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

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 (NO2) 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 NO2 in Air, Field Analytical Chemistry and Technology (1999) 3(6): pg.338-345.)

AQM-43-16005 Determination of Nitrogen Oxide (NOx), (Modified Source Sampling Code, Method 6, Alberta Environment)


ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY

NON METALLIC MINERALS AND PRODUCTS

Petroleum Crudes and Natural Gas:

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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
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 mm2/s) Viscosity and Density in kg/m3 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 Standards Council of Canada Accredited Laboratory No. 672

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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-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)


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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)
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

- MPC Varnish Potential

LTS-30-8048 Remaining Useful Life of Lubricant Oils by Determination of Amine and Phenol Groups

- Amine Remaining, %
- Phenol Remaining, % (ASTM D6971)

LTS-30-8049 Standard Operating Procedure For The Determination Of Percent Fuel Dilution By Gas Chromatography

- Diesel, %
- Gasoline, %

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:
Standards Council of Canada Accredited Laboratory No. 672


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

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

Date: 2017-06-16

Number of Scope Listings: 74
SCC 1003-15/827
Partner File #0
Partner: