Sn, Pb, Ga, Ba, Cr, Co)
QOP Ultra Trace 1	Trace elements by aqua regia digestion and ICP/MS Li, Be, B, Na, Mg, Al, K, Ca, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Rb, Sr, Y, Zr, Nb, Mo, Ag, Cd, In, Sn, Sb, Te, Cs, Ba, La, Ce, Nd, Sm, Eu, Tb, Yb, Lu, Hf, Ta, W, Re, Au, Tl, Pb, Bi, Th, U
QOP WRA	Multi-Element Whole Rock Analysis - Using Multi-Element Fusion Inductively Coupled Plasma - Atomic Emission Spectrometer (Al ₂ O ₃ , CaO, Fe ₂ O ₃ , K ₂ O, LOI, MgO, MnO, Na ₂ O, P ₂ O ₅ , SiO ₂ , TiO ₂ , Ba, Be, Sc, Sr, V, Y, Zr)
QOP WRA4B2	Trace Element Suite by Fusion Method 4B and Inductively Coupled Plasma-Mass Spectrometer (ICP/MS) Ba, Hf, Nb, Rb, Sn, Ta, Th, U, V, Y, Zr, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu

FORENSICS

Forensic Chemistry / Trace Evidence

Techniques for which laboratory is accredited:

- a. QOP Flammable : The analysis for the presence/absence of ignitable liquids in fire debris samples.
- b. QOP OpenIdent : Method for the characterization of the organics present in unknown samples.

Notes:

CAN-P-4E (ISO/IEC 17025): General Requirements for the Competence of Testing and Calibration Laboratories (ISO/IEC 17025-2005)

CAN-P-1578: Guidelines for the Accreditation of Forensic Testing Laboratories

CAN-P-1579: Guidelines for the Accreditation of Mineral Analysis Testing Laboratories

CAN-P-1585: Guidelines for Accreditation of Environmental Testing Laboratories

S. Cross, Director, Conformity Assessment

Date: 2012-01-03

Number of Scope Listings: 125

Number of Forensic Techniques: 2

SCC 1003-15/308

Partner File #0

Partner: SCC