

S A V A N T L A B S

SAVANT



Laboratory Testing Services

**Offering technical expertise in
the advancement of lubrication
technology for over 45 years.**

www.SavantLab.com

**ISO 9001:2008 QMS Certified
ISO/IEC 17025:2005 Accredited**

**ASTM Proficiency Testing Program
Participant**

January 2017

Savant Labs

Laboratory Testing Services

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LABORATORY TESTING SERVICE – GENERAL POLICY INFORMATION

TEST REQUESTS AND INFORMATION:

Telephone: 989.496.2301
Facsimile: 989.496.3438
Email: savant@savantgroup.com
Website: www.savantlab.com

QUALITY CONTROL AND ASSURANCE:

Savant is ISO 9001 quality system certified and ISO/IEC 17025:2005 Accredited for specific tests. The laboratory also participates in the ASTM Test Monitoring Center (TMC) calibration program for bench tests, the ASTM Interlaboratory Crosscheck Program, and the European CEC annual round-robins where appropriate.

Savant is proud of its testing quality and accuracy. Tests will be rerun upon request to confirm data accuracy. If rerun test results fall within repeatability of original test results, both original and rerun tests will be billed to the customer. If rerun test results are not repeatable with original test results, subsequent analysis will be conducted to determine the source of error, accurate results will be reported to the customer, and only one test will be billed to the customer.

INTERPRETATION AND CONSULTING:

As a research and testing laboratory, Savant is particularly well qualified to offer interpretation of test results and technical advisory services regarding lubricant performance, formulation or applications. We specialize in solving problems related to the measurement of critical lubricant properties. Services should be arranged in advance and are provided at a reasonable additional charge beyond the testing fee.

TEST AUTHORIZATION FORM:

Clients are asked to enclose a copy of the Savant Test Authorization Form with every set of samples sent to Savant Labs for testing.

SAVLAB TEST METHODS:

Some test methods have been developed at Savant Labs to provide special test information to our clients that may be unavailable from other sources. These internal test methods carry a SAVLAB method identification.

TEST RESULTS:

Savant provides test results in tabular and/or graphical form as appropriate to an effective use of the data by our clients. Data is transmitted to clients by Email. Test results can also be transferred directly into Client databases by EDT (electronic data transfer) upon request. Results are considered owned by the party purchasing the testing, and the signer of the TAF must authorize releasing the test results to additional parties.

SAMPLE AND DATA STORAGE:

Client oil and grease (non-flammable) samples submitted for testing are kept on site for a minimum of one year from date of receipt. Sample retains from fuels and other flammable samples will be disposed of upon final report completion. Other arrangements can be made for the storage or return of non-flammable lubricant samples at the client's request. Copies of reports and raw test data are kept by Savant Labs for a minimum of five years.

LABORATORY TESTING SERVICE – GENERAL POLICY INFORMATION

TEST FEES:

Our fee structure is designed to give clients a choice depending on the urgency of testing requested. The turnaround times listed below apply to most tests, although certain specialized analyses may require additional time, which will be brought to your attention at the time the testing is requested.

Standard Service: Delivery of data to client by fax or email within **ten** working days of receipt of sample. A final report will be e-mailed.

Expedited Service: Delivery of data to client by phone, fax or email within **five** working days. Expedited service is not available for all tests. A final report will be e-mailed. (30% Surcharge)

Rush Service: Delivery of data to client by phone or email within **three** working days. **Some tests require more time to complete and are not able to be included in our rush service.** A final report will be e-mailed. (50% Surcharge)

24 hr. Service: Delivery of data to client by phone or email within **24 hours** of receipt of sample. **This service must be specifically scheduled by phone and is only available for certain tests.** Please call to schedule. A final report will be emailed. (100% Surcharge)

DISCOUNTS:

The following discounts apply per single purchase or single release against a blanket purchase order.

Testing projects requiring expedited and RUSH service are not subject to discounts.

Multiple Oils: 10% Discount -- Six to eleven oils receiving the same test.
20% Discount -- Twelve or more oils receiving the same test.

SAMPLING SUPPLIES:

Plastic sample bottles with shipping boxes can be purchased for \$5 each. Please specify bottle size.

Re-usable pump with 100 feet of disposable plastic tubing can be purchased for \$120. Additional plastic tubing can be purchased for \$25 / 100 feet.

PAYMENT TERMS:

Net 30 days with approved credit. A purchase order is required unless other arrangements have been made. A late payment charge of 1.5% per month (18% annual rate) may be applied to past due invoices.

Payments should be made payable and mailed to:

Savant, Inc.
4800 James Savage Rd.
Midland, MI 48642 USA

MasterCard, Visa, Discover, and American Express credit cards are also accepted.

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Laboratory Testing Services

Tests by Method

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D86	Distillation	400 mL
ASTM D92	Fire Point, Cleveland Open Cup	250 mL
ASTM D92	Flash Point and Fire Point, Cleveland Open Cup	250 mL
ASTM D92	Flash Point, Cleveland Open Cup	250 mL
ASTM D93	Flash Point, Pensky-Martins Closed Cup	250 mL
ASTM D94	Saponification Number	25 g
ASTM D97	Pour Point	100 mL
ASTM D127	Drop Melting Point of Petroleum Wax	30 mL
ASTM D130	Copper Strip Corrosion	100 mL
ASTM D189	Carbon Residue, Conradson	50 mL
ASTM D217	Cone Penetration, Unworked & 60 Strokes (Grease)	800 g
ASTM D240	Gross Heat of Combustion (Specify BTUs/gallon or /pound)	20 mL
ASTM D240 & D5291	Net Heat of Combustion	20 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D323	Reid Vapor Pressure	125 mL
ASTM D445	Kinematic Viscosity, 0°C and Above	125 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D445	Kinematic Viscosity, Below 0°C	125 mL
ASTM D445	Kinematic Viscosity, Low Temperature with Linearity Validation	375 mL
ASTM D445	Kinematic Viscosity, Used or In-Service Oil	125 mL
ASTM D482	Total Ash	80 g
ASTM D524	Carbon Residue, Ramsbottom	50 mL
ASTM D525	Oxidation Stability (Gasoline)	200 mL
ASTM D611	Aniline Point	100 mL
ASTM D613	Cetane Number	1 L
ASTM D664	Acid Number	50 mL
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D665	Rust Prevention 24 Hours (Method A or B)	2 L
ASTM D874	Sulfated Ash	50 g
ASTM D877	Dielectric Breakdown Voltage	800 mL
ASTM D892	Foaming, Sequence I - III (Specify option A if required)	1 L
ASTM D892 & D6082	Foaming, Sequence I - IV (Specify option A if required)	1 L
ASTM D893	Insolubles, Pentane	25 mL
ASTM D942	Oxidation Stability (Grease) 100 Hours	150 mL
ASTM D942 Mod.	Oxidation Stability (Grease) > 100 Hours	150 mL
ASTM D943	Oxidation Characteristics (2.0 TAN or 1000 Hours)	600 mL
ASTM D943	Oxidation Characteristics (2.0 TAN or 2000 Hours)	600 mL
ASTM D943	Oxidation Characteristics (2.0 TAN or 3000 Hours)	600 mL
ASTM D972	Evaporation Loss (Grease) - Specify Time & Temperature	150 mL
ASTM D974	Acid Number	50 mL
ASTM D974	Base Number	50 mL
ASTM D976 & D4737	Cetane Index (Calculated from D1298 & D86)	500 mL
ASTM D1084 B	T-Bar Viscosity	Varies
ASTM D1092	Apparent Viscosity, Grease	500 g
ASTM D1177	Freeze Point	100 mL
ASTM D1218	Refractive Index	20 mL
ASTM D1264	Water Washout (Single Temperature)	50 g
ASTM D1298	Density / API Gravity, Hydrometer	250 mL
ASTM D1319	Hydrocarbon Type	40 mL
ASTM D1331	Surface Tension	100 mL
ASTM D1401	Emulsion Characteristics / Water Separability	100 mL
ASTM D1478	Low Temperature Torque	10 g
ASTM D1500	Color	150 mL
ASTM D1662	Sulfur, Active	100 g
ASTM D1742	Oil Separation, Storage of Greases	300 g

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Tests by Method

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Method	Test Description	Sample Size
ASTM D1748	Rust Protection by Humidity Cabinet	1 L
ASTM D1768	Water & Sediment for Opaque or In-Service Oils	100 mL
ASTM D2007	Clay Gel Analysis	100 mL
ASTM D2070	Thermal Stability (Hydraulic Fluids)	300 mL
ASTM D2112	Oxidation Stability of Inhibited Oil by Pressure Vessel at 140°C	150 mL
ASTM D2155	Auto-Ignition Temperature (Hydraulic Fluids)	10 mL
ASTM D2265	Dropping Point	50 g
ASTM D2266	Four Ball Wear (Grease)	100 g
ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
ASTM D2272	Rotating Bomb Oxidation Test (RBOT) Single Run	150 mL
ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2272	RPVOT, Run to End-of-Test, Hard Break	150 mL
ASTM D2273	Trace Sediment	200 g
ASTM D2274	Oxidation Stability (Petroleum Fuel Oil)	2 L
ASTM D2500	Cloud Point	100 mL
ASTM D2509	Timken OK Load for Grease (Specify starting load)	3400 g
ASTM D2596	Four Ball Extreme Pressure (Grease) Up to 400 kg.	40 mL
ASTM D2596	Four Ball Extreme Pressure (Grease) Above 400 kg.	40 mL
ASTM D2603	Sonic Shear, Oils	100 mL
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear, Close Step	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear, Long Step	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear, Very Long Step	200 mL
ASTM D2699	Octane Number (Research Rating)	800 mL
ASTM D2700	Octane Number (Motor Rating)	800 mL
ASTM D2709	Water & Sediment	100 mL
ASTM D2711	Demulsibility	2 L
ASTM D2711 EP	Demulsibility Extreme Pressure	2 L
ASTM D2782	Timken Extreme Pressure (Specify starting load)	4 L
ASTM D2783	Four Ball Extreme Pressure Up to 400 kg.	200 mL
ASTM D2783	Four Ball Extreme Pressure Above 400 kg.	200 mL
ASTM D2879	Vapor Pressure by Isotenoscope, Single Temperature	10 mL
ASTM D2879	Vapor Pressure by Isotenoscope, Multiple Temperatures	10 mL
ASTM D2887	Gas Chromatography - Carbon Distribution	10 mL
ASTM D2893	Oxidation Characteristics Extreme Pressure	500 mL
ASTM D2896	Base Number	50 mL
ASTM D2982	Glycol	20 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D3238	Carbon Distribution Analysis	250 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D3520	Quenching Time	600 mL
ASTM D3524	Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	10 mL
ASTM D3525	Fuel Dilution, Gasoline	10 mL
ASTM D3527	High Temperature Life, Wheel Bearing Grease	100 mL
ASTM D3703	Peroxide Value	200 mL
ASTM D3829 Mod.	Mini-Rotary Viscosity (MRV), Single Temperature	200 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D4170	Fretting Wear, Grease	25 mL
ASTM D4172	Four Ball Wear	100 mL
ASTM D4291	Glycol	5 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	10 mL
ASTM D4310	Sludging & Corrosion Tendency (Up to 1000 Hours)	1 L

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Method	Test Description	Sample Size
ASTM D4530	Carbon Residue, Micro	150 mL
ASTM D4629	Nitrogen by Chemiluminescence	30 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New Oil	150 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, Used Oil	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Multi-Temperature, Multi-Shear	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Other Shear	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Other Temperature	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Below 50°C	150 mL
ASTM D4684	TP-1 MRV Viscosity, Single Temperature	100 mL
ASTM D4693	Low Temperature Torque, Grease	50 mL
ASTM D4737	Cetane Index (Calculated from D1298 & D86)	500 mL
ASTM D4739	Base Number	20 mL
ASTM D4742	Thin Film Oxidation Uptake Test (TFOUT) Gas Engine Oils	50 mL
ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals (No S)	10 mL
ASTM D5133	Gelation Index	50 mL
ASTM D5133	Scanning Brookfield Viscosity (-5°C to -40°C)	50 mL
ASTM D5133	Scanning Brookfield Viscosity, Extended Temperature Range	50 mL
ASTM D5182	FZG Gear Test - Up to 12 Stages	2 L
ASTM D5182	FZG Gear Test - Up to 14 Stages	2 L
ASTM D5183	Coefficient of Friction by Four Ball	100 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5186	Aromatics in Diesel Fuel	150 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 20 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 30 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 40 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), Other Passes	500 mL
ASTM D5291	Carbon Hydrogen Nitrogen Content	30 mL
ASTM D5291	Nitrogen - Carlo Erba	30 mL
ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
ASTM D5293 Mod.	Cold Cranking Simulator, Temperature Scan	120 mL
ASTM D5453	Sulfur	10 mL
ASTM D5453 & D5762	Sulfur & Nitrogen Package	20 mL
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D5762	Nitrogen	10 mL
ASTM D5800	Noack Volatility	150 mL
ASTM D5827	Sulfate Analysis (SO ₄)	30 mL
ASTM D5972	Freeze Point	100 mL
ASTM D6082	Foaming, Sequence IV (Specify option A if required)	1 L
ASTM D6130	Elemental Analysis by ICP, Aqueous / Coolants / Sulfur, 5 elements	10 mL
ASTM D6184	Oil Separation %, Wire Cone Method	100 g
ASTM D6200	Cooling Curve Analysis of Quench Oils	4 L
ASTM D6217	Particulate Contamination for Diesel Fuels	1 L
ASTM D6278	Kurt Orbahn Shear Stability, 30 Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, 100 Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, Custom Number of Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, 90 Passes	1 L
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D6335	Thermo-oxidation Engine Oil Simulation Test (TEOST 33C)	250 mL
ASTM D6371	Cold Filter Plug Point	150 mL
ASTM D6375	Noack Volatility by TGA	20 mL
ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6443	Chlorine by XRF	30 mL
ASTM D6557	Ball Rust Test	125 mL
ASTM D6560	Asphaltene Content	25 g
ASTM D6594	High Temperature Corrosion Bench Test at 135°C	125 mL

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Tests by Method

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Method	Test Description	Sample Size
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, New Oil	150 mL
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, Other Shear	150 mL
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, Used Oil	150 mL
ASTM D6793	Bulk Modulus, Up to 80°C	200 mL
ASTM D6794	Engine Oil Water Tolerance (EOWT)	1 L
ASTM D6795	Engine Oil Filterability (EOFT)	1 L
ASTM D6922	Homogeneity & Miscibility	300 mL
ASTM D7097	Thermo-oxidation Engine Oil Simulation Test (TEOST MHT-4)	50 mL
ASTM D7098	Thin Film Oxygen Uptake Test (TFOUT) Catalyst B	50 mL
ASTM D7109	Kurt Orbahn Shear Stability - Includes 30 and 90 Passes	1 L
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
ASTM D7216	GF-5 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, ACM Polyacrylate	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7216	HDD Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	HDD Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	HDD Elastomer Compatibility, MAC, Vamac	1.2 L
ASTM D7216	HDD Elastomer Compatibility, NBR, Nitrile	1.2 L
ASTM D7216	HDD Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7317	Pentane Insolubles by Filtration	25 mL
ASTM D7321	Particulate Contamination for Biodiesel Fuels	1 L
ASTM D7371	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
ASTM D7412	FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	50 mL
ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ASTM D7415	FTIR Analysis, In-Service Fluid, Sulfate Content	50 mL
ASTM D7462	Oxidation Stability (Biodiesel)	2 L
ASTM D7462	Oxidation Stability (Biodiesel - B100 Option)	2 L
ASTM D7563	Emulsion of Water and Simulated Ed85 Fuel	500 mL
ASTM D7619 / ISO 4406	Particle Count & Sizing	500 mL
ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
ASTM E659	Auto-Ignition Temperature, Liquid Chemicals	10 mL
ASTM E1131	TGA Soot	5 mL
ASTM E1269	Specific Heat	100 mL
ASTM E2412	FTIR Analysis, In-Service Fluid	50 mL
CEC L-45-99 Mod. & D445	KRL Shear 04 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 08 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 20 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 30 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 40 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear Custom Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 04 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 08 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 20 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 30 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 40 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear Custom Hours + pre & post shear VI	100 mL
EN 14078	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL

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Tests by Method

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL
EPA Test 24	Volatile Organic Content (VOC)	10 mL
FTM 203C	Stable Pour Point	200 mL
FTM 3456	Channeling Characteristics	1 L
IP 346	PCA - Polycyclic Analysis	100 mL
ISO 4406	Particle Count	100 mL
SAVLAB BDICP	Elemental Analysis for Biodiesel Fuels	10 mL
SAVLAB CAP	Cone & Plate Viscosity	10 mL
SAVLAB FEI	Fuel Efficiency Index (FEI)	300 mL
SAVLAB FGE	FoamGen Analysis (Custom Test, Call)	1 L
SAVLAB GES	GE Locomotive Specification (GE Package 1, B82-1 test)	1 L
SAVLAB IOD	Iodine Value	100 mL
SAVLAB IR	Fourier Transform Infra-Red, FTIR, Spectra Only	50 mL
SAVLAB IRG	Fourier Transform Infra-Red, FTIR, Glycol Analysis	50 mL
SAVLAB IRW	Fourier Transform Infra-Red, FTIR, Water Analysis	50 mL
SAVLAB LPYC	Density, Pycnometer	120 mL
SAVLAB MIC	Microscopy	10 mL
SAVLAB PEI	Phosphorus Emissions Index (PEI) at 250°C, 1 Hour	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 16 Hours	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 32 Hours	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 48 Hours	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 64 Hours	250 mL
SAVLAB PH	pH Determination	150 mL
SAVLAB RBP	Reflux Boiling Point	100 mL
SAVLAB RV	Fuel Stripping	Varies
SAVLAB RV	Rotovapping	Varies
SAVLAB SEI	Sulfur Emissions Index, (SEI)	250 mL
SAVLAB SFACALC	Sulfated Ash, Calculated from ICP Results	N/A
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, New Oil	150 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Other Shear	150 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Other Temperature	150 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Used Oil	150 mL
SAVLAB TGASCAN	TGA Thermal Scan or Isotherm	5 mL
SAVLAB VLP	Viscosity Loss Profile (VLP), 20 Passes	1 L
SAVLAB VLP	Viscosity Loss Profile (VLP), 30 Passes	1 L
SAVLAB VLP	Viscosity Loss Profile (VLP), 40 Passes	1 L
SAVLAB XRF	Chlorine - Wavelength Dispersive	30 mL
SAVLAB XRFSCAN	Elemental Analysis, Qualitative by XRF	30 mL

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Tests in Alphabetical Order

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Test Description	Method	Sample Size
33C TEOST	ASTM D6335	250 mL
Acid Number	ASTM D664	50 mL
Acid Number	ASTM D974	50 mL
Air Release / Gas Bubble Separation	ASTM D3427	500 mL
Aniline Point	ASTM D611	100 mL
API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	ASTM D287	250 mL
Apparent Viscosity, Grease	ASTM D1092	500 g
Aromatics in Diesel Fuel	ASTM D5186	150 mL
Asphaltene Content	ASTM D6560	25 g
Auto-Ignition Temperature (Hydraulic Fluids)	ASTM D2155	10 mL
Auto-Ignition Temperature, Liquid Chemicals	ASTM E659	10 mL
Ball Rust Test	ASTM D6557	125 mL
Base Number	ASTM D974	50 mL
Base Number	ASTM D2896	50 mL
Base Number	ASTM D4739	20 mL
Brookfield Viscosity, +20°C to -60°C (Per Temperature)	ASTM D2983	200 mL
Bulk Modulus, Up to 80°C	ASTM D6793	200 mL
Carbon Distribution Analysis	ASTM D3238	250 mL
Carbon Hydrogen Nitrogen Content	ASTM D5291	30 mL
Carbon Residue, Conradson	ASTM D189	50 mL
Carbon Residue, Micro	ASTM D4530	150 mL
Carbon Residue, Ramsbottom	ASTM D524	50 mL
Cetane Index (Calculated from D1298 & D86)	ASTM D976 & D4737	500 mL
Cetane Index (Calculated from D1298 & D86)	ASTM D4737	500 mL
Cetane Number	ASTM D613	1 L
Channeling Characteristics	FTM 3456	1 L
Chlorine - Wavelength Dispersive	SAVLAB XRF	30 mL
Chlorine by XRF	ASTM D6443	30 mL
Clay Gel Analysis	ASTM D2007	100 mL
Cloud Point	ASTM D2500	100 mL
Coefficient of Friction by Four Ball	ASTM D5183	100 mL
Cold Cranking Simulator, Single Temperature	ASTM D5293	120 mL
Cold Cranking Simulator, Temperature Scan	ASTM D5293 Mod.	120 mL
Cold Filter Plug Point	ASTM D6371	150 mL
Color	ASTM D1500	150 mL
Cone & Plate Viscosity	SAVLAB CAP	10 mL
Cone Penetration, Unworked & 60 Strokes (Grease)	ASTM D217	800 g
Cooling Curve Analysis of Quench Oils	ASTM D6200	4 L
Copper Strip Corrosion	ASTM D130	100 mL
Demulsibility	ASTM D2711	2 L
Demulsibility Extreme Pressure	ASTM D2711 EP	2 L
Density / API Gravity, Hydrometer	ASTM D1298	250 mL
Density, Pycnometer	SAVLAB LPYC	120 mL
Dielectric Breakdown Voltage	ASTM D877	800 mL
Distillation	ASTM D86	400 mL
Drop Melting Point of Petroleum Wax	ASTM D127	30 mL
Dropping Point	ASTM D2265	50 g
Elemental Analysis by ICP, Aqueous / Coolants / Sulfur, 5 elements	ASTM D6130	10 mL
Elemental Analysis by Inductively Coupled Plasma (No S)	ASTM D5185	10 mL
Elemental Analysis by Inductively Coupled Plasma, Wear Metals (No S)	ASTM D4951	10 mL
Elemental Analysis for Biodiesel Fuels	SAVLAB BDICP	10 mL
Elemental Analysis, Qualitative by XRF	SAVLAB XRFSCAN	30 mL
Emulsion Characteristics / Water Separability	ASTM D1401	100 mL
Emulsion of Water and Simulated Ed85 Fuel	ASTM D7563	500 mL

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Tests in Alphabetical Order

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Test Description	Method	Sample Size
Engine Oil Filterability (EOFT)	ASTM D6795	1 L
Engine Oil Water Tolerance (EOWT)	ASTM D6794	1 L
Evaporation Loss (Grease) - Specify Time & Temperature	ASTM D972	150 mL
Falex Extreme Pressure	ASTM D3233	200 mL
Falex Pin & Vee Wear	ASTM D2670	200 mL
Falex Pin & Vee Wear, Close Step	ASTM D2670 Mod.	200 mL
Falex Pin & Vee Wear, Long Step	ASTM D2670 Mod.	200 mL
Falex Pin & Vee Wear, Very Long Step	ASTM D2670 Mod.	200 mL
FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	ASTM D7371	100 mL
FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	EN 14078	100 mL
Fire Point, Cleveland Open Cup	ASTM D92	250 mL
Flash Point and Fire Point, Cleveland Open Cup	ASTM D92	250 mL
Flash Point, Cleveland Open Cup	ASTM D92	250 mL
Flash Point, Pensky-Martins Closed Cup	ASTM D93	250 mL
FoamGen Analysis (Custom Test, Call)	SAVLAB FGE	1 L
Foaming, Sequence I - III (Specify option A if required)	ASTM D892	1 L
Foaming, Sequence I - IV (Specify option A if required)	ASTM D892 & D6082	1 L
Foaming, Sequence IV (Specify option A if required)	ASTM D6082	1 L
Four Ball Extreme Pressure (Grease) Up to 400 kg.	ASTM D2596	40 mL
Four Ball Extreme Pressure (Grease) Above 400 kg.	ASTM D2596	40 mL
Four Ball Extreme Pressure Up to 400 kg.	ASTM D2783	200 mL
Four Ball Extreme Pressure Above 400 kg.	ASTM D2783	200 mL
Four Ball Wear	ASTM D4172	100 mL
Four Ball Wear (Grease)	ASTM D2266	100 g
Fourier Transform Infra-Red, FTIR, Glycol Analysis	SAVLAB IRG	50 mL
Fourier Transform Infra-Red, FTIR, Spectra Only	SAVLAB IR	50 mL
Fourier Transform Infra-Red, FTIR, Water Analysis	SAVLAB IRW	50 mL
Freeze Point	ASTM D1177	100 mL
Freeze Point	ASTM D5972	100 mL
Fretting Wear, Grease	ASTM D4170	25 mL
FTIR Analysis, In-Service Fluid	ASTM E2412	50 mL
FTIR Analysis, In-Service Fluid, Nitration	ASTM D7624	50 mL
FTIR Analysis, In-Service Fluid, Oxidation	ASTM D7414	50 mL
FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	ASTM D7412	50 mL
FTIR Analysis, In-Service Fluid, Soot	ASTM D7844	50 mL
FTIR Analysis, In-Service Fluid, Sulfate Content	ASTM D7415	50 mL
FTIR Analysis, Oxidation by Peak Area Increase	ASTM D7214	50 mL
Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	ASTM D3524	10 mL
Fuel Dilution, Gasoline	ASTM D3525	10 mL
Fuel Efficiency Index (FEI)	SAVLAB FEI	300 mL
Fuel Injector Shear Stability (FISST), 20 Passes	ASTM D5275	500 mL
Fuel Injector Shear Stability (FISST), 30 Passes	ASTM D5275	500 mL
Fuel Injector Shear Stability (FISST), 40 Passes	ASTM D5275	500 mL
Fuel Injector Shear Stability (FISST), Other Passes	ASTM D5275	500 mL
Fuel Stripping	SAVLAB RV	Varies
FZG Gear Test - Up to 12 Stages	ASTM D5182	2 L
FZG Gear Test - Up to 14 Stages	ASTM D5182	2 L
Gas Bubble Separation, Air Release	ASTM D3427	500 mL
Gas Chromatography - Carbon Distribution	ASTM D2887	10 mL
GE Locomotive Specification (GE Package 1, B82-1 test)	SAVLAB GES	1 L
Gelation Index	ASTM D5133	50 mL
GF-5 Elastomer Compatibility, ACM, Polyacrylate	ASTM D7216	1.2 L
GF-5 Elastomer Compatibility, FKM, Fluoroelastomer	ASTM D7216	1.2 L
GF-5 Elastomer Compatibility, HNBR, Nitrile	ASTM D7216	1.2 L
GF-5 Elastomer Compatibility, MAC, Ethylene Acrylate	ASTM D7216	1.2 L

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Test Description	Method	Sample Size
GF-5 Elastomer Compatibility, VMQ, Silicone	ASTM D7216	1.2 L
Glycol	ASTM D2982	20 mL
Glycol	ASTM D4291	5 mL
GM dexos1:2015 Elastomer Compatibility, ACM Polyacrylate	ASTM D7216	1.2 L
GM dexos1:2015 Elastomer Compatibility, FKM, Fluoroelastomer	ASTM D7216	1.2 L
GM dexos1:2015 Elastomer Compatibility, HNBR, Nitrile	ASTM D7216	1.2 L
GM dexos1:2015 Elastomer Compatibility, VMQ, Silicone	ASTM D7216	1.2 L
Gross Heat of Combustion (Specify BTUs/gallon or /pound)	ASTM D240	20 mL
HDD Elastomer Compatibility, ACM, Polyacrylate	ASTM D7216	1.2 L
HDD Elastomer Compatibility, FKM, Fluoroelastomer	ASTM D7216	1.2 L
HDD Elastomer Compatibility, MAC, Vamac	ASTM D7216	1.2 L
HDD Elastomer Compatibility, NBR, Nitrile	ASTM D7216	1.2 L
HDD Elastomer Compatibility, VMQ, Silicone	ASTM D7216	1.2 L
High Temperature Corrosion Bench Test at 135°C	ASTM D6594	125 mL
High Temperature High Shear / TBS Viscosity, 100°C, New Oil	ASTM D6616	150 mL
High Temperature High Shear / TBS Viscosity, 100°C, Other Shear	ASTM D6616	150 mL
High Temperature High Shear / TBS Viscosity, 100°C, Used Oil	ASTM D6616	150 mL
High Temperature High Shear / TBS Viscosity, 150°C, New Oil	ASTM D4683	150 mL
High Temperature High Shear / TBS Viscosity, 150°C, Used Oil	ASTM D4683	150 mL
High Temperature High Shear / TBS Viscosity, Below 50°C	ASTM D4683 Mod.	150 mL
High Temperature High Shear / TBS Viscosity, Multi-Temperature, Multi-Shear	ASTM D4683 Mod.	150 mL
High Temperature High Shear / TBS Viscosity, Other Shear	ASTM D4683 Mod.	150 mL
High Temperature High Shear / TBS Viscosity, Other Temperature	ASTM D4683 Mod.	150 mL
High Temperature Life, Wheel Bearing Grease	ASTM D3527	100 mL
High Temperature Low Shear / TBR Viscosity, New Oil	SAVLAB TBR	150 mL
High Temperature Low Shear / TBR Viscosity, Other Shear	SAVLAB TBR	150 mL
High Temperature Low Shear / TBR Viscosity, Other Temperature	SAVLAB TBR	150 mL
High Temperature Low Shear / TBR Viscosity, Used Oil	SAVLAB TBR	150 mL
Homogeneity & Miscibility	ASTM D6922	300 mL
Hydrocarbon Type	ASTM D1319	40 mL
Hydrolytic Stability	ASTM D2619	250 mL
Insolubles, Pentane	ASTM D893	25 mL
Iodine Value	SAVLAB IOD	100 mL
Kinematic Viscosity, 0°C and Above	ASTM D445	125 mL
Kinematic Viscosity, 40°C or 100°C, New Oil	ASTM D445	125 mL
Kinematic Viscosity, Below 0°C	ASTM D445	125 mL
Kinematic Viscosity, Low Temperature with Linearity Validation	ASTM D445	375 mL
Kinematic Viscosity, Used or In-Service Oil	ASTM D445	125 mL
KRL Shear 04 Hours + 1 Temperature pre & post shear KV	CEC L-45-99 Mod. & D445	100 mL
KRL Shear 04 Hours + pre & post shear VI	CEC L-45-99 Mod. & D2270	100 mL
KRL Shear 08 Hours + 1 Temperature pre & post shear KV	CEC L-45-99 Mod. & D445	100 mL
KRL Shear 08 Hours + pre & post shear VI	CEC L-45-99 Mod. & D2270	100 mL
KRL Shear 20 Hours + 1 Temperature pre & post shear KV	CEC L-45-99 Mod. & D445	100 mL
KRL Shear 20 Hours + pre & post shear VI	CEC L-45-99 Mod. & D2270	100 mL
KRL Shear 30 Hours + 1 Temperature pre & post shear KV	CEC L-45-99 Mod. & D445	100 mL
KRL Shear 30 Hours + pre & post shear VI	CEC L-45-99 Mod. & D2270	100 mL
KRL Shear 40 Hours + 1 Temperature pre & post shear KV	CEC L-45-99 Mod. & D445	100 mL
KRL Shear 40 Hours + pre & post shear VI	CEC L-45-99 Mod. & D2270	100 mL
KRL Shear Custom Hours + 1 Temperature pre & post shear KV	CEC L-45-99 Mod. & D445	100 mL
KRL Shear Custom Hours + pre & post shear VI	CEC L-45-99 Mod. & D2270	100 mL
Kurt Orbahn Shear Stability - Includes 30 and 90 Passes	ASTM D7109	1 L
Kurt Orbahn Shear Stability, 100 Passes	ASTM D6278 Mod.	1 L
Kurt Orbahn Shear Stability, 90 Passes	ASTM D6278 Mod.	1 L
Kurt Orbahn Shear Stability, Custom Number of Passes	ASTM D6278 Mod.	1 L

Savant Labs
Laboratory Testing Services

Tests in Alphabetical Order

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Test Description	Method	Sample Size
Kurt Orbahn Shear Stability, 30 Passes	ASTM D6278	1 L
Low Temperature Torque	ASTM D1478	10 g
Low Temperature Torque, Grease	ASTM D4693	50 mL
Microscopy	SAVLAB MIC	10 mL
Mini-Rotary Viscosity (MRV), Single Temperature	ASTM D3829 Mod.	200 mL
Net Heat of Combustion	ASTM D240 & D5291	20 mL
Nitrogen	ASTM D5762	10 mL
Nitrogen - Carlo Erba	ASTM D5291	30 mL
Nitrogen by Chemiluminescence	ASTM D4629	30 mL
Noack Volatility	ASTM D5800	150 mL
Noack Volatility by TGA	ASTM D6375	20 mL
Octane Number (Motor Rating)	ASTM D2700	800 mL
Octane Number (Research Rating)	ASTM D2699	800 mL
Oil Separation %, Wire Cone Method	ASTM D6184	100 g
Oil Separation, Storage of Greases	ASTM D1742	300 g
Oxidation Characteristics (2.0 TAN or 1000 Hours)	ASTM D943	600 mL
Oxidation Characteristics (2.0 TAN or 2000 Hours)	ASTM D943	600 mL
Oxidation Characteristics (2.0 TAN or 3000 Hours)	ASTM D943	600 mL
Oxidation Characteristics Extreme Pressure	ASTM D2893	500 mL
Oxidation Stability (Bio-based FAME Only) Rancimat	EN 15751	100 mL
Oxidation Stability (Biodiesel - B100 Option)	ASTM D7462	2 L
Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	EN 14112	100 mL
Oxidation Stability (Biodiesel)	ASTM D7462	2 L
Oxidation Stability (Gasoline)	ASTM D525	200 mL
Oxidation Stability (Grease) 100 Hours	ASTM D942	150 mL
Oxidation Stability (Grease) > 100 Hours	ASTM D942 Mod.	150 mL
Oxidation Stability (Petroleum Fuel Oil)	ASTM D2274	2 L
Oxidation Stability of Inhibited Oil by Pressure Vessel at 140°C	ASTM D2112	150 mL
Particle Count	ISO 4406	100 mL
Particle Count & Sizing	ASTM D7619 / ISO 4406	500 mL
Particulate Contamination for Biodiesel Fuels	ASTM D7321	1 L
Particulate Contamination for Diesel Fuels	ASTM D6217	1 L
PCA - Polycyclic Analysis	IP 346	100 mL
Pentane Insolubles by Filtration	ASTM D7317	25 mL
Peroxide Value	ASTM D3703	200 mL
pH Determination	SAVLAB PH	150 mL
Phosphorus Emissions Index (PEI) at 165°C, 16 Hours	SAVLAB PEI 165	250 mL
Phosphorus Emissions Index (PEI) at 165°C, 32 Hours	SAVLAB PEI 165	250 mL
Phosphorus Emissions Index (PEI) at 165°C, 48 Hours	SAVLAB PEI 165	250 mL
Phosphorus Emissions Index (PEI) at 165°C, 64 Hours	SAVLAB PEI 165	250 mL
Phosphorus Emissions Index (PEI) at 250°C, 1 Hour	SAVLAB PEI	250 mL
Pour Point	ASTM D97	100 mL
Quenching Time	ASTM D3520	600 mL
Reflux Boiling Point	SAVLAB RBP	100 mL
Refractive Index	ASTM D1218	20 mL
Reid Vapor Pressure	ASTM D323	125 mL
Rotating Bomb Oxidation Test (RBOT) Single Run	ASTM D2272	150 mL
Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	ASTM D2272	150 mL
Rotovapping	SAVLAB RV	Varies
RPVOT, Run to End-of-Test, Hard Break	ASTM D2272	150 mL
Rust Prevention 24 Hours (Method A or B)	ASTM D665	2 L
Rust Prevention 4 Hours (Method A or B)	ASTM D665	1 L
Rust Protection by Humidity Cabinet	ASTM D1748	1 L
Saponification Number	ASTM D94	25 g

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Test Description	Method	Sample Size
Scanning Brookfield Viscosity (-5°C to -40°C)	ASTM D5133	50 mL
Scanning Brookfield Viscosity, Extended Temperature Range	ASTM D5133	50 mL
Shear Stability, KRL (Tapered Roller Bearing Test) 40 Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Shear Stability, KRL (Tapered Roller Bearing Test) Custom Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Shear Stability, Kurt Orbahn, 100 Passes	ASTM D6278 Mod.	1 L
Shear Stability, Kurt Orbahn, 30 Passes	ASTM D6278	1 L
Shear Stability, Kurt Orbahn, 90 Passes	ASTM D6278 Mod.	1 L
Shear Stability, Kurt Orbahn, Custom Number of Passes	ASTM D6278 Mod.	1 L
Simulated Distillation by Gas Chromatography	ASTM D6417	10 mL
Sludging & Corrosion Tendency (Up to 1000 Hours)	ASTM D4310	1 L
Sonic Shear, Hydraulic Fluids	ASTM D5621	100 mL
Sonic Shear, Oils	ASTM D2603	100 mL
Soot by TGA	ASTM E1131	5 mL
Specific Gravity (Includes API Gravity)	ASTM D4052	50 mL
Specific Heat	ASTM E1269	100 mL
Stable Pour Point	FTM 203C	200 mL
Sulfate Analysis (SO ₄)	ASTM D5827	30 mL
Sulfated Ash	ASTM D874	50 g
Sulfated Ash, Calculated from ICP Results	SAVLAB SFACALC	N/A
Sulfur	ASTM D5453	10 mL
Sulfur & Nitrogen Package	ASTM D5453 & D5762	20 mL
Sulfur by XRF - Energy Dispersive	ASTM D4294	10 mL
Sulfur by XRF - Wavelength Dispersive	ASTM D2622	30 mL
Sulfur Emissions Index, (SEI)	SAVLAB SEI	250 mL
Sulfur, Active	ASTM D1662	100 g
Surface Tension	ASTM D1331	100 mL
Tapered Roller Bearing Test (KRL Shear) 04 Hours + pre & post shear VI	CEC L-45-99 Mod. & ASTM D2270	100 mL
Tapered Roller Bearing Test (KRL Shear) 08 Hours + pre & post shear VI	CEC L-45-99 Mod. & ASTM D2270	100 mL
Tapered Roller Bearing Test (KRL Shear) 04 Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Tapered Roller Bearing Test (KRL Shear) 08 Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Tapered Roller Bearing Test (KRL Shear) 20 Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Tapered Roller Bearing Test (KRL Shear) 20 Hours + pre & post shear VI	CEC L-45-99 Mod. & ASTM D2270	100 mL
Tapered Roller Bearing Test (KRL Shear) 30 Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Tapered Roller Bearing Test (KRL Shear) 30 Hours + pre & post shear VI	CEC L-45-99 Mod. & ASTM D2270	100 mL
Tapered Roller Bearing Test (KRL Shear) 40 Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
Tapered Roller Bearing Test (KRL Shear) 40 Hours + pre & post shear VI	CEC L-45-99 Mod. & ASTM D2270	100 mL
Tapered Roller Bearing Test (KRL Shear) Custom Hours	CEC L-45-99 Mod. & ASTM D445	100 mL
T-Bar Viscosity	ASTM D1084 B	Varies
TBR / HTLS Viscosity, New Oil	SAVLAB TBR	150 mL
TBR / HTLS Viscosity, Other Shear	SAVLAB TBR	150 mL
TBR / HTLS Viscosity, Other Temperature	SAVLAB TBR	150 mL
TBR / HTLS Viscosity, Used Oil	SAVLAB TBR	150 mL
TBS / HTHS Viscosity, 100°C, New Oil	ASTM D6616	150 mL
TBS / HTHS Viscosity, 100°C, Other Shear	ASTM D6616	150 mL
TBS / HTHS Viscosity, 100°C, Used Oil	ASTM D6616	150 mL
TBS / HTHS Viscosity, 150°C, New Oil	ASTM D4683	150 mL
TBS / HTHS Viscosity, 150°C, Used Oil	ASTM D4683	150 mL
TBS / HTHS Viscosity, Below 50°C	ASTM D4683 Mod.	150 mL
TBS / HTHS Viscosity, Multi-Temperature, Multi-Shear	ASTM D4683 Mod.	150 mL
TBS / HTHS Viscosity, Other Shear	ASTM D4683 Mod.	150 mL
TBS / HTHS Viscosity, Other Temperature	ASTM D4683 Mod.	150 mL
TEOST 33C	ASTM D6335	250 mL
TEOST MHT-4	ASTM D7097	50 mL
TFOUT (Thin Film Oxidation Uptake Test) Catalyst B	ASTM D7098	50 mL

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Test Description	Method	Sample Size
TFOUT (Thin Film Oxidation Uptake Test) Gas Engine Oils	ASTM D4742	50 mL
TGA Soot	ASTM E1131	5 mL
TGA Thermal Scan or Isotherm	SAVLAB TGASCAN	5 mL
Thermal Stability (Hydraulic Fluids)	ASTM D2070	300 mL
Thermo-oxidation Engine Oil Simulation Test (TEOST 33C)	ASTM D6335	250 mL
Thermo-oxidation Engine Oil Simulation Test (TEOST MHT-4)	ASTM D7097	50 mL
Thin Film Oxidation Uptake Test (TFOUT) Gas Engine Oils	ASTM D4742	50 mL
Thin Film Oxygen Uptake Test (TFOUT) Catalyst B	ASTM D7098	50 mL
Timken Extreme Pressure (Specify starting load)	ASTM D2782	4 L
Timken OK Load for Grease (Specify starting load)	ASTM D2509	3400 g
Total Acid Number	ASTM D664	50 mL
Total Ash	ASTM D482	80 g
Total Base Number	ASTM D2896	50 mL
Total Base Number	ASTM D4739	20 mL
TP-1 MRV Viscosity, Single Temperature	ASTM D4684	100 mL
Trace Sediment	ASTM D2273	200 g
Vapor Pressure by Isoteniscope, Multiple Temperatures	ASTM D2879	10 mL
Vapor Pressure by Isoteniscope, Single Temperature	ASTM D2879	10 mL
Vapor Pressure, Reid	ASTM D323	125 mL
Viscosity by Cone & Plate	SAVLAB CAP	10 mL
Viscosity Index (Includes D445 at 40°C & 100°C)	ASTM D2270	125 mL
Viscosity Loss Profile (VLP), 20 Passes	SAVLAB VLP	1 L
Viscosity Loss Profile (VLP), 30 Passes	SAVLAB VLP	1 L
Viscosity Loss Profile (VLP), 40 Passes	SAVLAB VLP	1 L
Viscosity, Brookfield +20°C to -60°C (Per Temperature)	ASTM D2983	200 mL
Viscosity, High Temperature High Shear / TBS, 100°C, New Oil	ASTM D6616	150 mL
Viscosity, High Temperature High Shear / TBS, 100°C, Other Shear	ASTM D6616 Modified	150 mL
Viscosity, High Temperature High Shear / TBS, 100°C, Used Oil	ASTM D6616	150 mL
Viscosity, High Temperature High Shear / TBS, 150°C, New Oil	ASTM D4683	150 mL
Viscosity, High Temperature High Shear / TBS, 150°C, Used Oil	ASTM D4683	150 mL
Viscosity, High Temperature High Shear / TBS, Below 50°C	ASTM D4683 Mod.	150 mL
Viscosity, High Temperature High Shear / TBS, Multi-Temperature, Multi Shear	ASTM D4683 Mod.	150 mL
Viscosity, High Temperature High Shear / TBS, Other Shear	ASTM D4683 Mod.	150 mL
Viscosity, High Temperature High Shear / TBS, Other Temperature	ASTM D4683 Mod.	150 mL
Viscosity, High Temperature Low Shear / TBR, New Oil	SAVLAB TBR	150 mL
Viscosity, High Temperature Low Shear / TBR, Other Shear	SAVLAB TBR	150 mL
Viscosity, High Temperature Low Shear / TBR, Other Temperature	SAVLAB TBR	150 mL
Viscosity, High Temperature Low Shear / TBR, Used Oil	SAVLAB TBR	150 mL
Viscosity, Kinematic 40°C or 100°C	ASTM D445	125 mL
Viscosity, Kinematic Low Temperature with Linearity Validation	ASTM D445	375 mL
Viscosity, Kinematic Used or In-Service Oil	ASTM D445	125 mL
Viscosity, Kinematic, 0°C and Above	ASTM D445	125 mL
Viscosity, Kinematic, Below 0°C	ASTM D445	125 mL
Viscosity, MRV Single Temperature	ASTM D3829 Mod.	200 mL
Viscosity, MRV/TP-1 Single Temperature	ASTM D4684	100 mL
Viscosity, Scanning Brookfield (-5°C to -40°C)	ASTM D5133	50 mL
Viscosity, T-Bar	ASTM D1084 B	Varies
VLP (Viscosity Loss Profile), 20 Passes	SAVLAB VLP	1 L
VLP (Viscosity Loss Profile), 30 Passes	SAVLAB VLP	1 L
VLP (Viscosity Loss Profile), 40 Passes	SAVLAB VLP	1 L
Volatile Organic Content (VOC)	EPA Test 24	10 mL
Volatility by Noack	ASTM D5800	150 mL
Water & Sediment	ASTM D2709	100 mL
Water & Sediment for Opaque or In-Service Oils	ASTM D1768	100 mL

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Tests in Alphabetical Order

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Test Description	Method	Sample Size
Water by Karl Fischer	ASTM D6304	100 mL
Water Separability / Emulsion Characteristics	ASTM D1401	100 mL
Water Tolerance, Engine Oil	ASTM D6794	1 L
Water Washout (Single Temperature)	ASTM D1264	50 g

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Laboratory Testing Services

API SN & ILSAC GF-5

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D445	Viscosity, Kinematic 40°C or 100°C	125 mL
ASTM D892 & D6082	Foaming, Sequence I - IV (Specify option A if required)	1 L
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New Oil	150 mL
ASTM D4684	TP-1 MRV Viscosity, Single Temperature	100 mL
ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals (No S)	10 mL
ASTM D5133	Gelation Index	50 mL
ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
ASTM D5800	Noack Volatility	150 mL
ASTM D6335	Thermo-oxidation Engine Oil Simulation Test (TEOST 33C)	250 mL
ASTM D6557	Ball Rust Test	125 mL
ASTM D6794	Engine Oil Water Tolerance (EOWT)	1 L
ASTM D6795	Engine Oil Filterability (EOFT)	1 L
ASTM D6922	Homogeneity & Miscibility	300 mL
ASTM D7097	Thermo-oxidation Engine Oil Simulation Test (TEOST MHT-4)	50 mL
ASTM D7216	GF-5 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7563	Emulsion of Water and Simulated Ed85 Fuel	500 mL

Tests required to qualify for API SN or ILSAC GF-5 can vary by certification and grade. The above list contains bench tests that may be required. Review the specification according to your specific situation.

The Package Price comes standard with the above listed tests. Please contact us if you would like a custom test package quoted.

This package only includes testing and is not a substitute for the licensing process or in any way an implied endorsement or licensing submission.

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Laboratory Testing Services

API CK / FA-4

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D874	Sulfated Ash	50 g
ASTM D892	Foaming, Sequence I - III (Specify option A if required)	1 L
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New Oil	150 mL
ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals (No S)	10 mL
ASTM D5800	Noack Volatility	150 mL
ASTM D6594	High Temperature Corrosion Bench Test at 135°C	125 mL
ASTM D7109	Kurt Orbahn Shear Stability - Includes 30 and 90 Passes	1 L
ASTM D7216	HDD Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	HDD Elastomer Compatibility, FKM, Fluroelastomer	1.2 L
ASTM D7216	HDD Elastomer Compatibility, MAC, Vamac	1.2 L
ASTM D7216	HDD Elastomer Compatibility, NBR, Nitrile	1.2 L
ASTM D7216	HDD Elastomer Compatibility, VMQ, Silicone	1.2 L

Tests required to qualify for API CK / FA-4 can vary by certification and grade. The above list contains bench tests that may be required. Review the specification according to your specific situation.

The Package Price comes standard with the above listed tests. Please contact us if you would like a custom test package quoted.

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Laboratory Testing Services

Automatic Transmission Fluid (ATF)

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D92	Flash Point and Fire Point, Cleveland Open Cup	250 mL
ASTM D97	Pour Point	100 mL
ASTM D130	Copper Strip Corrosion	100 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D664	Acid Number	50 mL
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D892	Foaming, Sequence I - III (Specify option A if required)	1 L
ASTM D892 & D6082	Foaming, Sequence I - IV (Specify option A if required)	1 L
ASTM D974	Acid Number	50 mL
ASTM D974	Base Number	50 mL
ASTM D1500	Color	150 mL
ASTM D1748	Rust Protection by Humidity Cabinet	1 L
ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
ASTM D2896	Base Number	50 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D4172	Four Ball Wear	100 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New Oil	150 mL
ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals (No S)	10 mL
ASTM D5182	FZG Gear Test - Up to 12 Stages	2 L
ASTM D5182	FZG Gear Test - Up to 14 Stages	2 L
ASTM D5183	Coefficient of Friction by Four Ball	100 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
ASTM D5800	Noack Volatility	150 mL
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
CEC L-45-99 Mod. & D445	KRL Shear 20 Hours + 1 Temperature pre & post shear KV	100 mL
FTM 203C	Stable Pour Point	200 mL

Tests required to qualify for ATF specifications can vary by OEM. These are bench tests that may be required, review the specification according to your specific situation. Testing with Savant Labs is not a substitute for the licensing process or in any way an implied endorsement or a licensing submission.

Savant Labs

Laboratory Testing Services

Condition Monitoring Tests

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D92	Flash Point, Cleveland Open Cup	250 mL
ASTM D445	Kinematic Viscosity, Used or In-Service Oil	125 mL
ASTM D482	Total Ash	80 g
ASTM D664	Acid Number	50 mL
ASTM D874	Sulfated Ash	50 g
ASTM D974	Acid Number	50 mL
ASTM D1298	Density / API Gravity, Hydrometer	250 mL
ASTM D1500	Color	150 mL
ASTM D1768	Water & Sediment for Opaque or In-Service Oils	100 mL
ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2500	Cloud Point	100 mL
ASTM D2709	Water & Sediment	100 mL
ASTM D2896	Base Number	50 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D3524	Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	10 mL
ASTM D3525	Fuel Dilution, Gasoline	10 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, Used Oil	150 mL
ASTM D4683	Viscosity, High Temperature High Shear / TBS, 150°C, Used Oil	150 mL
ASTM D4739	Base Number	20 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D6217	Particulate Contamination for Diesel Fuels	1 L
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, Used Oil	150 mL
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
ASTM D7321	Particulate Contamination for Biodiesel Fuels	1 L
ASTM D7412	FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	50 mL
ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ASTM D7415	FTIR Analysis, In-Service Fluid, Sulfate Content	50 mL
ASTM D7619 / ISO 4406	Particle Count & Sizing	500 mL
ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
ASTM E2412	FTIR Analysis, In-Service Fluid	50 mL
ISO 4406	Particle Count	100 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Used Oil	150 mL
SAVLAB XRFSCAN	Elemental Analysis, Qualitative by XRF	30 mL

Savant Labs

Laboratory Testing Services

Diesel Fuel Tests

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D86	Distillation	400 mL
ASTM D93	Flash Point, Pensky-Martins Closed Cup	250 mL
ASTM D97	Pour Point	100 mL
ASTM D130	Copper Strip Corrosion	100 mL
ASTM D189	Carbon Residue, Conradson	50 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/gallon or /pound)	20 mL
ASTM D240 & D5291	Net Heat of Combustion	20 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D482	Total Ash	80 g
ASTM D524	Carbon Residue, Ramsbottom	50 mL
ASTM D664	Acid Number	50 mL
ASTM D893	Insolubles, Pentane	25 mL
ASTM D974	Acid Number	50 mL
ASTM D1298	Density / API Gravity, Hydrometer	250 mL
ASTM D1500	Color	150 mL
ASTM D2274	Oxidation Stability (Petroleum Fuel Oil)	2 L
ASTM D2500	Cloud Point	100 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2709	Water & Sediment	100 mL
ASTM D2887	Gas Chromatography - Carbon Distribution	10 mL
ASTM D2982	Glycol	20 mL
ASTM D5133	Scanning Brookfield Viscosity (-5°C to -40°C)	50 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5186	Aromatics in Diesel Fuel	150 mL
ASTM D5291	Carbon Hydrogen Nitrogen Content	30 mL
ASTM D5291	Nitrogen - Carlo Erba	30 mL
ASTM D5453	Sulfur	10 mL
ASTM D6217	Particulate Contamination for Diesel Fuels	1 L
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D6371	Cold Filter Plug Point	150 mL
ASTM D7321	Particulate Contamination for Biodiesel Fuels	1 L
ASTM D7371	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
ASTM D7412	FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	50 mL
ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ASTM D7415	FTIR Analysis, In-Service Fluid, Sulfate Content	50 mL
ASTM D7462	Oxidation Stability (Biodiesel)	2 L
ASTM D7462	Oxidation Stability (Biodiesel - B100 Option)	2 L
ASTM E659	Auto-Ignition Temperature, Liquid Chemicals	10 mL
EN 14078	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL
SAVLAB BDICP	Elemental Analysis for Biodiesel Fuels	10 mL

Savant Labs
Laboratory Testing Services

Elastomer Compatibility Tests

Method	Test Description	Sample Size
ASTM D7216	GF-5 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, ACM Polyacrylate	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7216	HDD Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	HDD Elastomer Compatibility, FKM, Fluroelastomer	1.2 L
ASTM D7216	HDD Elastomer Compatibility, MAC, Vamac	1.2 L
ASTM D7216	HDD Elastomer Compatibility, NBR, Nitrile	1.2 L
ASTM D7216	HDD Elastomer Compatibility, VMQ, Silicone	1.2 L

Savant Labs

Laboratory Testing Services

Gear Lubricant Tests

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D92	Flash Point, Cleveland Open Cup	250 mL
ASTM D94	Saponification Number	25 g
ASTM D97	Pour Point	100 mL
ASTM D130	Copper Strip Corrosion	100 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D664	Acid Number	50 mL
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D874	Sulfated Ash	50 g
ASTM D892	Foaming, Sequence I - III (Specify option A if required)	1 L
ASTM D893	Insolubles, Pentane	25 mL
ASTM D1500	Color	150 mL
ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D2782	Timken Extreme Pressure (Specify starting load)	4 L
ASTM D2783	Four Ball Extreme Pressure Up to 400 kg.	200 mL
ASTM D2783	Four Ball Extreme Pressure Above 400 kg.	200 mL
ASTM D2887	Gas Chromatography - Carbon Distribution	10 mL
ASTM D2893	Oxidation Characteristics Extreme Pressure	500 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D4172	Four Ball Wear	100 mL
ASTM D5182	FZG Gear Test - Up to 12 Stages	2 L
ASTM D5182	FZG Gear Test - Up to 14 Stages	2 L
ASTM D5183	Coefficient of Friction by Four Ball	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 20 Hours + 1 Temperature pre & post shear KV	100 mL
FTM 3456	Channeling Characteristics	1 L
SAVLAB XRF	Chlorine - Wavelength Dispersive	30 mL

Savant Labs
Laboratory Testing Services

Grease Tests

Method	Test Description	Sample Size
ASTM D94	Saponification Number	25 g
ASTM D217	Cone Penetration, Unworked & 60 Strokes (Grease)	800 g
ASTM D942	Oxidation Stability (Grease) 100 Hours	150 mL
ASTM D942 Mod.	Oxidation Stability (Grease) > 100 Hours	150 mL
ASTM D972	Evaporation Loss (Grease) - Specify Time & Temperature	150 mL
ASTM D1092	Apparent Viscosity, Grease	500 g
ASTM D1264	Water Washout (Single Temperature)	50 g
ASTM D1478	Low Temperature Torque	10 g
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D2265	Dropping Point	50 g
ASTM D2266	Four Ball Wear (Grease)	100 g
ASTM D2509	Timken OK Load for Grease (Specify starting load)	3400 g
ASTM D2596	Four Ball Extreme Pressure (Grease) Up to 400 kg.	40 mL
ASTM D2596	Four Ball Extreme Pressure (Grease) Above 400 kg.	40 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D3527	High Temperature Life, Wheel Bearing Grease	100 mL
ASTM D4170	Fretting Wear, Grease	25 mL
ASTM D4693	Low Temperature Torque, Grease	50 mL
ASTM D6304	Water by Karl Fischer	100 mL
SAVLAB IR	Fourier Transform Infra-Red, FTIR, Spectra Only	50 mL
SAVLAB XRFSCAN	Elemental Analysis, Qualitative by XRF	30 mL

Savant Labs

Laboratory Testing Services

Hydraulic Fluids Tests

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D92	Flash Point, Cleveland Open Cup	250 mL
ASTM D130	Copper Strip Corrosion	100 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D445	Kinematic Viscosity, Below 0°C	125 mL
ASTM D664	Acid Number	50 mL
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D943	Oxidation Characteristics (2.0 TAN or 1000 Hours)	600 mL
ASTM D1401	Emulsion Characteristics / Water Separability	100 mL
ASTM D2070	Thermal Stability (Hydraulic Fluids)	300 mL
ASTM D2112	Oxidation Stability of Inhibited Oil by Pressure Vessel at 140°C	150 mL
ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D2783	Four Ball Extreme Pressure Up to 400 kg.	200 mL
ASTM D2783	Four Ball Extreme Pressure Above 400 kg.	200 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D4172	Four Ball Wear	100 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
ISO 4406	Particle Count	100 mL

Savant Labs

Laboratory Testing Services

Marine Lubricant Tests

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D92	Flash Point, Cleveland Open Cup	250 mL
ASTM D97	Pour Point	100 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D664	Acid Number	50 mL
ASTM D892 & D6082	Foaming, Sequence I - IV (Specify option A if required)	1 L
ASTM D1298	Density / API Gravity, Hydrometer	250 mL
ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
ASTM D2896	Base Number	50 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New Oil	150 mL
ASTM D4684	TP-1 MRV Viscosity, Single Temperature	100 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
ASTM D5453	Sulfur	10 mL
ASTM D5762	Nitrogen	10 mL
ASTM D5800	Noack Volatility	150 mL
ASTM D6278	Kurt Orbahn Shear Stability, 030 Passes	1 L
ASTM D6795	Engine Oil Filterability (EOFT)	1 L

Savant Labs is certified as an NMMA testing lab for FC-W and FC-W Catalyst specifications.

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Laboratory Testing Services

Turbine Lubricant Tests

Highlighted Tests are ISO/IEC 17025:2005 Accredited

Method	Test Description	Sample Size
ASTM D445	Kinematic Viscosity, Used or In-Service Oil	125 mL
ASTM D664	Acid Number	50 mL
ASTM D893	Insolubles, Pentane	25 mL
ASTM D942	Oxidation Stability (Grease) 100 Hours	150 mL
ASTM D974	Acid Number	50 mL
ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D7412	FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	50 mL
ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
ISO 4406	Particle Count	100 mL

Savant Labs

Laboratory Testing Services

Tests by Category

Highlighted Tests are ISO/IEC 17025:2005 Accredited

<i>Viscosity</i>		
Method	Test Description	Sample Size
ASTM D97	Pour Point	100 mL
ASTM D445	Kinematic Viscosity, 0°C and Above	125 mL
ASTM D445	Kinematic Viscosity, 40°C or 100°C, New Oil	125 mL
ASTM D445	Kinematic Viscosity, Below 0°C	125 mL
ASTM D445	Kinematic Viscosity, Low Temperature with Linearity Validation	375 mL
ASTM D445	Kinematic Viscosity, Used or In-Service Oil	125 mL
ASTM D1084 B	T-Bar Viscosity	Varies
ASTM D1092	Apparent Viscosity, Grease	500 g
ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	200 mL
ASTM D3829 Mod.	Mini-Rotary Viscosity (MRV), Single Temperature	200 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New Oil	150 mL
ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, Used Oil	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Below 50°C	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Multi-Temperature, Multi	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Other Shear	150 mL
ASTM D4683 Mod.	High Temperature High Shear / TBS Viscosity, Other Temperature	150 mL
ASTM D4684	TP-1 MRV Viscosity, Single Temperature	100 mL
ASTM D5133	Scanning Brookfield Viscosity (-5°C to -40°C)	50 mL
ASTM D5133	Scanning Brookfield Viscosity, Extended Temperature Range	50 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 20 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 30 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 40 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), Other Passes	500 mL
ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
ASTM D5293 Mod.	Cold Cranking Simulator, Temperature Scan	120 mL
ASTM D6278	Kurt Orbahn Shear Stability, 30 Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, 100 Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, Custom Number of Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, 90 Passes	1 L
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, New Oil	150 mL
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, Other Shear	150 mL
ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, Used Oil	150 mL
ASTM D7109	Kurt Orbahn Shear Stability - Includes 30 and 90 Passes	1 L
CEC L-45-99 Mod. & D445	KRL Shear 04 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 08 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 20 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 30 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear 40 Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D445	KRL Shear Custom Hours + 1 Temperature pre & post shear KV	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 04 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 08 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 20 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 30 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear 40 Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & D2270	KRL Shear Custom Hours + pre & post shear VI	100 mL
CEC L-45-99 Mod. & ASTM D445	Shear Stability, KRL (Tapered Roller Bearing Test) 40 Hours	100 mL
FTM 203C	Stable Pour Point	200 mL

Savant Labs
Laboratory Testing Services

Tests by Category

Highlighted Tests are ISO/IEC 17025:2005 Accredited

<i>Viscosity</i>		
Method	Test Description	Sample Size
SAVLAB CAP	Cone & Plate Viscosity	10 mL
SAVLAB FEI	Fuel Efficiency Index (FEI)	300 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, New Oil	150 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Other Shear	150 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Other Temperature	150 mL
SAVLAB TBR	High Temperature Low Shear / TBR Viscosity, Used Oil	150 mL
SAVLAB VLP	Viscosity Loss Profile (VLP), 20 Passes	1 L
SAVLAB VLP	Viscosity Loss Profile (VLP), 30 Passes	1 L
SAVLAB VLP	Viscosity Loss Profile (VLP), 40 Passes	1 L

Savant Labs

Laboratory Testing Services

Tests by Category

Highlighted Tests are ISO/IEC 17025:2005 Accredited

<i>Performance / Simulation</i>		
Method	Test Description	Sample Size
ASTM D130	Copper Strip Corrosion	100 mL
ASTM D217	Cone Penetration, Unworked & 60 Strokes (Grease)	800 g
ASTM D877	Dielectric Breakdown Voltage	800 mL
ASTM D1264	Water Washout (Single Temperature)	50 g
ASTM D1478	Low Temperature Torque	10 g
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D2070	Thermal Stability (Hydraulic Fluids)	300 mL
ASTM D2266	Four Ball Wear (Grease)	100 g
ASTM D2509	Timken OK Load for Grease (Specify starting load)	3400 g
ASTM D2603	Sonic Shear, Oils	100 mL
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear, Close Step	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear, Long Step	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear, Very Long Step	200 mL
ASTM D2711	Demulsibility	2 L
ASTM D2711 EP	Demulsibility Extreme Pressure	2 L
ASTM D2782	Timken Extreme Pressure (Specify starting load)	4 L
ASTM D2783	Four Ball Extreme Pressure Up to 400 kg.	200 mL
ASTM D2783	Four Ball Extreme Pressure Above 400 kg.	200 mL
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D3524	Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	10 mL
ASTM D3525	Fuel Dilution, Gasoline	10 mL
ASTM D3527	High Temperature Life, Wheel Bearing Grease	100 mL
ASTM D4170	Fretting Wear, Grease	25 mL
ASTM D4172	Four Ball Wear	100 mL
ASTM D4693	Low Temperature Torque, Grease	50 mL
ASTM D5182	FZG Gear Test - Up to 12 Stages	2 L
ASTM D5182	FZG Gear Test - Up to 14 Stages	2 L
ASTM D5183	Coefficient of Friction by Four Ball	100 mL
ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D5972	Freeze Point	100 mL
ASTM D6200	Cooling Curve Analysis of Quench Oils	4 L
ASTM D6794	Engine Oil Water Tolerance (EOWT)	1 L
ASTM D6795	Engine Oil Filterability (EOFT)	1 L
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
ASTM D7216	GF-5 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
ASTM D7216	GF-5 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, ACM Polyacrylate	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, HNBR, Nitrile	1.2 L
ASTM D7216	GM dexos1:2015 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7216	HDD Elastomer Compatibility, ACM, Polyacrylate	1.2 L
ASTM D7216	HDD Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
ASTM D7216	HDD Elastomer Compatibility, MAC, Vamac	1.2 L
ASTM D7216	HDD Elastomer Compatibility, NBR, Nitrile	1.2 L
ASTM D7216	HDD Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7563	Emulsion of Water and Simulated Ed85 Fuel	500 mL
FTM 3456	Channeling Characteristics	1 L
SAVLAB FGE	FoamGen Analysis (Custom Test, Call)	1 L
SAVLAB GES	GE Locomotive Specification (GE Package 1, B82-1 test)	1 L
SAVLAB PEI	Phosphorus Emissions Index (PEI) at 250°C, 1 Hour	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 16 Hours	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 32 Hours	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 48 Hours	250 mL
SAVLAB PEI 165	Phosphorus Emissions Index (PEI) at 165°C, 64 Hours	250 mL
SAVLAB SEI	Sulfur Emissions Index, (SEI)	250 mL

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Tests by Category

<i>Oxidation</i>		
Method	Test Description	Sample Size
ASTM D525	Oxidation Stability (Gasoline)	200 mL
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D665	Rust Prevention 24 Hours (Method A or B)	2 L
ASTM D942	Oxidation Stability (Grease) 100 Hours	150 mL
ASTM D942 Mod.	Oxidation Stability (Grease) > 100 Hours	150 mL
ASTM D943	Oxidation Characteristics (2.0 TAN or 1000 Hours)	600 mL
ASTM D943	Oxidation Characteristics (2.0 TAN or 2000 Hours)	600 mL
ASTM D943	Oxidation Characteristics (2.0 TAN or 3000 Hours)	600 mL
ASTM D1748	Rust Protection by Humidity Cabinet	1 L
ASTM D2112	Oxidation Stability of Inhibited Oil by Pressure Vessel at 140°C	150 mL
ASTM D2272	Rotating Bomb Oxidation Test (RBOT) Single Run	150 mL
ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2272	RPVOT, Run to End-of-Test, Hard Break	150 mL
ASTM D2274	Oxidation Stability (Petroleum Fuel Oil)	2 L
ASTM D2893	Oxidation Characteristics Extreme Pressure	500 mL
ASTM D4310	Sludging & Corrosion Tendency (Up to 1000 Hours)	1 L
ASTM D4742	Thin Film Oxidation Uptake Test (TFOUT) Gas Engine Oils	50 mL
ASTM D6335	Thermo-oxidation Engine Oil Simulation Test (TEOST 33C)	250 mL
ASTM D6557	Ball Rust Test	125 mL
ASTM D6594	High Temperature Corrosion Bench Test at 135°C	125 mL
ASTM D7097	Thermo-oxidation Engine Oil Simulation Test (TEOST MHT-4)	50 mL
ASTM D7098	Thin Film Oxygen Uptake Test (TFOUT) Catalyst B	50 mL
ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ASTM D7462	Oxidation Stability (Biodiesel)	2 L
ASTM D7462	Oxidation Stability (Biodiesel - B100 Option)	2 L
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL
ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ASTM D7462	Oxidation Stability (Biodiesel)	2 L
ASTM D7462	Oxidation Stability (Biodiesel - B100 Option)	2 L
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL

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<i>Physical Properties</i>		
Method	Test Description	Sample Size
ASTM D86	Distillation	400 mL
ASTM D92	Fire Point, Cleveland Open Cup	250 mL
ASTM D92	Flash Point and Fire Point, Cleveland Open Cup	250 mL
ASTM D92	Flash Point, Cleveland Open Cup	250 mL
ASTM D93	Flash Point, Pensky-Martins Closed Cup	250 mL
ASTM D127	Drop Melting Point of Petroleum Wax	30 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/gallon or /pound)	20 mL
ASTM D240 & D5291	Net Heat of Combustion	20 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D323	Reid Vapor Pressure	125 mL
ASTM D892	Foaming, Sequence I - III (Specify option A if required)	1 L
ASTM D892 & D6082	Foaming, Sequence I - IV (Specify option A if required)	1 L
ASTM D972	Evaporation Loss (Grease) - Specify Time & Temperature	150 mL
ASTM D1177	Freeze Point	100 mL
ASTM D1218	Refractive Index	20 mL
ASTM D1298	Density / API Gravity, Hydrometer	250 mL
ASTM D1331	Surface Tension	100 mL
ASTM D1401	Emulsion Characteristics / Water Separability	100 mL
ASTM D1500	Color	150 mL
ASTM D1768	Water & Sediment for Opaque or In-Service Oils	100 mL
ASTM D2007	Clay Gel Analysis	100 mL
ASTM D2155	Auto-Ignition Temperature (Hydraulic Fluids)	10 mL
ASTM D2265	Dropping Point	50 g
ASTM D2709	Water & Sediment	100 mL
ASTM D2879	Vapor Pressure by Isotenoscope, Single Temperature	10 mL
ASTM D2879	Vapor Pressure by Isotenoscope, Multiple Temperatures	10 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D3520	Quenching Time	600 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D5800	Noack Volatility	150 mL
ASTM D6082	Foaming, Sequence IV (Specify option A if required)	1 L
ASTM D6184	Oil Separation %, Wire Cone Method	100 g
ASTM D6217	Particulate Contamination for Diesel Fuels	1 L
ASTM D6371	Cold Filter Plug Point	150 mL
ASTM D6375	Noack Volatility by TGA	20 mL
ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6793	Bulk Modulus, Up to 80°C	200 mL
ASTM D6922	Homogeneity & Miscibility	300 mL
ASTM D7321	Particulate Contamination for Biodiesel Fuels	1 L
ASTM D7619 / ISO 4406	Particle Count & Sizing	500 mL
ASTM E1269	Specific Heat	100 mL
ISO 4406	Particle Count	100 mL
SAVLAB LPYC	Density, Pycnometer	120 mL
SAVLAB MIC	Microscopy	10 mL
SAVLAB PH	pH Determination	150 mL
SAVLAB RBP	Reflux Boiling Point	100 mL
SAVLAB RV	Fuel Stripping	Varies
SAVLAB RV	Rotovapping	Varies
SAVLAB TGASCAN	TGA Thermal Scan or Isotherm	5 mL
SAVLAB RV	Rotovapping	Varies
SAVLAB TGASCAN	TGA Thermal Scan or Isotherm	5 mL

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Tests by Category

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<i>Molecular Characterization</i>		
Method	Test Description	Sample Size
ASTM D94	Saponification Number	25 g
ASTM D189	Carbon Residue, Conradson	50 mL
ASTM D482	Total Ash	80 g
ASTM D524	Carbon Residue, Ramsbottom	50 mL
ASTM D611	Aniline Point	100 mL
ASTM D613	Cetane Number	1 L
ASTM D664	Acid Number	50 mL
ASTM D874	Sulfated Ash	50 g
ASTM D893	Insolubles, Pentane	25 mL
ASTM D974	Acid Number	50 mL
ASTM D974	Base Number	50 mL
ASTM D976 & D4737	Cetane Index (Calculated from D1298 & D86)	500 mL
ASTM D1319	Hydrocarbon Type	40 mL
ASTM D1662	Sulfur, Active	100 g
ASTM D2273	Trace Sediment	200 g
ASTM D2699	Octane Number (Research Rating)	800 mL
ASTM D2700	Octane Number (Motor Rating)	800 mL
ASTM D2887	Gas Chromatography - Carbon Distribution	10 mL
ASTM D2896	Base Number	50 mL
ASTM D2982	Glycol	20 mL
ASTM D3238	Carbon Distribution Analysis	250 mL
ASTM D3703	Peroxide Value	200 mL
ASTM D4291	Glycol	5 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	10 mL
ASTM D4530	Carbon Residue, Micro	150 mL
ASTM D4629	Nitrogen by Chemiluminescence	30 mL
ASTM D4737	Cetane Index (Calculated from D1298 & D86)	500 mL
ASTM D4739	Base Number	20 mL
ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals (No S)	10 mL
ASTM D5186	Aromatics in Diesel Fuel	150 mL
ASTM D5291	Carbon Hydrogen Nitrogen Content	30 mL
ASTM D5291	Nitrogen - Carlo Erba	30 mL
ASTM D5453	Sulfur	10 mL
ASTM D5453 & D5762	Sulfur & Nitrogen Package	20 mL
ASTM D5762	Nitrogen	10 mL
ASTM D5827	Sulfate Analysis (SO ₄)	30 mL
ASTM D6130	Elemental Analysis by ICP, Aqueous / Coolants / Sulfur, 5 elements	10 mL
ASTM D6304	Water by Karl Fischer	100 mL
ASTM D6443	Chlorine by XRF	30 mL
ASTM D6560	Asphaltene Content	25 g
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
ASTM D7317	Pentane Insolubles by Filtration	25 mL
ASTM D7371	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
ASTM D7412	FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	50 mL
ASTM D7415	FTIR Analysis, In-Service Fluid, Sulfate Content	50 mL
ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
ASTM E1131	TGA Soot	5 mL
ASTM E2412	FTIR Analysis, In-Service Fluid	50 mL

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<i>Molecular Characterization</i>		
Method	Test Description	Sample Size
EN 14078	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
EPA Test 24	Volatile Organic Content (VOC)	10 mL
IP 346	PCA - Polycyclic Analysis	100 mL
SAVLAB BDICP	Elemental Analysis for Biodiesel Fuels	10 mL
SAVLAB IOD	Iodine Value	100 mL
SAVLAB IR	Fourier Transform Infra-Red, FTIR, Spectra Only	50 mL
SAVLAB IRG	Fourier Transform Infra-Red, FTIR, Glycol Analysis	50 mL
SAVLAB IRW	Fourier Transform Infra-Red, FTIR, Water Analysis	50 mL
SAVLAB SFACALC	Sulfated Ash, Calculated from ICP Results	N/A
SAVLAB XRF	Chlorine - Wavelength Dispersive	30 mL
SAVLAB XRFSCAN	Elemental Analysis, Qualitative by XRF	30 mL