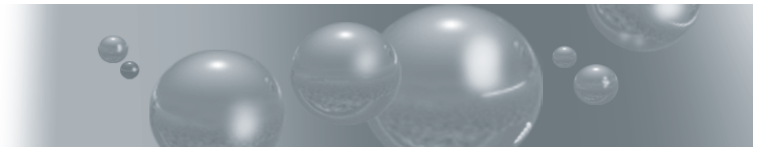


# SOS Scheduled Oil Sampling



**Call today for information about our services: 541-302-9199**

**Wear Elements:** Reported in ppm can elevate according to hours/miles in use, oil added, recent repairs, and other conditions may affect readings.

**(Metals):**

Copper Bearings, bushings, thrust washers, and brass parts. Engine readings may vary dramatically.  
 Iron Rust, gears, shafts, cylinders, valve train components, and liners in some applications.  
 Chromium Piston rings, chrome plated crankshafts, some exhaust valves, roller & ball bearings.  
 Lead Found in many bearings, rod, turbo, camshaft, and some bushings. Gasoline additive.  
 Aluminum Bearings, thrust washers, converter, pump bushings, and pistons. Dirt entry from clay soils.  
 Tin Piston plate coating. Overlay of connection rod and crankshaft main bearings.  
 Nickel Wear indicator in some bearings, shafts or valves.  
 Silver Wear of some bearings, secondary indicator for cooler.  
 Titanium Alloy in high quality gears and bearings.  
 Antimony Bearing overlay alloy or oil additive.

**(Contaminants):**

Sodium Inhibitor from cooling system, or oil additive. Environmental contaminates (salt water).  
 Silicon (DIRT) caused by dirt or dust entry. Silicone is used in some grease/anti-foam in oil.

**(Additives):**

Molybdenum Piston ring coating in some engines, or anti-wear additive in oil.  
 boron Coolant additive.  
 Potassium Coolant additive.  
 Phosphorus Anti-rust agent, deposit reducer.  
 Zinc Anti-oxidants, corrosion inhibitor, anti-wear, detergent, extreme pressure agent.  
 Calcium Detergent, dispersant, acid neutralizer.  
 Barium Corrosion inhibitor, detergent, rust inhibitor.  
 Magnesium Dispersant, detergent, alloying metal.

**Contamination:**

Anti-freeze Any amount unacceptable means coolant is transferring into the oil, possibility of contamination during draw.  
 Water Can promote oil Oxidation, rust and the oils ability to lubricate properly, Possibility condensation.  
 Fuel (Diesel) Fuel can reduce Viscosity, prevents proper lubrication, and may lower oil pressure.

**Oil Condition Analysis:** By Un-subtracted method this method performs its calculations on the ?neat? used oil spectrum without any subtraction of the new oil reference spectrum. The Un-subtracted FTIR method removes the dependence on reference oil, therefore eliminating the majority of the reading failures. This method allows for all oil sample types to be analyzed by FTIR when using the zinc selenide (ZnSe) cell.

Oxidation Oil oxidizes with age and service, or improper operating conditions. Causes varnish and thickening.  
 Nitration High nitrogen caused oil thickening, filter plugging, and may be an indication of blow-by.  
 Sulfur By-product of combustion, insoluble particulate that can plug filters, and deplete oil additives.  
 Soot By percent allowable: 0-140% Allowable (Acceptable).  
 Soot by Wt A measure of Soot by weight, corresponds to the amount of unburned fuel suspended in the oil.  
 0% Transmittance = 200% Allowable = 8% Wt Soot (Critical)  
 25% Transmittance = 150% Allowable = 6% Wt Soot (Abnormal)  
 50% Transmittance = 100% Allowable = 4% Wt Soot (Acceptable)  
 75% Transmittance = 50% Allowable = 2% Wt Soot (Extendable)  
 100% Transmittance = 0% Allowable = 0% Wt Soot (Unused)

**Particle Count:** Optically measured using light obstruction sensors utilizing a laser diode as illumination source and a photodiode detector.

ISO Code 11171 Cleanliness Code is the most wide spread system for representing contamination levels.  
 Channels\* 4, 6, 10, 14, 18, 21, 38, 70um (Micron) are measured and reported  
 Counts Cumulative Count of particles per/ml (approximately 14 drops of oil).  
 PVI Mathematical formula that calculates large particle contamination.  
 P C Photo Microscopic image when readings reach critical levels, image @ 60 X Magnification.

**Viscosity:**

Engine Oils		Gear Lubricants	
SAE Viscosity	Kinematic Viscosity	SAE Viscosity	Kinematic Viscosity
	cST at 100C		cST at 100C
5W	3.8 - 4.0	75W	4.1 - 6.9
10W	4.1 - 5.6	80W	7.0 - 10.9
15W	5.6 - 9.3	85W	11.0 - 13.4
20W	5.6 - 9.3	20W	13.5 - 23.9
20	5.6 - 9.2	90	24.0 - 40.9
30	9.3 - 12.4	140	41.0+
40	12.5 - 16.2	250	13.5 - 23.9
50	16.3 - 21.8	80W-90	24.0 - 40.9
60	21.9 - 26.1	85W-140	
5W30	9.3 - 12.4		
10W30	9.3 - 12.4		
15W40	12.5 - 16.3		

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: The test results provided by the Fluid Analysis Lab are to be used only as a diagnostic tool. The test results are not intended as a substitute for mechanical disassembly and inspection, nor are the test results intended to warrant the fitness or operation of any component. The test results relate only to the sample provided, and samples drawn from the same component may vary. You agree that Peterson Machinery Inc makes no IMPLIED WARRANTY of MERCHANTABILITY or IMPLIED WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE nor does Peterson make any other warranties express or implied concerning the test results. You further agree that your sole exclusive remedy, if any, against Peterson shall be limited to the amount you paid to Peterson for this fluid analysis performed at Peterson, and you will make no claims against Peterson for INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, or ANY COST, LOSS, ACTION, CLAIM OF DAMAGE WHATSOEVER, or INJURY TO PERSON OR PROPERTY OR ANY OTHER CONSEQUENTIAL, ECONOMIC OR INCIDENTAL LOSS.