



**TESTING AND CALIBRATION LABORATORY ACCREDITATION PROGRAM (LAP)**

**Scope of Accreditation**

Accredited Laboratory No. 18

**Legal Name of Accredited Laboratory:** **Element Materials Technology Canada Inc.**

Location Name or Operating as (if applicable): EDMONTON LABORATORY

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<b>SCC File Number:</b>	15031
<b>Accreditation Standard(s):</b>	ISO/IEC 17025:2005
<b>Fields of Testing:</b>	Chemical/Physical
<b>Program Specialty Area:</b>	Environmental Testing (ET)
<b>Initial Accreditation:</b>	1985-06-07
<b>Most Recent Accreditation:</b>	2020-05-31
<b>Accreditation Valid to:</b>	2021-06-07

**ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY**

**Environmental**

**Soil/Sediment**

**(Acid Neutralizing Value - Soil)**



TM SOIL 024-10;      Acid Neutralizing Value for Liming Materials (AOAC 955.01 Modified)  
Calcium Carbonate Equivalent

**(Atterberg Limits - Soil)**

TM SOIL 050-10;      Atterberg Limits of Soils (ASTM D4318-05 Modified)  
Atterberg Limits

**(Available Cu/Fe/Mn/Zn - Soil)**

TM METAL 073-10;      Extractable Micro Nutrients in Soil by ICP (MSS Method 4.65/APHA  
3120B Modified)  
Copper  
Iron  
Manganese  
Zinc

**(Barium - Soil)**

TM METAL 060-10;      Barium in Soil by ICP (Alberta Environment/British Columbia  
Environmental Laboratory Manual/ASTM D4503-08/APHA  
3120B Modified)  
Barium Extractable  
Barium Fusion  
Barium Soluble

**(Boron - Soil)**

TM METAL 059-10;      Hot Water Soluble Boron in Soil by ICP (MSS Method 4.61/APHA  
3120B Modified)  
Boron

**(BTEX - Soil)**

TM ORG 001-10;      Analysis of BTEX/F1 in Soil and Water Samples GC/MSD + FID (SW  
846, EPA 5021A/8260B Method A108.0-1/CCME-CWS-PHCS-TIER  
1 Modified)  
Benzene  
Ethylbenzene  
m/p-Xylene  
o- Xylene  
Styrene  
Toluene



**(Bulk Density - Soil)**

TM PREP 016-10; Bulk Density and Specific Gravity of "As-Received" Samples  
(American Society of Agronomy No. 9, Part 1, Method 13-2 Modified)  
Bulk Density

**(Calcium Carbonate - Soil)**

TM SOIL 133-10; Calcium Carbonate in Soil by Dual pH (J. Ashworth, COM. SOIL SCI  
PLANT SCI 28, 841-848, 1997 Modified)  
Calcium Carbonate

**(Conductivity - Soil)**

TM SOIL 001-10; pH and Electrical Conductivity in Soil: Water (MSS Method 4.11/4.12  
Modified)  
E.C. (1:2 water)

**(Cyanide - Soil)**

TM WET 053-10; Cyanide in Aqueous Solutions by Continuous Flow Colorimetry  
(NAQUADAT NO. 06608L/Method 335.3/ APHA 4500-CN<sup>-</sup> I/ APHA  
4500-CN<sup>-</sup> C Modified)  
Cyanide, SAD  
Cyanide, Total  
Cyanide, WAD  
Cyanide, Water Soluble

**(Extractable N/P/K - Soil)**

TM WET 018-10; Extractable Nitrate, Phosphate and Potassium in Soils by Continuous  
Flow Colorimetry (SSMA Method 6.3/ APHA 4500-P D/ Method 19103  
565 Modified)  
Nitrate  
Phosphorus  
Potassium

**(Extractable Na/Ca/Mg/K. - Soil)**

TM METAL 054-10; Extractable Macro Nutrients in Soil by ICP (MSS Method 4.51/ APHA  
3120 B Modified)



Calcium  
Magnesium  
Sodium

**(Extractable Na/Ca/Mg/K/C.E.C. - Soil)**

TM METAL 053-10; Exchangeable Cations and Cation Exchange Capacity (CEC) In Soil by Ammonium Acetate Extraction (MSS Method 3.32/APHA 3120 B/APHA, 4500-NH<sub>3</sub> G Modified)  
Ammonium  
C.E.C.  
Calcium  
Magnesium  
Potassium  
Sodium

**(Extractable NH<sub>4</sub>/NO<sub>3</sub> - Soil)**

TM WET 016-10; Extractable Ammonium and Nitrate in Soil by Continuous Flow Colorimetry (MSS Method 4.35/ APHA 4500-NH<sub>3</sub> G/ MSS Method 6.3 Modified)  
Ammonium  
Nitrate

**(Extraction - Soil/Waste)**

TM SOIL 129-10; Salinity, pH and EC of Field-Moist Soils (SSMA. 2008. pp. 161-168 Modified)  
Ammonium  
Calcium  
Chloride  
EC  
Extract  
Magnesium  
Nitrate + Nitrite  
pH  
Potassium  
Sodium  
Sulfur

**(Hydrocarbons - Soil/Waste)**



TM OIL 027-10; Dean Stark Analysis in Soil and Sludge (ACOSA REF. METHOD Modified)  
Oil Fraction  
Solids Fraction  
Water Fraction

**(Leachable BTEX - Soil/Waste)**

TM WET 033-10; Leachable BTEX in Solids and Waste by GC/PID + FID with headspace analyzer (SW-846, EPA1311, 5021A/8260B Modified)  
Benzene  
Ethylbenzene  
m/p-xylene  
o-xylene  
Toluene

**(Lime Requirement - Soil)**

TM SOIL 060-10; CaCO<sub>3</sub> (Lime) Requirement in Soil by Single Buffer (SSMA 12.2 Modified)  
Lime Requirement - Soil

**(Metals - Soil/Salm Digest)**

TM METAL 077-10; Metals in Soil, Sludge, Sediment and Oily Waste by ICP OES (BCMOE SALM Modified)  
Aluminum  
Calcium  
Iron  
Magnesium  
Manganese  
Phosphorous  
Potassium  
Silicon  
Sodium  
Sulfur

**(Metals - Soil/Salm Digest)**

TM METAL 077-10; Metals in Soil, Sludge, Sediment and Oily Waste by ICP MS (BCMOE SALM/EPA Method 200.8/EPA 1311 TCLP/Special Waste Extraction Procedure Modified)  
Antimony



Arsenic  
Barium  
Beryllium  
Bismuth  
Boron  
Cadmium  
Chromium  
Cobalt  
Copper  
Lead  
Lithium  
Mercury  
Molybdenum  
Nickel  
Selenium  
Silver  
Strontium  
Thallium  
Tin  
Titanium  
Uranium  
Vanadium  
Zinc  
Zirconium

**(Organic Matter (LOI) - Soil)**

TM SOIL 019-10;      Organic Matter in Soil by Loss on Ignition (MSS Method 3.8 Modified)  
Organic Matter by LOI

**(Particle Size Analysis)**

TM SOIL 032 - 10;      Particle Size Analysis of Soil by Dry Sieve (MSS Method 55.4  
Modified)

TM SOIL 120 - 10;      Particle Size Analysis of Soil by Hydrometer (MSS Method 55.3  
Modified)  
Diameter < 2mm

TM SOIL 121 - 10;      Particle Size Analysis by Wet Sieve (ASTM C117 Modified)

TM WET 103 - 10;      Particle Size Analysis by Laser Diffraction Particle Size Analyzer  
(Laser Diffraction Particle Size Analyzer Instruction for Use, October  
2011, Beckman Coulter, Inc., Modified)  
Particle Size Mean (D50)



**(Petroleum Hydrocarbons (PHC) - Soil)**

TM ORG 001-10; BTEX and F1 in Soil Samples by GC/MSD/FID (EPA 8260B/5021A/CCME-CWS-PHCS-TIER 1 Modified)  
F1: C6-C10

**(pH - Soil)**

TM SOIL 001-10/021-10; pH and Electrical Conductivity in Soil/pH in Soil by 0.01M Calcium Chloride (MSS Method 4.11 & 4.12/3.11 Modified)  
pH (0.01 M CaCl<sub>2</sub>)  
pH (1:2 Water/Soil)

**(Phenols, Total - Soil)**

TM WET 058-10; Phenol in Aqueous Solutions by Continuous Flow Colorimetry (APHA 5530D Modified)  
Phenols, Total

**(Phosphorus, Olsen P - Soil)**

TM WET 101-10; Sodium Bicarbonate Extractable Phosphorus (Olsen P) in Soil by Continuous Flow Colorimetry (SSMA 8.2.1/ APHA 4500-P D Modified)  
Bicarbonate Extractable

**(Physical Parameters)**

TM PREP 003 - 10; Soil Moisture Content (Martin R. Carter & E.G. Gregorich. Soil Sampling and Methods of Analysis, 2008. Method 4.4, Sample Moisture Content. Modified)  
% Moisture

TM SOIL 044 - 10; Hydraulic Conductivity Saturated by Constant Head Method (MSS Method 2.5 Modified)  
Hydraulic Conductivity

**(Saturated Paste - Soil)**

TM SOIL 022-10; Sodium Absorption Ratio (SAR), pH and EC in Soil by Saturated Paste (SSMA CH.15 Modified)  
Ammonium  
Calcium  
Chloride  
EC



Magnesium  
Nitrate + Nitrite  
pH  
Potassium  
Saturated Paste Extract  
Saturation Percentage  
Sodium  
Sulfur

**(Soluble Sulfate - Soil)**

TM METAL 083-10; Extractable Sulfur as Sulfate in Soils by ICP (MSS Method 4.47/  
APHA 3120B Modified)  
Sulfate

**(TEH in Soil/Water)**

TM ORG 003-10; Analysis of Petroleum Hydrocarbons in Soil and Water Using GC-FID  
(CCME-CWS-PHCS-TIER 1 Modified)  
F2 (C10-C16)  
F3 (C16-C34)  
F4 (C34-C50)

**(Wettability - Soil)**

TM SOIL 049-10; Molarity Ethanol Droplet Value (MED) (AB SOIL SCI WORKSHOP  
YOUNG. VOL 27, P.59-63, 1990 Modified)  
Wettability

**Waste**

**(Extractable Organic Halogens - Waste/Soil)**

TM OIL 500-90; EOX in Soil/Waste (EPA 9023 modified)  
Extractable Organic Halogens

**(Flash Point - Waste)**

TM OIL 025-10; Flash Point in Liquid and Soil Samples by Penske-Martens Closed  
Cup Tester (ASTM D93Modified)  
Flash Point





**(Free Liquids - Waste)**

TM SOIL 130-10;      Paint Filter Test (SW846, EPA 9095B Modified)  
Free Liquids - Waste

**Water (Inorganic)**

**(Alkalinity (pH 4.5) and EC - Water)**

TM WET 001-10;      pH, Electrical Conductivity and Total and Phenolphthalein Alkalinity in  
Water by PCTitrate Auto Titrator (APHA 2320 B/ APHA, 2510 B/  
APHA, 4500-H<sup>+</sup> B Modified)

Alkalinity (pH 4.5)  
Electrical Conductivity

pH

TM WET 104-10;      Measurement of pH in Water and Waste Water at 15°C (APHA, 4500-  
H<sup>+</sup> B, Modified)

pH

**(Ammonia - Water)**

TM WET 008-10;      Ammonia-N in Aqueous Solutions by Continuous Flow Colorimetry  
(APHA 4500 NH<sub>3</sub>-G/EPA 1311 Modified)

Ammonium

**(B.O.D.)**

TM WET 044-10;      Biological Oxygen Demand in Waters and Wastewaters by Incubation  
(APHA 5210B Modified)

BOD  
CBOD

**(BCMOE Total Metals - Water)**

TM METAL 080-10;      Metals in Aqueous Solutions by ICP-OES (British Columbia  
Environmental Lab Manual (2009) - Digestion for Total Metals in  
Water - Prescriptive/APHA 3120B/APHA 3030F)

Total Calcium  
Total Iron  
Total Magnesium  
Total Manganese  
Total Phosphorus  
Total Potassium



	Total Silicon
	Total Sodium
	Total Sulfur
TM METAL 081-10;	Trace Metals in Aqueous Solutions by ICP-MS (British Columbia Environmental Lab Manual (2009) - Digestion for Total Metals in Water - Prescriptive/EPA 200.8/APHA 3125B Modified)
	Total Aluminum
	Total Antimony
	Total Arsenic
	Total Barium
	Total Beryllium
	Total Bismuth
	Total Boron
	Total Cadmium
	Total Chromium
	Total Cobalt
	Total Copper
	Total Iron
	Total Lead
	Total Lithium
	Total Manganese
	Total Molybdenum
	Total Nickel
	Total Selenium
	Total Silver
	Total Strontium
	Total Thallium
	Total Thorium
	Total Tin
	Total Titanium
	Total Uranium
	Total Vanadium
	Total Zinc
	Total Zirconium

**(C.O.D. - Water)**

TM WET 050-10;	Chemical Oxygen Demand in Water and Wastewater by Block Digestion (APHA 5220 D Modified)
	COD

**(Carbon - Water)**



TM WET 020-10; TOC, DOC, TIC, DIC, and TC in Water and Wastewater by High-Temperature Combustion (APHA 5310B)  
Carbon-Dissolved Inorganic  
Carbon-Dissolved Nonpurgeable Organic  
Carbon-Total  
Carbon-Total Inorganic  
Carbon-Total Nonpurgeable Organic

**(Chloride - Water)**

TM WET 100-10; Chloride in Aqueous Solutions by Colorimetric Discrete Analyzer (APHA 4500 Cl E Modified)  
Chloride

**(Chlorine - Water)**

TM WET 068-10; Total and Free Chlorine in Water by Spectrophotometer (APHA 4500-CL G Modified)  
Free Chlorine  
Total Chlorine

**(Chromium -Hex - Water)**

TM WET 075-10; Hexavalent Chromium in Aqueous Solutions by Colorimetric Centripetal Analyzer (APHA 3500 CR B//EPA 1311 Modified)  
Chromium (Hexavalent)

**(Color - Water)**

TM WET 025-10; True and Apparent Color in Water by Visual Comparison (APHA 2120 B Modified)  
Color  
TM WET 035 - 10; UV Absorbance and Transmittance in Water and Waste Water by Spectrophotometer (APHA 5910 B, Modified)  
UV Absorbance and Transmittance

**(Cyanate - Water)**

TM WET 095-10; Cyanate in Water and Wastewater by Continuous Flow Colorimetry (APHA 4500-CN-L Modified)  
Cyanate



**(Cyanide - Water)**

TM WET 053-10; Cyanide in Aqueous Solutions by Continuous Flow Colorimetry  
(NAQUADAT 06608L/ EPA 335.3/ APHA 4500-CN C/APHA 4500-CN-  
I/EPA 1311/Special Waste Extraction Procedure Modified)  
Cyanide - Dissolved  
Cyanide - SAD  
Cyanide - Total  
Cyanide - WAD

**(Dissolved Metals - Water)**

TM METAL 081-10; Trace Metals in Aqueous Solutions by ICP-OES (EPA 200.8 /APHA  
3125 B Modified)  
Dissolved Aluminum  
Dissolved Antimony  
Dissolved Arsenic  
Dissolved Barium  
Dissolved Beryllium  
Dissolved Bismuth  
Dissolved Boron  
Dissolved Cadmium  
Dissolved Chromium  
Dissolved Cobalt  
Dissolved Copper  
Dissolved Iron  
Dissolved Lead  
Dissolved Lithium  
Dissolved Molybdenum  
Dissolved Nickel  
Dissolved Selenium  
Dissolved Silver  
Dissolved Strontium  
Dissolved Thallium  
Dissolved Tin  
Dissolved Titanium  
Dissolved Uranium  
Dissolved Vanadium  
Dissolved Zinc  
Dissolved Zirconium

**(Dissolved Metals - Water (High Range))**



TM METAL 080-10; Metals in Aqueous Solutions by ICP-OES (APHA 3120 B/ APHA 3030 F Modified)  
Dissolved Barium (High)  
Dissolved Calcium  
Dissolved Iron (High)  
Dissolved Magnesium  
Dissolved Manganese (High)  
Dissolved Phosphorus  
Dissolved Potassium  
Dissolved Silicon  
Dissolved Sodium  
Dissolved Sulfur  
Hardness - Calculation  
Sodium Absorption Ratio - Calculation

**(Dissolved Solids - Formation Water)**

TM WQ 035-10; Filterable Residue in Oilfield Water, Gravimetric (APHA 2540 C/APHA 2540 E Modified)  
Dissolved Solids - Ignited @ 550°C  
Dissolved Solids - Dried @ 105°C

**(Dissolved Solids - Water)**

TM WET 055-10; Dissolved Solids (APHA 2540 C/ APHA 2540 E Modified)  
Fixed Dissolved Solids  
Total Dissolved Solids  
Volatile Dissolved Solids

**(Extractable Metals - Water)**

TM METAL 080-10; Metals in Aqueous Solutions by ICP-OES (APHA 3120 B/APHA 3030 F Modified)  
Extractable Calcium  
Extractable Iron  
Extractable Magnesium  
Extractable Manganese  
Extractable Phosphorus  
Extractable Potassium  
Extractable Silicon  
Extractable Sodium



Extractable Sulfur

**(Extractable Metals - Water)**

TM METAL 081-10; Trace Metals in Aqueous Solutions by ICP-MS (EPA 200.8/APHA 3125 B Modified)  
Extractable Aluminum  
Extractable Antimony  
Extractable Arsenic  
Extractable Barium  
Extractable Beryllium  
Extractable Boron  
Extractable Cadmium  
Extractable Chromium  
Extractable Cobalt  
Extractable Copper  
Extractable Iron  
Extractable Lead  
Extractable Lithium  
Extractable Molybdenum  
Extractable Nickel  
Extractable Selenium  
Extractable Silver  
Extractable Strontium  
Extractable Thallium  
Extractable Tin  
Extractable Titanium  
Extractable Uranium  
Extractable Vanadium  
Extractable Zinc  
Extractable Zirconium

**(Major Ions - Water)**

TM WET 012-10; Anions in Aqueous Solutions by Ion Chromatography (APHA 4110 B/EPA 1311/Special Waste Extraction Procedure Modified)  
Bromate  
Bromide  
Chlorate  
Chloride  
Chlorite  
Fluoride



Iodide  
Nitrate  
Nitrite  
Phosphate  
Sulfate

**(Mercury - Water)**

TM METAL 063-10; Mercury in Aqueous Solutions by Cold Vapour Atomic Absorption (EPA Method 245.5/APHA 3112B Modified)  
Mercury - Dissolved  
Mercury - Extractable  
Mercury - Total

**(Nitrogen Total - Water)**

TM WET 040-10; Total Nitrogen in Water and Wastewater by High-Temperature Combustion (ISO/TR 11905:1997(E) Modified)  
Dissolved Kjeldahl Nitrogen  
Dissolved Nitrogen  
Total Kjeldahl Nitrogen  
Total Nitrogen

**(Oil and Grease - Water)**

TM OIL 065-10; Total Oil & Grease in Water by Gravimetric Analysis (EPA 1664 Modified)  
Total Oil and Grease

**(Oxygen - Water)**

TM WET 022-10; Dissolved Oxygen in Water and Waste Water by Titration (APHA 4500-O C, Modified)

COD

**(Phenols - Water)**

TM WET 058-10; Phenol in Aqueous Solutions by Continuous Flow Colorimetry (APHA 5530 D/EPA 1311 Modified)  
Phenols



**(Phosphorus - Water)**

TM WET 073-10/TM WET 099-10      Ortho-Phosphate in Water by Colorimetric Discrete Analyzer /Total and Dissolved Phosphorus in Water by Smartchem Colorimetric Discrete Analyzer (10APHA 4500 P-F/ APHA, 4500-P B/APHA, 4500-P F Modified)  
Orthophosphate (SRP)  
Total Dissolved Phosphorus  
Total Phosphorus

**(Reactive Silica - Water)**

TM WET 091-10;      Molybdate Reactive Silica in Water by Spectrophotometer (APHA 4500 SIO2 C Modified)  
Reactive Silica

**(Sulfide - Water)**

TM WET 057-10;      Total Sulfide in Aqueous Solutions by Automated Gas Dialysis (APHA 4500 S2-E Modified)  
Sulfide

**(Suspended Solids - Water)**

TM WET 056-10;      Total Suspended Solids in Water and Wastewater Dried at 104° C (APHA 2540 D/ APHA 2540 E Modified)  
Fixed Suspended Solids  
Total Suspended Solids  
Volatile Suspended Solids

**(Thiocyanate - Water)**

TM WET 096-10;      Thiocyanate in Water and Wastewater by Colorimetric Centripetal Analyzer (APHA 4500 CN- M Modified)  
Thiocyanate

**(Turbidity - Water)**

TM WET 064-10;      Turbidity in Water and Waterwaster by Nephelometric Method (APHA 2130 B Modified)  
Turbidity

**Water (Organic)**





**(BTEX - Water)**

TM ORG 001-10; BTEX and F1 in Water Samples by MSD/FID (CCME-CWS-PHCS-TIER 1/EPA 5021A/8260B/ Modified)  
Benzene  
Ethylbenzene  
m/p-Xylene  
o-Xylene  
Styrene  
Toluene

**(Petroleum Hydrocarbons (PHC) - Water)**

TM ORG 001-10; BTEX and F1 in Soil Samples by GC/MSD/FID (CCME-CWS-PHCS-TIER 1 Modified)  
F1: C6-C10

**Water (Toxicology)**

**(Microtox - Water)**

TM BIO 037-10; Microtox 15 Minute, Multiple Concentration, Acute, Static EC50 Bioassay (EPS 1/RM/24 Modified)  
Microtox EC 50 (15min)

TM BIO 038-10; Club Root Pathogen (*P. brassicae*) Detection in Soil and Plant Tissue by Manual Spin Kit DNA Extraction and Real-time PCR (Wallenhammar et al. In-field distribution of *Plasmodiophora brassicae* measured using quantitative real-time PCR. *Plant Pathology* 61: 16-28; Modified)  
*Plasmodiophora brassicae*

**NON METALLIC MINERALS AND PRODUCTS**

**Petroleum Crudes and Natural Gas:**

**(Acid Neutralization Number)**

TM OIL 241-90; Acid Number by Potentiometric Titration, (ASTM D 664, Modified)  
Acid Number



**(Asphaltenes: nC5 insoluble)**

TM OIL 200-90; Asphaltenes Content Of Crude Oil, Condensate And Bitumen  
(Syncrude Method 5.1, Modified)  
Asphaltene

**(Benzene Emissions)**

TM GAS 037-90; BTEX in Natural Gas Dehydrator Reboiler Overheads Streams By  
Total Capture

**(BS&W - Oil)**

TM OIL 040-90; Sediment and Water (BS&W) in Crude and Heavy Oil: Centrifuge  
Method (ASTM D 4007 Modified)

**(Composition - Liquid Hydrocarbon)**

TM GAS 015-90; High Pressure Liquid Compositional Analysis (ASTM D 2887 modified)  
High Pressure Liquid Analysis (D 5307 modified)  
Only for: N<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>S, C<sub>1</sub>-C<sub>30+</sub>, Benzene, Toluene, Ethylbenzene  
& p+m Xylene, o-Xylene, 1,2,4 Trimethylbenzene, Cyclopentane,  
Methylcyclopentane, Cyclohexane, Methylcyclohexane, Density,  
Relative Molecular Mass and Gas Equivalent Factor

TM GAS 016-90; Low Pressure Liquid Composition Analysis (ASTM D 2887 modified)  
Only for: H<sub>2</sub>S, C<sub>1</sub>-C<sub>30+</sub>, Benzene, Toluene, Ethylbenzene & p+m  
Xylene, o-Xylene, 1,2,4 Trimethylbenzene, Cyclopentane,  
Methylcyclopentane, Cyclohexane, Methylcyclohexane, Density,  
Relative Molecular Mass and Gas Equivalent Factor

**(Composition - Natural Gas)**

TM GAS 023-90; Compositional Gas Analysis GPA 2286 Modified)  
Only for: N<sub>2</sub>, CO<sub>2</sub>, C<sub>1</sub>-C<sub>10+</sub>, He, H<sub>2</sub>, H<sub>2</sub>S Density, Gross Heating  
Value, Pseudocritical Pressure and Temperature, Relative Molecular  
Mass (Total and C<sub>7+</sub>) and Vapour Pressure (C<sub>5+</sub>)

TM GAS 028-90; Extended Gas Analysis: GPA 2286 (GPA 2286 Modified)  
Only for: N<sub>2</sub>, CO<sub>2</sub>, C<sub>1</sub>-C<sub>30+</sub>, He, H<sub>2</sub>, Density, Gross Heating Value,  
Pseudocritical Pressure and Temperature, Relative Molecular Mass  
(Total and C<sub>7+</sub>) and Vapour Pressure (C<sub>5+</sub>)

**(D86 Atmospheric Distillation)**

TM OIL 150-90; D86 Atmospheric Distillation (ASTM D 86, Modified)



**(Density - Oil)**

TM OIL 050-90; Absolute and Relative Density and API Gravity: Digital Density Meter (ASTM D 4052 Density, Relative Density, Modified/ASTM D 5002 Modified)

**(Flash Point - Closed Cup)**

TM OIL 171-90; Flash Point of Petroleum Oils and Lubricants (ASTM D 93, Modified) Flash Point

**(Hydrogen Sulfide and Mercaptan as Sulfur)**

UOP 163; Hydrogen Sulfide and Mercaptan Sulfur in Liquid Hydrocarbon: by Potentiometric Titration  
Hydrogen Sulfide  
Mercaptan as Sulfur

**(Kinematic and Absolute Viscosity)**

TM OIL 145-90; Dynamic Viscosity and Density of Liquids by Stabinger Viscometer  
Absolute Viscosity  
Density  
Kinematic Viscosity

**(LPG or NGL Composition)**

TM GAS 009-90; NGL Analysis by Gas Chromatography (ASTM D 2163 Modified)  
Only for: N<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>S, C<sub>1</sub>-C<sub>12</sub>+, Density, Relative Molecular Mass and Gas Equivalent Factor

**(Micro Carbon Residue)**

TM OIL 135-90; Carbon Residue Microcarbon Method (ASTM D 4530 modified)  
Micro Carbon Residue

**(Organic Chloride Content in Crude Oil)**

TM OIL 076-90; Organic Chloride Content of Crude and Waste Oil (ASTM D 4929, Method A, Modified)  
Organic Chloride

**(Reduced Sulfur Species - Gas)**



TM GAS 014a-90; Total Reduced Sulfur Analysis of Natural Gas: Gas Chromatography/Sulfur Chemiluminescence Detector. (ASTM D 5504; Modified)

Only for: Hydrogen sulfide, Carbonyl Sulfide, Sulfur Dioxide, MethylMercaptan, EthylMercaptan, DimethylSulfide, Carbon Disulfide, i-PropylMercaptan, t-ButylMercaptan, n-PropylMercaptan, MethylEthylSulfide, s-ButylMercaptan, i-ButylMercaptan, Diethylsulfide, n-ButylMercaptan, Dimethyl disulfide

**(Total Sulfur - Oil)**

TM OIL 060-90; Total Sulfur: X-Ray Fluorescence Method (ASTM D 4294 Modified)

**(Water Content)**

TM OIL 160-90; Water Content by Karl Fisher Coulometric Titration (ASTM D 4928 modified)  
Water Content

**Notes:**

**AOAC:** Official Methods of Analysis International

**ASTM:** American Society of Testing and Materials

**APHA:** Standard Methods for the Examination of Water & Wastewater

**BCMOE:** British Columbia Ministry of Environment

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

**CCME-CWS-PHCS Tier 1:** Canadian Council of Ministers of the Environment, Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1

**EPA:** Environmental Protection Agency

**PREP #, BIO #, WET #, ORG #, METAL #, SOIL #, GAS #, OIL #, TO #, WQ #:** Exova in-house Test Methods.

**GPA:** Gas Processors Association

**MSS:** Manual on Soil Sampling and Methods of Analysis - J.A. McKeague, 1978

**SMAA:** Soil Sampling and Methods of Analysis, Martin R. Carter, 2008

**SSA:** Soil Science Society of America



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**Conseil canadien des normes**

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