

**Standards Council of Canada**

600-55 Metcalfe Street  
Ottawa, ON K1P 6L5  
Canada

**Conseil canadien des normes**

55, rue Metcalfe, bureau 600  
Ottawa, ON K1P 6L5  
Canada

**SCOPE OF ACCREDITATION**

**AGAT LABORATORIES LTD.OIL AND GAS CHEMISTRY DIVISION WESTERN CANADA**  
**3650 - 21st Street, N.E.**  
**Calgary, AB**  
**T2E 6V6**

Accredited Laboratory No. 672

(Conforms with requirements of CAN-P-1578 , CAN-P-1585, CAN-P-4E (ISO/IEC 17025:2005))

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CLIENTS SERVED: All interested parties.

FIELDS OF TESTING: Chemical/Physical, Forensic

PROGRAM SPECIALTY AREA: Environmental, Forensic

SCOPE ISSUED ON: 2017-06-16

ACCREDITATION VALID TO: 2018-04-27

**FORENSICS**

**Forensic Chemistry / Trace Evidence**

Description of Activities:  
(Testing conducted at 2420-42 Avenue NE, Calgary AB T2E7T6)

IHF-60-25001: Determination of Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas

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Chromatography-Mass Spectrometry (ASTM E1618: 2014, Standard Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry)

## **ENVIRONMENTAL AND INDUSTRIAL HYGIENE**

### **Environmental**

Air

(AIR QUALITY MONITORING - Passives)

(Testing conducted at 2420-42 Avenue NE, Calgary AB T2E7T6)

AQM-43-16002 Gravimetric Determination of Particulate Emissions from Stationary Sources (Alberta Stacks Sampling Code Method 5)

AQM-43-16004 Determination of Nitrogen Dioxide (NO<sub>2</sub>) in the Air Using Passive Air Quality Sampling (is a passive sampling), (Modified is based on : H., Tang ; T., Lau ; B., Brassard. A New All-Season Passive Sampling System for Monitoring NO<sub>2</sub> in Air, Field Analytical Chemistry and Technology (1999) 3(6): pg.338-345.)

AQM-43-16005 Determination of Nitrogen Oxide (NO<sub>x</sub>), (Modified Source Sampling Code, Method 6, Alberta Environment)

AQM-43-16006 Determination of Hydrogen Sulfide (H<sub>2</sub>S) in the Air Using Passive Air Quality Sampling (Modified Tang, H. Sandeluk, J., Lin, L., and Lown, W. J. A New All-Season Passive Sampling System for Monitoring H<sub>2</sub>S in Air, The Scientific World Journal (2002) 2, pg. 155-168)

AQM-43-16007 Passive Air Quality Sampling of Sulfur Dioxide (SO<sub>2</sub>) in Air. H., Tang; B., Brassard; R., Brassard; E., Peake, A New Passive Sampling System for Monitoring SO<sub>2</sub> in the Atmosphere, Field Analytical Chemistry and Technology (1997) 1(5) pg. 307-315.

AQM-43-16008 Determination of Ozone (O<sub>3</sub>) in the Air using Passive Air Quality Sampling. Hongmao Tang & Thomas Lau, A new All Season Passive Sampling System for Monitoring Ozone in Air. Environmental Monitoring and Assessment. Kluwer Academic Publishers. 65: 129-137, 2000

AQM-43-16009 Determination of Total Dust fall and Total Fixed Dust fall, (Modified Methods of Manual for Chemical Analysis of Atmospheric Pollutants 1985 Third Edition , Alberta Environmental Centre-Dust Falls and Fixed Gravimetric Method No. 32020-October 1978-Sample Evaporating Method)

AQM-43-16010 Standard Operating Procedure for Breathing Air Analysis (Total particulate and Dew Point) (National Standard Of Canada CAN/CSA-Z180.1 13for Compressed Breathing Air and systems published March 2000, approved in January 2001 and reaffirmed in 2005)

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

### **NON METALLIC MINERALS AND PRODUCTS**

#### **Petroleum Crudes and Natural Gas:**

SCOPE OF ACCREDITATION

HC-0100	Determination of Relative Density, Density, and API Gravity of Liquids by Digital Density Meter and by Oscillating U-tube Method (ASTM D4052;ASTM D5002)
HC-0120	Determination of Hydrogen Sulfide by Tutweiler titration (GPA C1; GPA 2377)
HC-0160	Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography (modified GPA 2261, modified GPA 2286) Helium Hydrogen Nitrogen Carbon Dioxide Methanol Methane Ethane Propane Isobutane n-Butane Isopentane n-Pentane Hexane Heptanes+ Oxygen Carbon Dioxide C1-C15+ Benzene Ethylbenzene m/p-Xylene o- Xylene Toluene
HC-0200	Water and Sediment in Crude Oil by the Centrifuge Method (Lab Procedure) (Modified ASTM D4007) Solids Fraction Water Fraction
HC-0300	Determination of Cloud Point of Petroleum Products Cloud Point detection by Enhanced Optical Detection using Automatic MPP-5Gs analyzer, ultra low temperature testing and Cloud Point Testing Bath (ASTM 2500; ASTM D5771)
HC-0310	Extended Analysis of HC Liquid Mixtures Containing Nitrogen And Carbon Dioxide By Temperature Programmed Gas Chromatography (Modified GPA 2186) Methane Ethane Propane Iso-butane n-Butane Iso-pentane

n-Pentane  
Cyclopentane  
Hexane  
Methylcyclopentane  
Benzene  
Cyclohexane  
Heptanes  
Methylcyclohexane  
Toluene  
Octane  
Ethylbenzene  
o-Xylene  
m,p-Xylene  
Nonane  
Trimethylbenzene  
Decanes  
Undecanes  
Dodecanes  
Tridecanes  
Tetradecanes  
Pentadecanes  
Hexadecanes  
Heptadecanes  
Octadecanes  
Nonadecanes  
Eicosanes  
Heneicosanes  
Docosanes  
Tricosanes  
Tetracosanes  
Pentacosanes  
Hexacosanes  
Heptacosanes  
Octacosanes  
Nonacosanes  
Tricontanes+

HC-0355	Flashing a Pressurized Hydrocarbon Liquid Sample to Atmospheric Pressure by the Single Stage Cold Flash Method and Obtaining a Gas/Oil Ratio.
HC-0420	Flash Point by Manual and Anton-Paar Automatic Pensky-Martens Closed Cup Tester (ASTM D93)
HC-0500	Pour Point Determination of Crude Oils by Koehler Cloud/Pour Point Testing Bath (ASTM D5853; ASTM D97; ASTM D7346)
HC-0600	Determination of Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity) (ASTM D445)
HC-0610	Dynamic Viscosity (cP or mPa*s) and Kinematic (cSt or mm <sup>2</sup> /s )Viscosity and Density in kg/m <sup>3</sup> and API of Liquids by Stabinger Viscometer (calculation Kinematic

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	Viscosity) (ASTM D7042)
HC-0700	Vapor Pressure of Petroleum Products (Reid Method) (ASTM D323)
HC-0801	Determination of Organosulfur Compounds in Liquid and Gaseous state using GC/SCD (Modified UOP 791; Modified ASTM D5504)
HC-0900	Analysis of Natural Gas Liquid Mixtures Containing the Following Components by Gas Chromatography (GPA 2177) Nitrogen Carbon Dioxide Methane Ethane Propane Isobutane n-Butane Isopentane n-Pentane Hexane Heptane
HC-0904	Standard Operating Procedure For The Determination of PIONAOX(U) (ASTM D6730 and CAN/CGSB-3.0) P- n-paraffins I- iso-paraffins O- Olefins N-Naphthenes A- Aromatics OX-Oxygenates U-Unknown Hydrocarbons
HC-1200	Determination of Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents (Modified ASTM D 611 Method A) Aniline Point, °C Mixed Aniline Point for dark samples, °C
HC-1300	Atmospheric Distillation by Automatic Tanaka AD-6 Distillation Unit of Crude Oil and Petroleum Products (ASTM D86) Initial Boiling Point, °C 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, and 90% Recovery, °C Final Boiling Point, °C Recovered, Volume % Residue, Volume % Loss, Volume %
HC-2000	Determination of Asphaltenes (pentane insoluble) %wt Content in Oil ( Modified ASTM D2007 Annex A)
HC-2100	Determination of Heptane Insoluble Asphaltene Content in Oil %wt (ASTM D6560)
HC-3100	

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	Determination of Total Sulfur Content Mass% or ppm in Petroleum and Petroleum Products by Energy Dispersive X-Ray Fluorescence Spectrometry (ASTM D4294)
HC-3120	Determination of Wax Content %wt of Oil (Modified UOP 46)
HC-3180	Determination of Pentane Insolubles by Membrane Filtration (ASTM 4055)
HC-3181	Determination of Boiling Point Distribution by High Temperature Gas Chromatography for C5-C100 (ASTM D7169)
HC-3184	Flash Point by TAG Closed cup Tester and Anton Paar Automatic TAG closed cup apparatus Non-Metallic Minerals and Products (ASTM D56)
WAT-0100	Determination of Sulfide by Iodometric Titration Method (APHA 4500-S)
WAT-0200	Determination of Chloride concentration in Produced water by mercuric Nitrate Titration (Modified D512 Method A)
WAT-0300	Determination of pH, Alkalinity and Acidity by Titration Method (Modified APHA 2310B and APHA 2320B)
WAT-0301	Determination of pH and Alkalinity by PC-Titrate (ASTM D1067) Autotitrator
WAT-0402	Determination of Elements in Produced Water by Flame Atomic Absorption Spectrophotometry (ASTM D4691) Barium Calcium Copper Iron Magnesium Potassium Sodium Strontium
WAT-0501	Use of Refractometer for Field Test Determination of the Freezing Point of Aqueous Engine Coolants (ASTM D3321)
WAT-0600	Total Suspended Solids Dried at 103°C-105°C (APHA 2540D)
WAT-0601	Total Dissolved Solids Dried at 180°C (APHA 2540 C)
WAT-2100	Determination of Ions using Ion Chromatography with Chemical Suppression of Eluent Conductivity (APHA 4110B) Chloride Nitrate Bromide Nitrite Sulfate
WAT-2301	Specific Gravity of Formation Water and Brine using Hydrometer ranging 0.760-1.250 (ASTM D1429 Method D)

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WAT-2302	Conductivity using Conductivity Meter of Formation Water sample (APHA 2510 B)
WAT-2303	Determination of the following metals by Inductively Coupled Plasma (Modified EPA 200.7) Barium Calcium Iron Magnesium Manganese Potassium Sodium Strontium
WAT-2304	Determination of Acid Producing Bacteria by APB-BART™ (Acid producing bacteria- Biological Activity Reaction Test BART User Manual 2004 edition)
WAT-2305	Determination of Sulphate reducing bacteria by SRB-BART™ (Sulphate reducing bacteria- Biological Activity Reaction Test BART User Manual 2004 edition)
WAT-2307	Determination of Iron Related Bacteria by IRB-BART™ (Iron related bacteria Biological Activity Reaction Test BART User Manual 2004 edition)
WAT-2308	Determination of Iodide by ISE Meter (Modified ASTM D3869 Test method C) Ion selective method

**Petroleum Refinery Products: (Including asphalt materials; petrochemicals; fuels and lubricants)**

**Fuels and Lubricants**

**(LUBRICATING OILS AND FUELS )**

LTS-30-8001	Kinematic Viscosity of Transparent and Opaque Liquids cSt at 40 and 100 degrees Celsius (and Calculation of Dynamic Viscosity) (ASTM D445)
LTS-30-8007	Particle Count in Mineral Insulating Oil using Automatic Optical Particle Counters for ISO 11500 Particle Counts and NAS 1638 Particle Counts, (ASTM D6786)
LTS-30-8008	Determination Of Water In Petroleum Products, Lubricating Oils And Additives By Karl Fischer Titration Water % (ASTM D6304)
LTS-30-8014	Corrosiveness to Copper from Petroleum Products by Copper Strip test Grade (ASTM D130)
LTS-30-8015	Determination of Additive Elements, Wear Metals, and Contaminants in Used Lubricating Oils and Determination of Selected Elements in Base Oils By Inductively Coupled Plasma Atomic Emission Spectrometry (ASTM D5185) Aluminium

	Silver
	Arsenic
	Boron
	Barium
	Calcium
	Cadmium
	Chromium
	Copper
	Iron
	Potassium
	Magnesium
	Manganese
	Molybdenum
	Sodium
	Nickel
	Phosphorus
	Lead
	Antimony
	Silicon
	Strontium
	Titanium
	Vanadium
	Zinc
	Zirconium
LTS-30-8024	Freezing Point in Degrees Celsius of Aviation Fuels(Modified ASTM D2386)
LTS-30-8028	Water Separation Characteristics of Aviation Turbine Fuels by Portable Separometer as per MSEP Rating (ASTM D3948)
LTS-30-8029	Electrical Conductivity of Aviation and Distillate Fuels in pS/m (ASTM D2624)
LTS-30-8030	Saybolt Color of Petroleum Products (ASTM D156)
LTS-30-8032	Flash point in degree Celsius by Tag Closed Cup Tester (ASTM D56)
LTS-30-8034	Distillation of Petroleum Products at Atmospheric Pressure Initial Boiling Point, °C 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, and 90% Recovery, °C Final Boiling Point, °C Recovered, Volume % Residue, Volume % Loss, Volume % (ASTM D86)
LTS-30-8035	Determination of Particle Contamination in Aviation Fuels by Laboratory Filtration of Solids in mg/L (Modified ASTM D5452)
LTS-30-8038	Base number in mg/g KOH of Petroleum Products by Potentiometric Perchloric Acid Titration (ASTM D 2896)
LTS-30-8040	Determination of Acid Number by Potentiometric Titration (Modified ASTM D664)



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LTS-30-8041	Condition Monitoring of In-service Lubricants by Trend Analysis using Fourier Transform Infrared (FT-IR) Spectrometry (ASTM E2412) Soot Oxidation Nitration Sulphation Phosphate Antiwear
LTS-30-8042	Determination of API and Density of Jet Fuel by Digital Density Meter (Modified ASTM D4052)
LTS-30-8047	Determining Insoluble Compound Levels in Oil by Membrane Patch Colorimetry
	<ul style="list-style-type: none"><li>• MPC Varnish Potential</li></ul>
LTS-30-8048	Remaining Useful Life of Lubricant Oils by Determination of Amine and Phenol Groups
	<ul style="list-style-type: none"><li>• Amine Remaining, %</li><li>• Phenol Remaining, % (ASTM D6971)</li></ul>
LTS-30-8049	Standard Operating Procedure For The Determination Of Percent Fuel Dilution By Gas Chromatography
	<ul style="list-style-type: none"><li>• Diesel, %</li><li>• Gasoline, %</li></ul>
LTS-30-8050	Determining Corrosive Properties Of Cargoes In Petroleum Product Pipelines Corrosive Rating, as per NACE TM0172

**(Oil Sands)**

*(Testing conducted at 3801-21 Street NE, Calgary AB T2E6T5 )*

ROCK-04-26000	Determination of The Bitumen, Water and Solids in Oil Sand, Dean Stark Method ( Performed by Direct Determination ( Based on ACOSA method)
ROCK-04-26001	Determination of The Bitumen, Water and Solids in Oil Sand, Dean Stark Method (Performed by Weight Difference) (Modified ACOSA method)

**(Oil Sands)**

OILSANDS-31-001	Methylene Blue Index of Clay (Modified ASTM C837)
OILSANDS-31-002	Sieve Analysis Wet and Wet/Dry Combination (API40 Recommended Practices)
OILSANDS-31-004	Particle Size Analysis by Laser Diffraction (API40 Recommended Practices)

**Notes:**

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

CAN-P-1585: Requirements for the Accreditation of Environmental Testing Laboratories

CAN-P-1578: Guidelines for the Accreditation of Forensic Testing Laboratories, Program Specialty Area - Forensic Testing Laboratories

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Chantal Guay, ing., P. Eng.  
Vice President, Accreditation  
Services

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