

**Characterization Laboratory**  
**CanmetENERGY**  
Ottawa (ON) Research Centre  
Analytical Services

<b>TEST NAME</b>	<b>TEST METHOD</b>
<b>COALS, COKES, COMBUSTION RESIDUES, BIOMASS ANALYSIS</b>	
AIR DRYING LOSS	ASTM D3302
ASH in COAL, COKE, BIOMASS & DEPOSIT	ASTM D3174/ASTM D5142
ASH in COAL, COKE, BIOMASS & DEPOSIT	ISO 1171/ASTM D5142
ASH in PETROLEUM COKE	ASTM D4422
CALORIFIC VALUE, GROSS (Routine Samples)	ISO 1928
CARBON DIOXIDE IN COAL & DEPOSIT	ISO 925
CARBON DIOXIDE IN COAL & DEPOSIT by TGA-FTIR	IN-HOUSE
CARBON in Deposits	ASTM D5373
CARBON, HYDROGEN & NITROGEN (coal, coke, biomass, combustion residues)	ASTM D5373
CHLORINE, FLUORINE, & BROMINE in Coal & Residues (Pyrohydrolysis/IC)	ISO 11724 (modified), ASTM D5987 (modified)
CHLORINE BY BOMB COMBUSTION/IC	ASTM D4208
DENSITY BY HELIUM PYCNOMETER	IN-HOUSE
EQUILIBRIUM MOISTURE	ASTM D1412
FOURIER TRANSFORM IR ANALYSIS	IN-HOUSE
FUSIBILITY OF ASH – OXIDIZING & REDUCING	ASTM D1857
LOW TEMP PLASMA ASH	IN-HOUSE
MERCURY in COAL & COMBUSTION RESIDUES	ASTM D6722
MOISTURE ANALYSIS	ASTM D3173/D5142/C311
SULPHUR (Coal, Coke, Combustion Residues)	ASTM D4239, D5016
TGA/FTIR ANALYSIS	IN-HOUSE
THERMOGRAVIMETRIC ANALYSIS	IN-HOUSE
VOLATILES IN COAL & COKE	ISO 5071, ISO 562, ASTM D5142
XRF ANALYSIS (Major and Minor Metals)	ASTM D4326
<b>PETROLEUM PRODUCTS, LUBRICANTS, BIOFUELS</b>	
ACID NUMBER by Potentiometric Titration	ASTM D664
ANILINE POINT	ASTM D611
API GRAVITY- CALCULATION	ASTM D4052
ASH in PETROLEUM PRODUCT	ASTM D482
CALORIFIC VALUE, GROSS	ISO 1928
CARBON, HYDROGEN & NITROGEN	ASTM D5291
CETANE INDEX (+ D86 OR SIMDIS, DENSITY, ANILINE & VI-40)	CGSB-3.0#20.9-M88
CETANE INDEX (+ DENSITY & ASTM D86 OR SIMDIS)	ASTM D4737
CETANE INDEX (+ DENSITY & ASTM D86 OR SIMDIS)	ASTM D976
CLOUD POINT ANALYSIS	ASTM D5773
COLOR ANALYSIS	ASTM D1500

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DENSITY BY DIGITAL DENSITY METER	ASTM D4052
DENSITY BY HELIUM PYCNOMETER	IN-HOUSE
FLASH POINT, CLEVELAND (OPEN CUP)	ASTM D92
FLASH POINT, MINI	ASTM D6450
FLASH POINT, PENSKY-MARTENS (CLOSED CUP)	ASTM D93
FLASH POINT, SETAFLASH (CLOSED CUP)	ASTM D3828
FREEZING POINT	ASTM D5972
ION CHROMATOGRAPHY, SOLUBLE CHLORINE, FLUORINE, NITRATE, NITRITE, SULPHATE, SULPHITE	IN-HOUSE
MICRO CARBON RESIDUE	ASTM D4530
NITROGEN in Petroleum Products (Chemiluminescence)	ASTM D5762
POUR POINT ANALYSIS	ASTM D5949
SIMULATED DISTILLATION – Boiling Range Distribution	ASTM D2887
SULPHUR (Oil)	ASTM D1552
SULPHUR in Petroleum Products by XRF Analysis	ASTM D2622, D7039
SULPHUR, TOTAL in Petroleum Products (UV Fluorescence, Antek)	ASTM D5453
VISCOSITY, DYNAMIC (BROOKFIELD)	ASTM D5018
VISCOSITY, KINEMATIC AT VARIOUS TEMP	ASTM D445, D7279
VISCOSITY INDEX CALCULATION	ASTM D2270
WATER CONTENT BY DISTILLATION	ASTM D95
WATER CONTENT BY KARL FISCHER TITRATION	ASTM D4928, D6304
<b>SPECIALIZED ANALYSES</b>	
GAS ANALYSIS BY GC	
GC/MS ANALYSIS	
GC/MS: Determination of fatty acids, alpha-olefins and alkenes in bio-diesel	
GC/MS/TDU: Thermal Desorption Unit	
GC/PFPD: Sulphur Speciation	
SCANNING ELECTRON MICROSCOPY with ENERGY DISPERSIVE XRF	
XRD ANALYSIS, Qualitative and Quantitative	
XRD-CRYSTALLITE SIZE	
XRF ANALYSIS, Qualitative, Semi-quantitative and Quantitative	