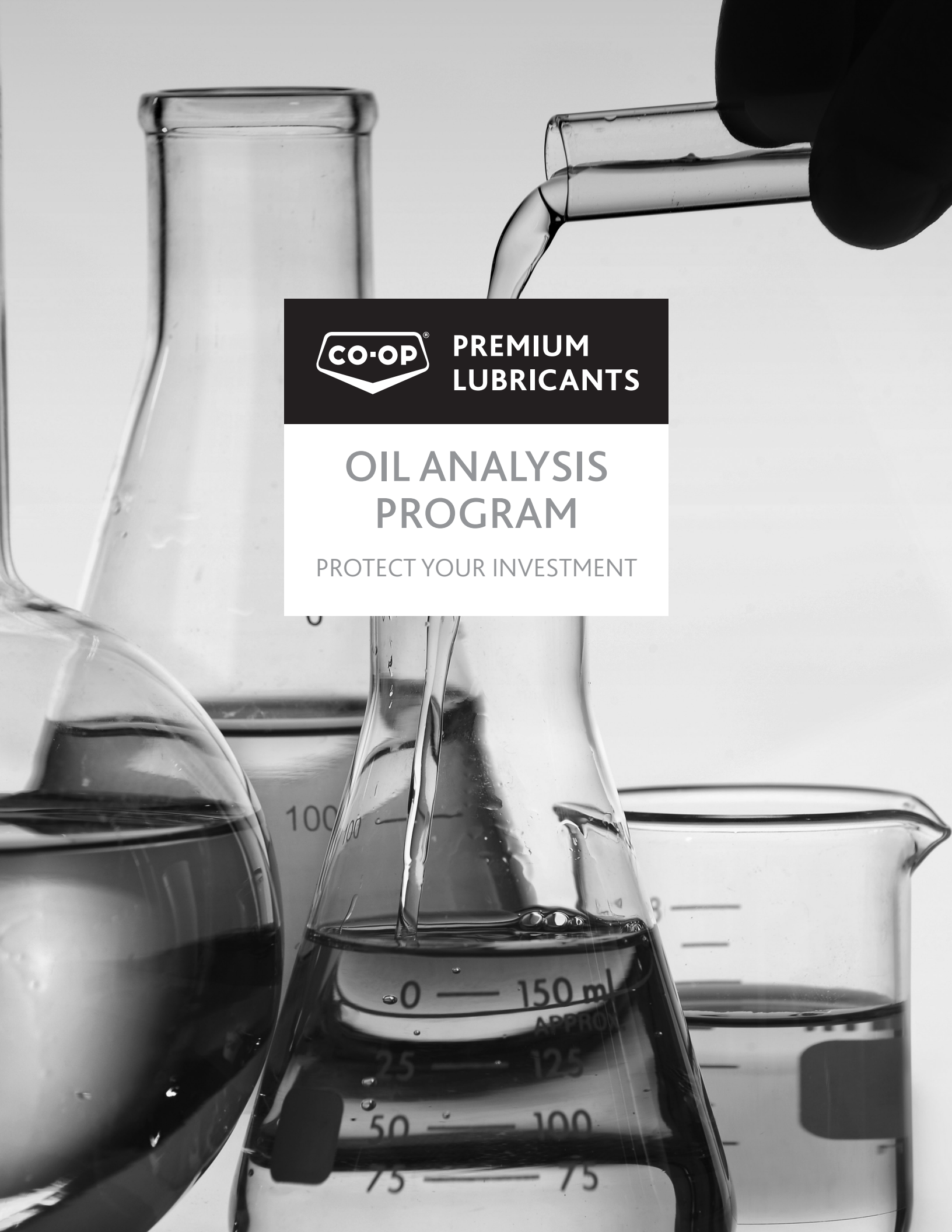


CO-OP® PREMIUM LUBRICANTS

OIL ANALYSIS PROGRAM

PROTECT YOUR INVESTMENT

WEAR METAL ORIGINS REFERENCE CHART

Equipment Components

Metal	Engine	Transmission	Differential	Planetary	Torque Converter	Hydraulic Power Steering	Final Drive	Gear Box	Air Compressor
Aluminum (Al)	• Pistons • Bearings • Bushings • Blocks (some) • Housings • Oil pump bushings • Blowers • Thrust bearings • Ingested dirt	• Pumps • Clutches (some) • Thrust washers • Bushings • Ingested dirt	• Thrust washers • Pump bushings (some) • Greases (some) • Ingested dirt	• Grease (some) • Ingested dirt	• Impeller • Turbine • Pump (some) • Ingested dirt	• Pump/motor housings • Cylinders (some) • Ingested dirt	• Oil pump • Thrust washers • Greases (some) • Ingested dirt	• Thrust washers • Oil pump (some) • Bushings • Greases (some) • Ingested dirt	• Rotors • Pistons • Bearings • Thrust washers • Block housings • Ingested dirt
Chromium (Cr)	• Rings • Roller taper • Bearings (some) • Liners • Exhaust valves • Water treatment • Chemicals	• Roller/taper • Bearings • Water treatment (oil cooler)	• Roller/taper • Bearings (some)	• Roller/taper • Bearings (some)	• Roller/taper • Bearings (some)	• Rods • Spools • Roller/taper • Bearings (some)	• Roller/taper • Bearings (some)	• Roller/taper • Bearings (some)	• Rings • Roller/taper • Bearings (some) • Water treatment (oil cooler)
Copper (Cu)	• Wrist pin bushings • Valve train • Bushings • Cam bushings • Bearings (near failure) • Oil cooler • Thrust washers • Governor • Oil pump • Oil additives (some)	• Clutches • Steering discs • Bushings/thrust • Washers • Oil cooler • Thrust washers	• Bushings • Thrust washers • Oil pumps (where used)	• Bushings • Thrust washers	• Bushings • Thrust washers (where used)	• Pump thrust plates • Pump pistons • Cylinders • Guides • Bushings • Oil coolers (some)	• Bushings • Thrust washers	• Bushings • Thrust washers	• Wear plates • Bushings • Wrist pin bushings • Bearings (recip) • Thrust washers
Iron (Fe)	• Cylinders • Block • Gears • Crankshaft • Wrist pins • Rings (cast) • Camshaft • Valve train • Oil pump • Liners	• Gears • Discs • Housings • Bearings • Brake bands • Shift spools • Pumps • PTO	• Gears • PTO • Shafts • Bearings • Housings	• Gears • Shafts • Bearings • Housings	• Housings • Bearings • Shafts	• Pump/motor vanes • Gears • Pistons • Cylinder bores and rods • Bearings • Valves • Pump housings	• Gears • Shafts • Bearings • Housings	• Gears • Shafts • Bearings	• Crankshaft block • Housings • Screws • Bearings • Shaft • Oil pump • Piston rings • Cylinders
Lead (Pb)	• Bearings • Gasoline • Octane improver • Oil additives (some) • Thrust washers	• Oil additives (some) • Thrust washers • Friction discs	• Oil additives (some) • Thrust washers	• Oil additives (some) • Thrust washers	• Oil additives	• Pump bearings	• Oil additives (some) • Thrust washers	• Oil additives (some) • Thrust washers	• Bearings
Silicon (Si)	• Anti-foam additives • Ingested dirt • Octane improver • Coolant leak	• Disc lining • Ingested dirt • Defoamant	• Ingested dirt	• Ingested dirt	• Ingested dirt • Defoamant	• Ingested dirt • Elastometric seals (some)	• Ingested dirt	• Ingested dirt	• Ingested Dirt
Sodium (Na)	• Oil additive (some) • Coolant • Road salt • Ingested dirt	• Oil additives • Coolant • Road salt • Ingested dirt	• Ingested dirt	• Ingested dirt	• Oil additive • Ingested dirt	• Oil additive • Coolant • Ingested dirt • Road salt	• Oil additive • Road salt • Ingested dirt	• Oil additive • Ingested dirt • Road salt	• Oil additive • Ingested dirt • Coolant
Tin (Sn)	• Pistons (overlay) • Bearings (overlay) • Bushings	• Thrust washers	–	–	–	–	–	–	• Pistons (overlay) • Bearings (overlay) • Bushings

CONTACT INFORMATION

For more information on this or any other CO-OP® Lubricant product, please contact your local retail co-operative or Federated Co-operatives Limited.

petroadmin@fcl.crs • www.coopag.ca • Item #2815520

For further details on *Oil Analysis*, see: www.Fluidlife.com or call toll free at 1-877-962-2400

CO-OP PREMIUM LUBRICANTS

FLUID LIFE
EQUIPMENT RELIABILITY SERVICES

WHAT IS THE OIL ANALYSIS PROGRAM?

Inevitably, all equipment lubricants (whether engine, gear, transmission or hydraulic) will eventually begin to break down, regardless of the quality of product. This is due to the nature of the product's life cycle. Working under high-stress conditions, coupled with contaminants, the lubricant's physical properties will undergo changes. As additives become less effective, the lubricant cannot perform its intended purpose and may instead cause damage to the components.

Oil analysis programs are a cost-effective way to ensure the lubricants are maintaining their intended functions. Consistent testing will help to determine a baseline for the component, offering the ability to recognize abnormal wear. Using oil analysis will help to identify any potential problems before they become a major source of damage.

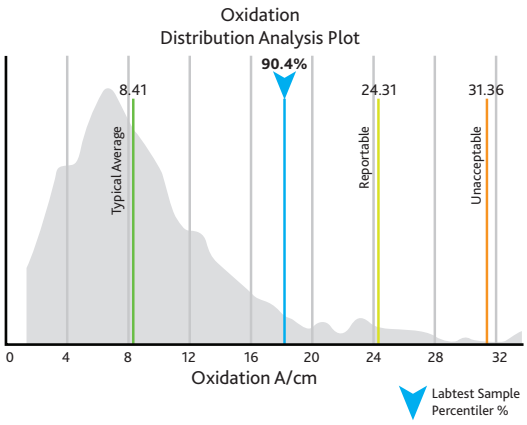
This is where Fluid Life comes in. Fluid Life is a third-party lab that provides customers with an unbiased analysis of their lubricants through various in-depth tests.

Sample		Contaminants (ppm)		Wear Metals (ppm)						
Sample #	Sample Date	Sodium	Potassium	Silicon	Aluminum	Iron	Copper	Lead	Tin	Chromium
Ref. Sample	2017/05/02	2	0	6	0	1	0	0	0	0
09/11-465	2017/08/10	3	1	10	0	30	3	0	0	1
08/11-356	2017/06/22	2	1	10	0	18	3	1	0	1
05/11-685	2017/04/23	0	1	4	0	14	1	0	1	0

BENEFITS:

Oil analysis will help with early detection of potential lubricant problems, helping to prolong the life of the equipment. The key benefit to oil analysis is the maintenance cost savings and prevention of downtime with equipment, while protecting warranty and strengthening equipment resale value.

Oxidation Rank 5.1



WHAT IS INCLUDED IN A SAMPLING KIT?

Each kit includes 10 sample bottles and the testing of the sample.

Oil Analysis Test Package

Prepaid Oil Analysis Kit includes the following tests:

- Spectrometry: Analyzes 23 metal elements indicating potential equipment wear
- Viscosity @ 40°C/100°C: Oil thickness measurement
- Viscosity Index
- Water by Crackle: Indicating presence of water in oil
- % Soot: Total amount of carbon soot and combustion related contamination (Engines)
- % Glycol (i.e coolant): Detects presence of ethylene glycol which can reduce lubricant properties causing component failure.
- % Fuel: Detects presence of fuel in oil which can reduce viscosity, increase wear rates and deposit formation.

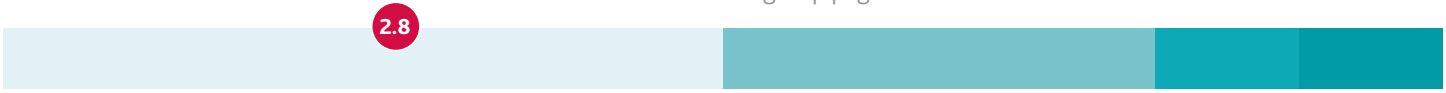
NOTE: Additional Tests such as TAN and ISO Particle Count can also be performed for an additional charge. Please notify Fluid Life in advance prior to sending in oil samples for the additional TAN & ISO tests.

You can expect the sample results to be returned to you in 1-2 business days once they arrive at Fluid Life.

YOU HAVE ORDERED YOUR KIT... NOW WHAT?

Once you have ordered sample kits, Fluid Life will send you an email on how to register for MyLab, which will allow you to look at current and past customer reports. This online application also allows you to store analysis reports for different customers in one place. Sign up is free, and all that is required is to fill out an initial sign-up page.

YOUR SAMPLE RANK



Normal 0 – 5

Elevated 5.1 – 8

High 8.1 – 9

Very High Over 9.1 – 10

Sample rank ranges from zero to ten. The higher the sample rank, the more abnormal the sample results are.

TEST	EFFECTS	POSSIBLE CAUSE
METAL ANALYSIS Identifies metals in parts per million (ppm).	Reduction in the life of the component.	The type of metals found in the oil can be caused by: - Wear metals from various engine components (see wear metals origin chart on back page). - Foreign debris - Metal-containing additives in lubrication
VISCOSITY: Determines the oil's resistance to flow	Wear rate increase in equipment; Increase or decreases in oil consistency; premature oil breakdown.	Excessive contamination, fuel dilution or shearing of multi-grade oils.
WATER: Detects the presence of free and emulsified water in the oil.	Reduction of lubrication properties; increased component corrosion.	Causes can include: - Inadequate ventilation - Improper maintenance practices - Corroded core or worn rings/liners - Condensation - Cooler core leak - High blow-by
FUEL DILUTION: Detects the presence of fuel in the oil sample and reports it as a percentage.	Increased wear rates, reduced viscosity; increased deposit formations and premature engine failure.	Oversize or dribbling injectors, restricted fuel return lines, improper air/fuel ratio and worn rings or liners.
GLYCOL PRESENT: Detects presence of ethylene glycol (coolant) in the oil sample.	Reduction of lubrication properties; increasd component corrosion and premature engine failure.	Potential causes include: - Defective or blown head gasket - Improperly torqued or cracked cylinder head - Defective seals on wet liners - Over-fueling - Poor combustion or cracked/ broken fuel line fittings.
SOOT/SUSPENDED SOLIDS: Detects total amount of carbon soot and other combustion-related contamination.	Increased oil viscosity, increased sludge deposits and increased wear on engine parts.	Soot is a by-product of combustion and other solids contamination is caused by: - air borne dirt and debris -oxidation by products from over extended oil drain intervals -Wear metals -Dirty filters