

SAVANTLAB.COM

Laboratory Testing Services

Complete overview of tests

SAVANT LABS

SAVANT



*Technical expertise in the
advancement of lubrication
technology for over 50 years*

ISO 9001:2015 QMS CERTIFIED

ISO/IEC 17025:2017 ACCREDITED • Gold bullets

ASTM PROFICIENCY TESTING
PROGRAM PARTICIPANT

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General Policy Information

Quality Control and Assurance

Savant is ISO 9001 quality system certified and ISO/IEC17025:2017 Accredited for specific tests indicated by a gold bullet. The laboratory also participates in the ASTM Test Monitoring Center (TMC) calibration program for bench tests, the ASTM Proficiency Testing 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 SAVLAB 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.

(General Policy Information continued on next page)

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 email within **ten** working days of receipt of sample. A final report will be emailed.

Expedited Service: Delivery of data to client by phone or email within **five** working days. Expedited service is not available for all tests. A final report will be emailed. (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 emailed. (50% Surcharge)

24 hr. Service: Delivery of data to client by phone or email within **1 business day** 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)

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. Orders paid by a credit card will be charged a 3.5% transaction fee.

Tests by Method

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Method	Test Description	Sample Size
ASTM D86 Mod.	Distillation by Gas Chromatograph	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 D92	Flash Point, Grease	200 g
• ASTM D93	Flash Point, Pensky-Martins Closed Cup	250 mL
ASTM D94	Saponification Number	25 g
ASTM D95	Water by Distillation	100 mL
• ASTM D97	Pour Point	100 mL
• ASTM D130	Copper Strip Corrosion	100 mL
ASTM D156	Color (Saybolt Chromometer Method)	250 mL
ASTM D189	Carbon Residue, Conradson	50 mL
ASTM D217	Cone Penetration, Grease, Unworked	800 g
ASTM D217	Cone Penetration, Grease, Worked, 60 Strokes	800 g
ASTM D217	Cone Penetration, Grease, Worked, 10,000 Strokes	800 g
ASTM D217	Cone Penetration, Grease, Worked, 100,000 Strokes	800 g
ASTM D240	Gross Heat of Combustion (Specify BTUs/Pound)	20 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/Gallon)	50 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D323	Reid Vapor Pressure	125 mL
ASTM D381	Gum Content of Gasoline (Washed and Unwashed)	50 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, 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 D566	Dropping Point Grease	50 g
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)	1 L
• ASTM D874	Sulfated Ash	50 g
ASTM D877	Dielectric Breakdown Voltage	800 mL
ASTM D890	Water in Liquid Pine Chemicals	100 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 D924	Dissipation/Power Factor	500 mL
ASTM D942	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 and Temperature	150 mL
ASTM D974	Acid Number	50 mL
ASTM D974	Base Number	50 mL
ASTM D976 & D4737	Cetane Index (Calculated from D1298 and D86)	500 mL
ASTM D1084 B	T-Bar Viscosity	Varies
ASTM D1092	Apparent Viscosity, Grease	500 g
ASTM D1120	Boiling Point of Coolants	100 mL

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Tests by Method

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Method	Test Description	Sample Size
ASTM D1169	Specific Resistance (Resistivity)	150 mL
ASTM D1177	Freeze Point	100 mL
ASTM D1218	Refractive Index	20 mL
ASTM D1264	Water Washout (Single Bearing/Single Temperature)	50 g
ASTM D1264	Water Washout (Two Bearings Per Method/Single Temperature)	100 g
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
ASTM D1319	Hydrocarbon Type	40 mL
ASTM D1331	Surface Tension	100 mL
ASTM D1401	Emulsion Characteristics, Water Separability	100 mL
ASTM D1403	Cone Penetration, 1/4 or 1/2 Scale	100 g
ASTM D1404	Harmful Particles in Grease	30 g
ASTM D1478	Low Temperature Torque	10 g
ASTM D1500	Color	150 mL
ASTM D1533	Water in Insulating Liquids by Coulometric Karl Fischer Titration	100 mL
ASTM D1544	Color of Transparent Liquids - Gardner Scale	10 mL
ASTM D1662	Sulfur, Active	100 g
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D1743	Rust Prevention Properties of Grease	50 g
ASTM D1748	Rust Protection by Humidity Cabinet	1 L
ASTM D1768	Water and Sediment for Opaque or In-Service Oils	100 mL
ASTM D1831	Roll Stability of Grease	100 g
ASTM D1903	Calculating Coefficient of Thermal Expansion through Density	250 mL
ASTM D1957	Hydroxyl Number	25 mL
ASTM D2007	Clay Gel Analysis	100 mL
ASTM D2008	UV Absorbance to Absorptivity	10 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 and 100°C)	125 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 D2369	Volatile Organic Content (VOC)	10 mL
ASTM D2422 & D445	Industrial Fluid Lubricants by Viscosity System	125 mL
ASTM D2500	Cloud Point	100 mL
ASTM D2509	Timken OK Load for Grease (Specify Starting Load)	3400 g
ASTM D2532	Viscosity Stability at Low Temperature	125 mL
ASTM D2595	Evaporation Loss, Grease, Wide Temperature Range	25 g
• ASTM D2596	Four Ball Extreme Pressure (Grease) Up to 400 kg	500 g
• ASTM D2596	Four Ball Extreme Pressure (Grease) Above 400 kg	500 g
ASTM D2603	Sonic Shear, Oils	100 mL
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2624	Electrical Conductivity	100 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D2699	Octane Number (Research Rating)	800 mL
ASTM D2700	Octane Number (Motor Rating)	800 mL
ASTM D2709	Water and Sediment	100 mL
ASTM D2711	Demulsibility - Procedure A (No EP Additives)	2 L

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Method	Test Description	Sample Size
ASTM D2711	Demulsibility - Procedure B (Contains EP Additives)	2 L
ASTM D2714	Block on Ring Friction and Wear	200 mL
ASTM D2717	Thermal Conductivity - Single Temperature	100 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 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 Extended	10 mL
ASTM D2893	Oxidation Characteristics Extreme Pressure	500 mL
• ASTM D2896	Base Number	50 mL
ASTM D2982	Glycol-Base Antifreeze in Used Oils	20 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 mL
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D3238	Carbon Distribution Analysis	250 mL
ASTM D3336	High Temperature Bearing Performance Up to 600 Hours	50 g
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 D3527	High Temperature Life, Wheel Bearing Grease	120 g
ASTM D3703	Peroxide Value	200 mL
ASTM D3704	Oscillation Friction Wear, Grease	20 g
• ASTM D3829	Mini-Rotary Viscosity (MRV), Single Temperature	200 mL
• ASTM D4048	Copper Strip Corrosion, Grease	100 g
ASTM D4049	Resistance of Lubricating Grease to Water Spray	25 g
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D4170	Fretting Wear, Grease	40 g
• ASTM D4172	Four Ball Wear	100 mL
ASTM D4287	High-Shear Viscosity Using a Cone/Plate Viscometer	10 mL
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
ASTM D4289	Elastomer Compatibility HPM Elastomer SRE-NBR 28/P or SRE-NBR 28/PX	200 g
ASTM D4290	Leakage of Wheel Bearing Grease	200 g
ASTM D4291	Glycol	5 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	30 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive, 23 Elements	30 mL
ASTM D4310	Sludging & Corrosion Tendency Up to 1000 Hours	1 L
ASTM D4530	Carbon Residue, Micro	150 mL
• ASTM D4629	Nitrogen by Chemiluminescence	10 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, Other Shear, 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, Wheel Bearing Grease	50 g
ASTM D4737	Cetane Index (Calculated from D1298 and D86)	500 mL
• ASTM D4739	Base Number	20 mL
ASTM D4742	Thin Film Oxidation Uptake Test (TFOUT) Gas Engine Oils	50 mL
ASTM D4927	Sulfur Content for Automatic Transmission Fluid by XRF	30 mL



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Method	Test Description	Sample Size
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	10 mL
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-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 D5185	Sulfur by Elemental Analysis by Inductively Coupled Plasma	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 and Nitrogen Content	30 mL
ASTM D5291	Nitrogen - Carlo Erba	30 mL
• ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
• ASTM D5293	Cold Cranking Simulator, Temperature Scan	120 mL
• ASTM D5453	Sulfur	10 mL
• ASTM D5453 & D5762	Sulfur and Nitrogen Package	20 mL
ASTM D5483	Oxidation Stability of Greases by PDSC	10 g
ASTM D5554	Iodine Value	60 mL
ASTM D5620	Drain and Dry Mode Using Falex Pin & Vee Block Test Machine	100 mL
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D5706	Extreme Pressure Properties of Lubricating Greases Using SRV	20 g
ASTM D5707	Friction and Wear Properties using SRV	20 g
• ASTM D5762	Nitrogen	10 mL
ASTM D5769	Benzene, Toluene, Total Aromatics by GC/MS	10 mL
• ASTM D5800	Noack Volatility	150 mL
ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
ASTM D5827	Sulfate Analysis (SO4)	30 mL
ASTM D5853	Pour Point for Crude Oils	100 mL
ASTM D5969	Corrosion-Preventive, Dilute Synthetic Sea Water Environments	30 g
ASTM D5972	Freeze Point	100 mL
ASTM D6022	Calculated Permanent Shear Stability Index	-
ASTM D6079	Lubricity by HFRR	10 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 D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test)	40 g
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test - 2 Bearings)	40 g
ASTM D6184	Oil Separation Percent, Wire Cone Method	100 g
ASTM D6185	Compatibility of Two Greases	2400 g
ASTM D6186	Oxidation Induction Time by PDSC	20 mL
ASTM D6200	Cooling Curve Analysis of Quench Oils	1.5 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, Custom Number of Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, 90 Passes	1 L
• ASTM D6304	Water by Karl Fischer	20 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

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Method	Test Description	Sample Size
• ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6425	Friction and Wear Properties of Extreme Pressure (EP) Using SRV	20 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	300 mL
• ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, New Oil	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 D7213	Boiling Range Distribution of Petroleum Distillates (100°C to 615°C)	10 mL
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
• ASTM D7216	GF-6 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, HNBR, Nitrile	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
• ASTM D7216	GF-6 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 D7217	Extreme Pressure Properties of Solid Bonded Films Using a High-Frequency, Linear-Oscillation SRV	100 g
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 D7420	Tribomechanical Properties of Grease Lubricated Plastic Socket Suspension Joints Using a High-Frequency, Linear-Oscillation SRV	100 g
ASTM D7421	Extreme Pressure Properties of Lubricating Oils Using High-Frequency, Linear-Oscillation SRV	100 g
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 D7594	Fretting Wear, High Hertzian, High-Frequency, Linear-Oscillation (SRV)	50 g
ASTM D7619/ISO 4406	Particle Count and Sizing	500 mL
• ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
• ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
ASTM D8022	Roll Stability, Presence of Water	454 g
• ASTM D8447	Thermo-oxidation Engine Oil Simulation Test (TEOST Turbo®)	250 mL

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Method	Test Description	Sample Size
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), Other test durations and temperatures up to 180°C available upon request	100 mL
ASTM E659	Auto-Ignition Temperature, Liquid Chemicals	10 mL
ASTM E1131	TGA Soot	5 mL
ASTM E1269	Specific Heat	100 mL
ASTM E1269 & E1133	Specific Heat and TGA for Fluids	100 mL
ASTM E1858	Oxidation Induction Time by PDSC	25 g
● ASTM E2412	FTIR Analysis, In-Service Fluid	50 mL
ASTM E2550	Thermal Stability by Thermogravimetry	10 g
ASTM E3070	Shear Thinning Index of Non-Newtonian Liquids Using a Rotational Viscometer	20 mL
ASTM G 99	Wear Testing with a Pin-on-Disk Apparatus	100 g
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, New Oil	150 mL
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, Used Oil	150 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
● CEC L-48	Oxidation Stability of Lubricating Oils by Artificial Aging	1 L
● CEC L-105	ACEA Low Temperature Pumpability	700 mL
● CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 168 Hours	1 L
● CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 168 Hours	1 L
● CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 216 Hours	1 L
● CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 216 Hours	1 L
CEC L-085-T99	Oxidation Induction Time by PDSC	5 mL
● CEC L-112	Elastomer Compatibility, RE6 FKM	500 mL
● CEC L-112	Elastomer Compatibility, RE7 ACM	500 mL
● CEC L-112	Elastomer Compatibility, RE8 HNBR	500 mL
● CEC L-112	Elastomer Compatibility, RE9 AEMc	500 mL
DIN 51805	Flow Pressure, Kesternich Method	50 g
DIN 51834	Tribological Test - Translatory Oscillation Apparatus - Part 2: Determination of Friction and Wear Data for Lubricating Oils	100 g
DIN ISO 7148-1	Tribological Test - Metallic Bearing Materials for Plain Bearings Under Conditions of Boundary Lubrication	100 g
DIN ISO 7148-2	Tribological Test - Polymer-Based Plain Bearing Materials Under Specified Working Conditions	100 g
EN 14078	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL



Tests by Method

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Method	Test Description	Sample Size
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL
EPA Test 24	Volatile Organic Content (VOC)	10 mL
IP 346	PCA - Polycyclic Analysis	100 mL
ISO 1817	Elastomer Compatibility, Gear Oils, NBR/SRE 28SX, 168 Hours	500 mL
ISO 4406	Particle Count	100 mL
ISO 4925 WTT	Brake Fluids Water Tolerance	220 mL
ISO 4925 COM	Compatibility Brake Fluid	120 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, AU, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, HNBR, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, FKM2, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, NBR1, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, NBR2, 1000 Hours	500 mL
ISO 14635	FZG Gear Test	2 L
NACE TM0172	Corrosive Properties of Cargoes in Petroleum Product Pipelines	1 L
SAE J1703, J1704 & ISO4925 COM	Compatibility Brake Fluid	120 mL
SAE J1703 & J1704 COR	Corrosion Test (Wet and Dry)	1.7 L
SAE J1703, J1704 & ISO 4925 CS	Chemical Stability	100 mL
SAE J1703, J1704 & ISO 4925 ERBP	Equilibrium Reflux Boiling Point	200 mL
SAE J1703, J1704 & ISO 4925 WERBP	Wet Equilibrium Reflux Boiling Point	800 mL
SAE J1703 & J1704 ESBP	Effect on SBR Cups	300 mL
SAE J1703, J1704 & ISO 4925 ESBP	Effect on SBR Cups	300 mL
SAE J1703, J1704 & ISO 4925 HTS	High Temperature Stability	200 mL
SAE J1703, J1704 & ISO 4925 LTF	Fluidity At Low Temperature	300 mL
SAE J1703 & J1704 OR	Resistance to Oxidation	100 mL
SAE J1703 & J1704 pH	pH Determination	100 mL
SAE J1703, J1704 & ISO 4925 WERBP	Wet Equilibrium Reflux Boiling Point	800 mL
SAE J1703 & J1704 & ISO 4925 WTT	Brake Fluids Water Tolerance	220 mL
SAVLAB APP	Appearance	50 mL
SAVLAB CAP	Cone & Plate Viscosity	20 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), Other test durations and temperatures up to 180°C available upon request	200 mL
SAVLAB FEI	Fuel Efficiency Index (FEI)	300 mL



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Method	Test Description	Sample Size
SAVLAB GES	GE Locomotive Specification (GE Package 1, B82-1 test)	300 mL
• SAVLAB IRG	Fourier Transform Infra-Red, FTIR, Glycol Analysis	50 mL
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Below 0°C	800 g
• 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 & SEI	Phosphorus Emissions Index (PEI) and Sulfur Emissions Index (SEI) Package, 250°C, 1 Hour	250 mL
SAVLAB pH-E70	pH Determination	150 mL
SAVLAB RBP	Reflux Boiling Point	100 mL
SAVLAB SEI	Sulfur Emissions Index (SEI), 250°C, 1 Hour	250 mL
SAVLAB SFACALC	Sulfated Ash, Calculated from ICP Results	10 mL
• SAVLAB SPECTRA	Fourier Transform Infra-Red, FTIR, Spectra Only	50 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 TBR-BFR	Bunker Fuels	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 WHAT	Fuel Additive Water Uptake	100 mL
US Steel LT-37	Grease Mobility	500 g



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Method	Test Description	Sample Size
• CEC L-105	ACEA Low Temperature Pumpability	700 mL
• ASTM D664	Acid Number	50 mL
ASTM D974	Acid Number	50 mL
ASTM D3427	Air Release, Gas Bubble Separation	500 mL
ASTM D611	Aniline Point	100 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D1092	Apparent Viscosity, Grease	500 g
SAVLAB APP	Appearance	50 mL
ASTM D5186	Aromatics in Diesel Fuel	150 mL
ASTM D6560	Asphaltene Content	25 g
ASTM D2155	Auto-Ignition Temperature (Hydraulic Fluids)	10 mL
ASTM E659	Auto-Ignition Temperature, Liquid Chemicals	10 mL
ASTM D6557	Ball Rust Test	125 mL
ASTM D974	Base Number	50 mL
• ASTM D2896	Base Number	50 mL
• ASTM D4739	Base Number	20 mL
ASTM D5769	Benzene, Toluene, Total Aromatics by GC/MS	10 mL
• CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 168 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 168 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 216 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 216 Hours	1 L
ASTM D2714	Block on Ring Friction and Wear	200 mL
ASTM D1120	Boiling Point of Coolants	100 mL
ASTM D7213	Boiling Range Distribution of Petroleum Distillates (100°C to 615°C)	10 mL
SAE J1703 & J1704 & ISO 4925 WTT	Water Tolerance	220 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 mL
ASTM D6793	Bulk Modulus, Up to 80°C	200 mL
SAVLAB TBR-BFR	Bunker Fuels	150 mL
ASTM D6022	Calculated Permanent Shear Stability Index	-
ASTM D1903	Calculating Coefficient of Thermal Expansion through Density	250 mL
ASTM D3238	Carbon Distribution Analysis	250 mL
ASTM D189	Carbon Residue, Conradson	50 mL
ASTM D4530	Carbon Residue, Micro	150 mL
ASTM D524	Carbon Residue, Ramsbottom	50 mL
ASTM D5291	Carbon, Hydrogen and Nitrogen Content	30 mL
ASTM D976 & D4737	Cetane Index (Calculated from D1298 and D86)	500 mL
ASTM D4737	Cetane Index (Calculated from D1298 and D86)	500 mL
ASTM D613	Cetane Number	1 L
SAE J1703, J1704 & ISO 4925 CS	Chemical Stability	100 mL
ASTM D6443	Chlorine by XRF	30 mL
ASTM D2007	Clay Gel Analysis	100 mL
ASTM D2500	Cloud Point	100 mL
ASTM D5183	Coefficient of Friction by Four Ball	100 mL
• ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
• ASTM D5293	Cold Cranking Simulator, Temperature Scan	120 mL
ASTM D6371	Cold Filter Plug Point	150 mL
ASTM D1500	Color	150 mL
ASTM D1544	Color of Transparent Liquids - Gardner Scale	10 mL
ASTM D156	Color (Saybolt Chromometer Method)	250 mL
SAE J1703, J1704 & ISO4925 COM	Compatibility Brake Fluid	120 mL

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Method	Test Description	Sample Size
ASTM D6185	Compatibility of Two Greases	2400 g
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), Other test durations and temperatures up to 180°C available upon request	100 mL
SAVLAB CAP	Cone & Plate Viscosity	20 mL
ASTM D1403	Cone Penetration, 1/4 or 1/2 Scale	100 g
ASTM D217	Cone Penetration, Grease, Unworked	800 g
ASTM D217	Cone Penetration, Grease, Worked, 60 Strokes	800 g
ASTM D217	Cone Penetration, Grease, Worked, 10,000 Strokes	800 g
ASTM D217	Cone Penetration, Grease, Worked, 100,000 Strokes	800 g
ASTM D6200	Cooling Curve Analysis of Quench Oils	1.5 L
• ASTM D130	Copper Strip Corrosion	100 mL
• ASTM D4048	Copper Strip Corrosion, Grease	100 g
SAE J1703 & J1704 COR	Corrosion Test (Wet and Dry)	1.7 L
ASTM D5969	Corrosion-Preventive, Dilute Synthetic Sea Water Environments	30 g
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test)	40 g
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test - 2 Bearings)	40 g
NACE TM0172	Corrosive Properties of Cargoes in Petroleum Product Pipelines	1 L
ASTM D2711	Demulsibility - Procedure A (No EP Additives)	2 L
ASTM D2711	Demulsibility - Procedure B (Contains EP Additives)	2 L
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
• SAVLAB LPYC	Density, Pycnometer	120 mL
ASTM D877	Dielectric Breakdown Voltage	800 mL
ASTM D924	Dissipation/Power Factor	500 mL
ASTM D86 Mod.	Distillation by Gas Chromatograph	400 mL
ASTM D5620	Drain and Dry Mode Using Falex Pin & Vee Block Test Machine	100 mL
ASTM D2265	Dropping Point	50 g
ASTM D566	Dropping Point Grease	50 g
SAE J1703 & J1704 ESBR	Effect on SBR Cups	300 mL
SAE J1703, J1704 & ISO 4925 ESBR	Effect on SBR Cups	300 mL
ASTM D4289	Elastomer Compatibility HPM Elastomer	200 g
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
ISO 1817	Elastomer Compatibility, Gear Oils, NBR/SRE 28SX, 168 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, AU, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, FKM2, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, HNBR, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, NBR1, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, NBR2, 1000 Hours	500 mL
• CEC L-112	Elastomer Compatibility, RE6 FKM	500 mL
• CEC L-112	Elastomer Compatibility, RE7 ACM	500 mL
• CEC L-112	Elastomer Compatibility, RE8 HNBR	500 mL
• CEC L-112	Elastomer Compatibility, RE9 AEM	500 mL
ASTM D2624	Electrical Conductivity	1000 mL
ASTM D6130	Elemental Analysis by ICP, Aqueous / Coolants / Sulfur, 5 elements	10 mL
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL

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Method	Test Description	Sample Size
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	10 mL
ASTM D1401	Emulsion Characteristics, Water Separability	100 mL
ASTM D7563	Emulsion of Water and Simulated Ed85 Fuel	500 mL
ASTM D6795	Engine Oil Filterability (EOFT)	1 L
ASTM D6794	Engine Oil Water Tolerance (EOWT)	1 L
SAE J1703, J1704 & ISO 4925 ERBP	Equilibrium Reflux Boiling Point	200 mL
ASTM D972	Evaporation Loss (Grease) - Specify Time and Temperature	150 mL
ASTM D2595	Evaporation Loss, Grease, Wide Temperature Range	25 g
ASTM D7421	Extreme Pressure Properties of Lubricating Oils Using High-Frequency, Linear-Oscillation SRV	100 g
ASTM D7217	Extreme Pressure Properties of Solid Bonded Films Using a High-Frequency, Linear-Oscillation SRV	100 g
ASTM D5706	Extreme Pressure Properties of Lubricating Greases Using SRV	20 g
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D7371	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 mL
EN 14078	FAME Fatty Acid Methyl Esters Content in Diesel Fuel Oil	100 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 D92	Flash Point, Grease	200 g
• ASTM D93	Flash Point, Pensky-Martins Closed Cup	250 mL
DIN 51805	Flow Pressure, Kesternich Method	50 g
SAE J1703, J1704 & ISO 4925 LTF	Fluidity at Low Temperature	300 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 D6082	Foaming, Sequence IV (Specify Option A if Required)	1 L
• ASTM D2596	Four Ball Extreme Pressure (Grease) Above 400 kg	500 g
• ASTM D2596	Four Ball Extreme Pressure (Grease) Up to 400 kg	500 g
• ASTM D2783	Four Ball Extreme Pressure Above 400 kg.	200 mL
• ASTM D2783	Four Ball Extreme Pressure Up to 400 kg.	200 mL
• ASTM D4172	Four Ball Wear	100 mL
• ASTM D2266	Four Ball Wear (Grease)	100 g
• SAVLAB IRG	Fourier Transform Infra-Red, FTIR, Glycol Analysis	50 mL
• SAVLAB IRW	Fourier Transform Infra-Red, FTIR, Water Analysis	50 mL
• SAVLAB SPECTRA	Fourier Transform Infra-Red, FTIR, Spectra Only	50 mL
ASTM D1177	Freeze Point	100 mL
ASTM D5972	Freeze Point	100 mL
ASTM D4170	Fretting Wear, Grease	40 g
ASTM D7594	Fretting Wear, High Hertzian, High-Frequency, Linear-Oscillation (SRV)	50 g
ASTM D6425	Friction and Wear Properties of Extreme Pressure (EP) Using SRV	20 mL
ASTM D5707	Friction and Wear Properties using SRV	20 g
• ASTM E2412	FTIR Analysis, In-Service Fluid	50 mL
• ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
• ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
• ASTM D7412	FTIR Analysis, In-Service Fluid, Phosphate Anti-Wear	50 mL
• ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
• ASTM D7415	FTIR Analysis, In-Service Fluid, Sulfate Content	50 mL
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
SAVLAB WHAT	Fuel Additive Water Uptake	100 mL
• ASTM D3524	Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	10 mL

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Method	Test Description	Sample Size
• ASTM D3525	Fuel Dilution, Gasoline	10 mL
SAVLAB FEI	Fuel Efficiency Index (FEI)	300 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), 20, 30, or 40 Passes	500 mL
ASTM D5275	Fuel Injector Shear Stability (FISST), Other Passes	500 mL
ISO 14635	FZG Gear Test	2 L
ASTM D5182	FZG Gear Test - Up to 12 Stages	2 L
ASTM D5182	FZG Gear Test - Up to 14 Stages	2 L
• ASTM D2887	Gas Chromatography - Carbon Distribution Extended	10 mL
SAVLAB GES	GE Locomotive Specification (GE Package 1, B82-1 test)	300 mL
• ASTM D7216	GF-6 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, HNBR, Nitrile	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D4291	Glycol	5 mL
ASTM D2982	Glycol-Base Antifreeze in Used Oils	20 mL
• 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
US Steel LT-37	Grease Mobility	50 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/Gallon)	50 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/Pound)	50 mL
ASTM D381	Gum Content of Gasoline (Washed and Unwashed)	50 mL
ASTM D1404	Harmful Particles in Grease	30 g
• 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 D3336	High Temperature Bearing Performance Up to 600 Hours	50 g
• ASTM D6594	High Temperature Corrosion Bench Test at 135°C	300 mL
• ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, New Oil	150 mL
• ASTM D6616	High Temperature High Shear / TBS Viscosity, 100°C, Used Oil	150 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, Other Shear, Other Temperature	150 mL
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, New Oil	150 mL
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, Used Oil	150 mL
ASTM D3527	High Temperature Life, Wheel Bearing Grease	120 g
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
SAE J1703, J1704 & ISO 4925 HTS	High Temperature Stability	200 mL
ASTM D4287	High-Shear Viscosity Using a Cone/Plate Viscometer	10 mL
ASTM D6922	Homogeneity & Miscibility	300 mL
ASTM D1319	Hydrocarbon Type	40 mL
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D1957	Hydroxyl Number	25 mL

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Method	Test Description	Sample Size
ASTM D2422 & D445	Industrial Fluid Lubricants by Viscosity System	125 mL
ASTM D893	Insolubles, Pentane	25 mL
ASTM D5554	Iodine Value	60 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, Used or In-Service Oil	125 mL
• CEC L-45-99 Mod. & D445	KRL Shear 04 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. & D445	KRL Shear 08 Hours + 1 Temperature pre & post shear KV	100 mL
• CEC L-45-99 Mod. & D2270	KRL Shear 08 Hours + pre & post shear VI	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. & D2270	KRL Shear 20 Hours + pre & post shear VI	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. & D2270	KRL Shear 30 Hours + pre & post shear VI	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. & D2270	KRL Shear 40 Hours + pre & post shear VI	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 Custom Hours + pre & post shear VI	100 mL
• ASTM D7109	Kurt Orbahn Shear Stability - Includes 30 and 90 Passes	1 L
• ASTM D6278	Kurt Orbahn Shear Stability, 30 Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, 90 Passes	1 L
ASTM D6278 Mod.	Kurt Orbahn Shear Stability, Custom Number of Passes	1 L
ASTM D4290	Leakage of Wheel Bearing Grease	200 g
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Below 0°C	800 g
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Room Temperature	800 g
ASTM D1478	Low Temperature Torque	10 g
ASTM D4693	Low Temperature Torque, Wheel Bearing Grease	50 g
ASTM D6079	Lubricity by HFRR	10 mL
SAVLAB MIC	Microscopy	10 mL
• ASTM D3829	Mini-Rotary Viscosity (MRV), Single Temperature	200 mL
• ASTM D5762	Nitrogen	10 mL
ASTM D5291	Nitrogen - Carlo Erba	30 mL
• ASTM D4629	Nitrogen by Chemiluminescence	30 mL
• ASTM D5800	Noack Volatility	150 mL
ASTM D5800 Mod.	Noack Volatility, 150°C at 12 Hours	150 mL
ASTM D6375	Noack Volatility by TGA	20 mL
ASTM D2700	Octane Number (Motor Rating)	800 mL
ASTM D2699	Octane Number (Research Rating)	800 mL
ASTM D6184	Oil Separation Percent, Wire Cone Method	100 g
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D3704	Oscillation Friction Wear, Grease	20 g
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 D2893	Oxidation Characteristics Extreme Pressure	500 mL
ASTM D6186	Oxidation Induction Time by PDSC	20 mL
ASTM E1858	Oxidation Induction Time by PDSC	25 g
CEC L-085-T99	Oxidation Induction Time by PDSC	5 mL
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL
ASTM D7462	Oxidation Stability (Biodiesel)	2 L
ASTM D7462	Oxidation Stability (Biodiesel - B100 Option)	2 L

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Method	Test Description	Sample Size
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL
ASTM D525	Oxidation Stability (Gasoline)	200 mL
ASTM D942	Oxidation Stability (Grease) 100 Hours	150 mL
ASTM D2274	Oxidation Stability (Petroleum Fuel Oil)	2 L
ASTM D5483	Oxidation Stability of Greases by PDSC	10 g
ASTM D2112	Oxidation Stability of Inhibited Oil by Pressure Vessel at 140°C	150 mL
• CEC L-48	Oxidation Stability of Lubricating Oils by Artificial Aging	1 L
ISO 4406	Particle Count	50 mL
ASTM D7619/ISO 4406	Particle Count and Sizing	500 mL
ASTM D7321	Particulate Contamination for Biodiesel Fuels	1 L
ASTM D6217	Particulate Contamination for Diesel Fuels	1 L
IP 346	PCA - Polycyclic Analysis	100 mL
ASTM D7317	Pentane Insolubles by Filtration	25 mL
ASTM D3703	Peroxide Value	200 mL
SAE J1703 & J1704 pH	pH Determination	100 mL
SAVLAB pH-E70	pH Determination	150 mL
SAVLAB PEI	Phosphorus Emissions Index (PEI) at 250°C, 1 Hour	250 mL
SAVLAB PEI & SEI	Phosphorus Emissions Index (PEI) and Sulfur Emissions Index (SEI) Package, 250°C, 1 Hour	250 mL
• ASTM D97	Pour Point	100 mL
ASTM D5853	Pour Point for Crude Oils	100 mL
SAVLAB RBP	Reflux Boiling Point	100 mL
ASTM D1218	Refractive Index	20 mL
ASTM D323	Reid Vapor Pressure	125 mL
ASTM D4049	Resistance of Lubricating Grease to Water Spray	25 g
SAE J1703 & J1704 OR	Resistance to Oxidation	100 mL
ASTM D1831	Roll Stability of Grease	100 g
ASTM D8022	Roll Stability, Presence of Water	454 g
• 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 D665	Rust Prevention 24 Hours (Method A or B)	1 L
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D1743	Rust Prevention Properties of Grease	50 g
ASTM D1748	Rust Protection by Humidity Cabinet	1 L
ASTM D94	Saponification Number	25 g
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-5°C to -40°C)	50 mL
• ASTM D5133	Scanning Brookfield Viscosity, Extended Temperature Range	50 mL
• ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D4310	Sludging & Corrosion Tendency Up to 1000 Hours	1 L
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D2603	Sonic Shear, Oils	100 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM E1269	Specific Heat	100 mL
ASTM E1269 & E1133	Specific Heat and TGA for Fluids	100 mL
• ASTM D874	Sulfated Ash	50 g



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Method	Test Description	Sample Size
ASTM D1169	Specific Resistance (Resistivity)	150 mL
ASTM D5827	Sulfate Analysis (SO ₄)	30 mL
SAVLAB SEI	Sulfur Emissions Index (SEI), 250°C, 1 Hour	250 mL
SAVLAB SFACALC	Sulfated Ash, Calculated from ICP Results	10 mL
• ASTM D5453	Sulfur	10 mL
• ASTM D5453 & D5762	Sulfur and Nitrogen Package	20 mL
• ASTM D5185	Sulfur by Elemental Analysis by Inductively Coupled Plasma	10 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	30 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive, 23 Elements	30 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D4927	Sulfur Content for Automatic Transmission Fluid by XRF	30 mL
ASTM D1662	Sulfur, Active	100 g
ASTM D1331	Surface Tension	100 mL
ASTM D1084 B	T-Bar Viscosity	Varies
ASTM E1131	TGA Soot	5 mL
SAVLAB TGASCAN	TGA Thermal Scan or Isotherm	5 mL
ASTM D2717	Thermal Conductivity - Single Temperature	100 mL
ASTM D2070	Thermal Stability (Hydraulic Fluids)	300 mL
ASTM E2550	Thermal Stability by Thermogravimetry	10 g
• ASTM D6335	Thermo-oxidation Engine Oil Simulation Test (TEOST® 33C)	250 mL
• ASTM D7097	Thermo-oxidation Engine Oil Simulation Test (TEOST MHT®-4)	50 mL
• ASTM D8447	Thermo-oxidation Engine Oil Simulation Test (TEOST Turbo®)	250 mL
ASTM D4742	Thin Film Oxidation Uptake Test (TFOUT) Gas Engine Oils	50 mL
ASTM D7098	Thin Film Oxygen Uptake Test (TFOUT) Catalyst B	50 mL
ASTM D2782	Timken Extreme Pressure (Specify Starting Load)	4 L
ASTM D2509	Timken OK Load for Grease (Specify Starting Load)	3400 g
ASTM D482	Total Ash	80 g
• ASTM D4684	TP-1 MRV Viscosity, Single Temperature	100 mL
ASTM D2273	Trace Sediment	200 g
DIN ISO 7148-1	Tribological Test - Metallic Bearing Materials for Plain Bearings Under Conditions of Boundary Lubrication	100 g
DIN ISO 7148-2	Tribological Test - Polymer-Based Plain Bearing Materials Under Specified Working Conditions	100 g
DIN 51834	Tribological Test - Translatory Oscillation Apparatus - Part 2: Determination of Friction and Wear Data for Lubricating Oils	100 g
ASTM D7420	Tribomechanical Properties of Grease Lubricated Plastic Socket Suspension Joints Using a High-Frequency, Linear-Oscillation SRV	100 g
ASTM D2008	UV Absorbance to Absorptivity	10 mL
ASTM D2879	Vapor Pressure by Isotenoscope, Multiple Temperatures	10 mL
ASTM D2879	Vapor Pressure by Isotenoscope, Single Temperature	10 mL
• ASTM D2270	Viscosity Index (Includes D445 at 40°C and 100°C)	125 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
ASTM D2532	Viscosity Stability at Low Temperature	125 mL
ASTM D2369	Volatile Organic Content (VOC)	10 mL
EPA Test 24	Volatile Organic Content (VOC)	10 mL
ASTM D2709	Water and Sediment	100 mL
ASTM D1768	Water and Sediment for Opaque or In-Service Oils	100 mL
ASTM D95	Water by Distillation	100 mL
• ASTM D6304	Water by Karl Fischer	100 mL
ASTM D1533	Water in Insulating Liquids by Coulometric Karl Fischer Titration	100 mL

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Method	Test Description	Sample Size
ASTM D890	Water in Liquid Pine Chemicals	100 mL
ASTM D1264	Water Washout (Single Bearing/Single Temperature)	50 g
ASTM D1264	Water Washout (Two Bearings Per Method/Single Temperature)	100 g
ASTM G 99	Wear Testing with a Pin-on-Disk Apparatus	100 g
SAE J1703, J1704 & ISO 4925 WERBP	Wet Equilibrium Reflux Boiling Point	800 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), Other test durations and temperatures up to 180°C available upon request	200 mL



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Automatic Transmission Fluid (ATF)

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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 D445	Kinematic Viscosity, 0°C and Above	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 D665	Rust Prevention 24 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 and 100°C)	125 mL
ASTM D2369	Volatile Organic Content (VOC)	10 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
• ASTM D2896	Base Number	50 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 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 D4927	Sulfur Content for Automatic Transmission Fluid by XRF	30 mL
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	10 mL
ASTM D5183	Coefficient of Friction by Four Ball	100 mL
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
• ASTM D5185	Sulfur by Elemental Analysis by Inductively Coupled Plasma	10 mL
• ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
• ASTM D5293	Cold Cranking Simulator, Temperature Scan	120 mL
• ASTM D5800	Noack Volatility	150 mL
ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
• ASTM D6304	Water by Karl Fischer	100 mL
• ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6443	Chlorine by XRF	30 mL
ASTM D6793	Bulk Modulus, Up to 80°C	200 mL
ASTM E1269 & E1133	Specific Heat and TGA for Fluids	100 mL
• CEC L-45-99 Mod. & D445	KRL Shear 20 Hours + 1 Temperature pre & post shear KV	100 mL
EPA Test 24	Volatile Organic Content (VOC)	10 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.



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Brake Fluid Tests

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Method	Test Description	Sample Size
• ASTM D445	Kinematic Viscosity at -40°C	125 mL
• ASTM D445	Kinematic Viscosity at 100°C	125 mL
SAE J1703, J1704 & ISO4925 COM	Compatibility Brake Fluid	120 mL
SAE J1703 & J1704 COR	Corrosion Test (Wet and Dry)	1.7 L
SAE J1703, J1704 & ISO 4925 CS	Chemical Stability	100 mL
SAE J1703, J1704 & ISO 4925 ERBP	Equilibrium Reflux Boiling Point	200 mL
SAE J1703, J1704 & ISO 4925 WERBP	Wet Equilibrium Reflux Boiling Point	800 mL
SAE J1703 & J1704 ESBP	Effect on SBR Cups	300 mL
SAE J1703, J1704 & ISO 4925 ESBP	Effect on SBR Cups	300 mL
SAE J1703, J1704 & ISO 4925 HTS	High Temperature Stability	200 mL
SAE J1703, J1704 & ISO 4925 LTF	Fluidity At Low Temperature	300 mL
SAE J1703 & J1704 OR	Resistance to Oxidation	100 mL
SAE J1703 & J1704 pH	pH Determination	100 mL
SAE J1703, J1704 & ISO 4925 WERBP	Wet Equilibrium Reflux Boiling Point	800 mL
SAE J1703 & J1704 & ISO 4925 WTT	Brake Fluids Water Tolerance	220 mL
SAVLAB MIC	Microscopy	10 mL
SAVLAB pH-E70	pH Determination	150 mL
SAVLAB RBP	Reflux Boiling Point	100 mL

FMVSS 116 and SAE J1703 standards include the same tests.



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Condition Monitoring Tests

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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 D892	Foaming, Sequence I - III (Specify Option A if Required)	1 L
ASTM D974	Acid Number	50 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
ASTM D1500	Color	150 mL
ASTM D1768	Water and Sediment for Opaque or In-Service Oils	100 mL
• ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2273	Trace Sediment	200 g
ASTM D2500	Cloud Point	100 mL
ASTM D2709	Water and Sediment	100 mL
• ASTM D2887	Gas Chromatography - Carbon Distribution Extended	10 mL
• ASTM D2896	Base Number	50 mL
ASTM D2982	Glycol-Base Antifreeze in Used Oils	20 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 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 D4291	Glycol	5 mL
• ASTM D4683	High Temperature High Shear / TBS Viscosity, 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 D5185	Sulfur by Elemental Analysis by Inductively Coupled Plasma	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 D7213	Boiling Range Distribution of Petroleum Distillates, 100°C to 615°C	10 mL
ASTM D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
ASTM D7317	Pentane Insolubles by Filtration	25 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 and Sizing	500 mL
• ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	50 mL
• ASTM D7844	FTIR Analysis, In-Service Fluid, Soot	50 mL
ASTM E1858	Oxidation Induction Time by PDSC	25 g
• ASTM E2412	FTIR Analysis, In-Service Fluid	50 mL
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, Used Oil	150 mL
CEC L-085-T99	Oxidation Induction Time by PDSC	25 g
ISO 4406	Particle Count	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 TBR	High Temperature Low Shear / TBR Viscosity, Used Oil	150 mL



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Diesel Fuel Tests

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Method	Test Description	Sample Size
ASTM D86 Mod.	Distillation by Gas Chromatograph	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)	50 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/Pound)	50 mL
ASTM D323	Reid Vapor Pressure	125 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 D613	Cetane Number	1 L
• ASTM D664	Acid Number	50 mL
ASTM D893	Insolubles, Pentane	25 mL
ASTM D974	Acid Number	50 mL
ASTM D976 & D4737	Cetane Index (Calculated from D1298 and D86)	500 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 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 D2624	Electrical Conductivity	1000 mL
ASTM D2709	Water and Sediment	100 mL
• ASTM D2887	Gas Chromatography - Carbon Distribution	10 mL
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-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 and Nitrogen Content	30 mL
ASTM D5291	Nitrogen - Carlo Erba	30 mL
• ASTM D5453	Sulfur	10 mL
• ASTM D5453 & 5762	Sulfur and Nitrogen Package	20 mL
ASTM D6079	Lubricity by HFRR	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 D7213	Boiling Range Distribution of Petroleum Distillates, 100°C to 615°C	10 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

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Elastomer Compatibility Tests

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Method	Test Description	Sample Size
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
ASTM D4289	Elastomer Compatibility HPM Elastomer SRE-NBR 28/P or SRE-NBR 28/PX	200 g
ASTM D4289	Elastomer Compatibility HPM Elastomer	200 g
• ASTM D7216	GF-6 Elastomer Compatibility, ACM, Polyacrylate	1 L
• ASTM D7216	GF-6 Elastomer Compatibility, FKM, Fluoroelastomer	1 L
• ASTM D7216	GF-6 Elastomer Compatibility, HNBR, Nitrile	1 L
• ASTM D7216	GF-6 Elastomer Compatibility, MAC, Ethylene Acrylate	1 L
• ASTM D7216	GF-6 Elastomer Compatibility, VMQ, Silicone	1 L
• ASTM D7216	GM dexos1:2015 Elastomer Compatibility, ACM Polyacrylate	1 L
• ASTM D7216	GM dexos1:2015 Elastomer Compatibility, FKM, Fluoroelastomer	1 L
• ASTM D7216	GM dexos1:2015 Elastomer Compatibility, HNBR, Nitrile	1 L
• ASTM D7216	GM dexos1:2015 Elastomer Compatibility, VMQ, Silicone	1 L
• ASTM D7216	HDD Elastomer Compatibility, ACM, Polyacrylate	1 L
• ASTM D7216	HDD Elastomer Compatibility, FKM, Fluoroelastomer	1 L
• ASTM D7216	HDD Elastomer Compatibility, MAC, Vamac	1 L
• ASTM D7216	HDD Elastomer Compatibility, NBR, Nitrile	1 L
• ASTM D7216	HDD Elastomer Compatibility, VMQ, Silicone	1 L
• CEC L-112	Elastomer Compatibility, RE6, FKM, Fluoroelastomer	1 L
• CEC L-112	Elastomer Compatibility, RE7, ACM, Polyacrylate	1 L
• CEC L-112	Elastomer Compatibility, RE8, HNBR, Nitrile	1 L
• CEC L-112	Elastomer Compatibility, RE9, AEM, Ethylene Acrylic	1 L
ISO 1817	Elastomer Compatibility, Gear Oils, NBR/SRE 28SX, 168 Hours	500 mL



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Electric Vehicle (EV) Lubricant and Fluid Tests

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Method	Test Description	Sample Size
• ASTM D92	Flash and Fire Points by Cleveland Open Cup	250 mL
• ASTM D97	Pour Point	100 mL
• ASTM D130	Copper Strip Corrosion	100 mL
ASTM D217	Cone Penetration	800 g
• ASTM D445	Kinematic Viscosity at 100°C	125 mL
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D665	Rust Prevention 24 Hours (Method A or B)	1 L
ASTM D877	Dielectric Breakdown Voltage	800 mL
• ASTM D892	Foaming Characteristics of Lubricating Oils	1 L
ASTM D924	Dissipation/Power Factor	500 mL
ASTM D1169	Specific Resistance (Resistivity)	150 mL
ASTM D1177	Freeze Point	100 mL
ASTM D1264	Water Washout (Single Temperature)	50 g
ASTM D1331	Surface Tension	100 mL
ASTM D1478	Low-Temperature Torque - Grease	10 g
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D1831	Roll Stability of Grease	100 g
ASTM D2265	Dropping Point	50 g
• ASTM D2266	Four Ball Wear (Grease)	100 g
• ASTM D2270	Viscosity Index (Includes D445 at 40°C and 100°C)	125 mL
• ASTM D2596	Four-Ball Extreme Pressure Up to 400 kg.	500 g
• ASTM D2596	Four-Ball Extreme Pressure Above 400 kg.	500 g
ASTM D2624	Electrical Conductivity of Aviation and Distillate Fuels	1000 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 mL
ASTM D3336	High Temperature Bearing Performance Up to 600 Hours	50 g
ASTM D3427	Air Release, Gas Bubble Separation	500 g
• ASTM D4048	Copper Strip Corrosion, Grease	100 g
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D4170	Fretting Wear, Grease	40 g
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
• ASTM D4683	High Temperature High Shear / TBS Viscosity at 150°C	150 mL
• ASTM D4684	TP-1 MRV Viscosity (Single Temperature)	100 mL
ASTM D4693	Low-Temperature Torque, Grease	50 g
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
• ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
• ASTM D5293	Cold Cranking Simulator, Temperature Scan	120 mL
ASTM D5706	Extreme Pressure Properties of Lubricating Greases Using SRV	20 g
• ASTM D6082	Foaming, Sequence IV (Specify Option A if Required)	1 L
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), Other test durations and temperatures up to 180°C available upon request	100 mL
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test)	40 g
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test - 2 Bearings)	40 g
ASTM D6184	Oil Separation from Lubricating Grease	100 g
• ASTM D6304	Water by Karl Fischer	100 mL
• ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6443	Chlorine by XRF	30mL

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Electric Vehicle (EV) Lubricant and Fluid Tests

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Method	Test Description	Sample Size
ASTM D6793	Bulk Modulus, Up to 80°C	200 mL
ASTM D7594	Fretting Wear, High Hertzian Contact, High-Frequency, Linear-Oscillation, SRV	50 g
ASTM E1269	Specific Heat	100 mL
ASTM E1269 & E1133	Specific Heat and TGA for Fluids	100 mL
CEC L-45-99 mod. & D445	KRL Shear 20 Hours + 1 Temperature pre & post shear KV	100 mL
• CEC L-48	Oxidation Stability of Lubricating Oils by Artificial Aging	1 L
DIN 51805	Flow Pressure, Kesternich Method	50 g
SAVLAB EV-WCT	Wire Corrosion Test	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), Other test durations and temperatures up to 180°C available upon request	200 mL



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Electrical Insulating Fluid Tests

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Method	Test Description	Sample Size
• ASTM D92	Flash Point and Fire Point, Cleveland Open Cup	250 mL
• ASTM D97	Pour Point	100 mL
• ASTM D445	Kinematic Viscosity (and Calculation of Dynamic Viscosity)	125 mL
ASTM D611	Aniline Point	100 mL
• ASTM D664	Acid Number	50 mL
ASTM D877	Dielectric Breakdown Voltage	800 mL
ASTM D924	Dissipation/Power Factor	50 mL
ASTM D974	Acid and Base Number by Color-Indicator Titration	100 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
ASTM D1500	Color	150 mL
ASTM D1533	Water in Insulating Liquids by Coulometric Karl Fischer Titration	100 mL
ASTM D1903	Calculating Coefficient of Thermal Expansion through Density	250 mL
ASTM D2112	Oxidation Stability of Inhibited Oil by Pressure Vessel at 140°C	150 mL
ASTM D2717	Thermal Conductivity - Single Temperature	100 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL



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Engine Oil Tests

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Method	Test Description	Sample Size
• ASTM D92	Flash Point and Fire Point, Cleveland Open Cup	250 mL
• ASTM D97	Pour Point	100 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 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, Used or In-Service Oil	125 mL
• ASTM D664	Acid Number	50 mL
• ASTM D874	Sulfated Ash	50 g
• 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 D1177	Freeze Point	100 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
• ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
• ASTM D2896	Base Number	50 mL
ASTM D2982	Glycol-Base Antifreeze in Used Oils	20 mL
• ASTM D3524	Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	10 mL
• ASTM D3525	Fuel Dilution, Gasoline	10 mL
• ASTM D3829	Mini-Rotary Viscosity (MRV), Single Temperature	200 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D4287	High-Shear Viscosity Using a Cone/Plate Viscometer	10 mL
ASTM D4291	Glycol	5 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, Below 50°C	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 D4684	TP-1 MRV Viscosity (Single Temperature)	100 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	10 mL
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-5°C to -40°C)	50 mL
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
• ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
• ASTM D5293	Cold Cranking Simulator, Temperature Scan	120 mL
• ASTM D5453	Sulfur	10 mL
• ASTM D5453 & D5762	Sulfur and Nitrogen Package	20 mL
• ASTM D5762	Nitrogen	10 mL
• ASTM D5800	Noack Volatility	150 mL
ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
• ASTM D6082	Foaming, Sequence IV (Specify Option A if Required)	1 L
• ASTM D6278	Kurt Orbahn Shear Stability, 30 Passes	1 L
• ASTM D6304	Water by Karl Fischer	100 mL
• ASTM D6335	Thermo-oxidation Engine Oil Simulation Test (TEOST® 33C)	250 mL
ASTM D6375	Noack Volatility by TGA	20 mL
• ASTM D6417	Simulated Distillation by Gas Chromatography	10 mL
ASTM D6425	Friction and Wear Properties of Extreme Pressure (EP) Using SRV	20 mL
ASTM D6443	Chlorine by XRF	30 mL
ASTM D6557	Ball Rust Test	125 mL



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Engine Oil Tests

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Method	Test Description	Sample Size
• ASTM D6594	High Temperature Corrosion Bench Test at 135°C	300 mL
• 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 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 D7216	GF-6 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, HNBR, Nitrile	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
• ASTM D7216	GF-6 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 D8447	Thermo-oxidation Engine Oil Simulation Test (TEOST Turbo®)	250 mL
ASTM E1131	TGA Soot	5 mL
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, New Oil	150 mL
• CEC L-105	ACEA Low Temperature Pumpability	700 mL
• CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 168 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 168 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 216 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 216 Hours	1 L
SAVLAB CAP	Viscosity by Cone & Plate	20 mL
SAVLAB FEI	Fuel Efficiency Index (FEI)	300 mL
SAVLAB GES	GE Locomotive Specification (GE Package 1, B82-1 test)	300 mL
• SAVLAB LPYC	Density, Pycnometer	120 mL
SAVLAB PEI	Phosphorus Emissions Index (PEI) at 250°C, 1 Hour	250 mL
SAVLAB PEI & SEI	Phosphorus Emissions Index (PEI) and Sulfur Emissions Index (SEI) Package, 250°C, 1 Hour	250 mL
SAVLAB SEI	Sulfur Emissions Index (SEI), 250°C, 1 Hour	250 mL
SAVLAB SFACALC	Sulfated Ash, Calculated from ICP Results	10 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



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Gear Lubricant Tests

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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 D445	Kinematic Viscosity, 0°C and Above	125 mL
ASTM D524	Carbon Residue, Ramsbottom	50 mL
• 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)	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 D943	Oxidation Characteristics (2.0 TAN or 1000 Hours)	600 mL
ASTM D1084B	T-Bar Viscosity	Varies
ASTM D1401	Emulsion Characteristics, Water Separability	100 mL
ASTM D1500	Color	150 mL
ASTM D2070	Thermal Stability (Hydraulic Fluids)	300 mL
ASTM D2270	Viscosity Index (Includes D445 at 40°C and 100°C)	125 mL
ASTM D2422 & D445	Industrial Fluid Lubricants by Viscosity System	125 mL
ASTM D2603	Sonic Shear, Oils	100 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
• ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D2711	Demulsibility - Procedure A (No EP Additives)	2 L
ASTM D2711	Demulsibility - Procedure B (Contains EP Additives)	2 L
ASTM D2714	Block on Ring Friction and 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)	60 mL
ASTM D3233	Falex Extreme Pressure	200 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
• ASTM D4172	Four Ball Wear	100 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	30 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive, 23 Elements	30 mL
ASTM D4310	Sludging & Corrosion Tendency Up to 1000 Hours	1 L
• ASTM D4629	Nitrogen by Chemiluminescence	10 mL
ASTM D4927	Sulfur Content for Automatic Transmission Fluid by XRF	30 mL
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	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 D5185	Sulfur by Elemental Analysis by Inductively Coupled Plasma	10 mL
• ASTM D5453 & D5762	Sulfur and Nitrogen Package	20 mL
ASTM D5620	Drain and Dry Mode Using Falex Pin & Vee Block Test Machine	100 mL
ASTM D6022	Calculated Permanent Shear Stability Index	-



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Gear Lubricant Tests

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Method	Test Description	Sample Size
ASTM D7213	Boiling Range Distribution of Petroleum Distillates, 100°C to 615°C	10 mL
ASTM D7421	Extreme Pressure Properties of Lubricating Oils Using High-Frequency, Linear-Oscillation SRV	100 g
ASTM E1131	TGA Soot	5 mL
ASTM E1269 & E1133	Specific Heat and TGA for Fluids	100 mL
ASTM E1858	Oxidation Induction Time by PDSC	25 g
ASTM G 99	Wear Testing with a Pin-on-Disk Apparatus	100 g
CEC L-085-T99	Oxidation Induction Time by PDSC	25 g
DIN ISO 7148-1	Tribological Test - Metallic Bearing Materials for Plain Bearings Under Conditions of Boundary Lubrication	100 g
DIN ISO 7148-2	Tribological Test - Polymer-Based Plain Bearing Materials Under Specified Working Conditions	100 g
ISO 1817	Elastomer Compatibility, Gear Oils, NBR/SRE 28SX, 168 Hours	500 mL
• SAVLAB LPYC	Density, Pycnometer	120 mL



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Grease Tests

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Method	Test Description	Sample Size
• ASTM D92	Flash Point, Grease	200 g
ASTM D94	Saponification Number	25 g
ASTM D217	Cone Penetration, Grease, Unworked	800 g
ASTM D217	Cone Penetration, Grease, Worked, 60 Strokes	800 g
ASTM D217	Cone Penetration, Grease, Worked, 10,000 Strokes	800 g
ASTM D217	Cone Penetration, Grease, Worked, 100,000 Strokes	800 g
ASTM D566	Dropping Point Grease	50 g
ASTM D942	Oxidation Stability (Grease) 100 Hours	150 mL
ASTM D972	Evaporation Loss (Grease) - Specify Time and Temperature	150 mL
ASTM D1092	Apparent Viscosity, Grease	500 g
ASTM D1264	Water Washout (Single Temperature)	50 g
ASTM D1264	Water Washout (Two Bearings Per Method/ Single Temperature)	100 g
ASTM D1403	Cone Penetration, 1/4 or 1/2 Scale	100 g
ASTM D1404	Harmful Particles in Grease	30 g
ASTM D1478	Low Temperature Torque - Grease	10 g
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D1743	Rust Prevention Properties of Grease	50 g
ASTM D1831	Roll Stability of Grease	100 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 D2595	Evaporation Loss, Grease, Wide Temperature Range	25 g
• ASTM D2596	Four Ball Extreme Pressure (Grease) Up to 400 kg.	500 g
• ASTM D2596	Four Ball Extreme Pressure (Grease) Above 400 kg.	500 g
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D3336	High Temperature Bearing Performance Up to 600 Hours	50 g
ASTM D3527	High Temperature Life, Wheel Bearing Grease	120 mL
ASTM D3704	Oscillation Friction Wear, Grease	20 g
• ASTM D4048	Copper Strip Corrosion, Grease	100 g
ASTM D4049	Resistance of Lubricating Grease to Water Spray	25 g
ASTM D4170	Fretting Wear, Grease	40 g
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
ASTM D4289	Elastomer Compatibility HPM Elastomer	200 g
ASTM D4290	Leakage of Wheel Bearing Grease	200 g
ASTM D4693	Low Temperature Torque, Grease	50 g
ASTM D5483	Oxidation Stability of Greases by PDSC	10 g
ASTM D5706	Extreme Pressure Properties of Lubricating Greases Using SRV	20 g
ASTM D5707	High Frequency, Linear Oscillation, SRV of Grease	20 g
ASTM D5969	Corrosion-Preventive, Dilute Synthetic Sea Water Environments	30 g
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test)	40 g
ASTM D6138	Corrosion-Preventive, Dynamic Wet Conditions (Emcor Test - 2 Bearings)	40 g
ASTM D6184	Oil Separation Percent, Wire Cone Method	100 g
ASTM D6185	Compatibility of Two Greases	2400 g
ASTM D6186	Oxidation Induction Time by PDSC	20 mL
• ASTM D6304	Water by Karl Fischer	100 mL
ASTM D6482	Cooling Curve Analysis of Aqueous Polymer Quenchants	1100 mL
ASTM D7217	Tribological Test - Friction and Wear Model Test for Sliding Friction of Solids (Ball on Disc System)	1100 mL



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Grease Tests

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Method	Test Description	Sample Size
ASTM D7420	Tribomechanical Properties of Grease Lubricated Plastic Socket Suspension Joints Using a High-Frequency, Linear-Oscillation SRV	100 g
ASTM D7594	Fretting Wear, High Hertzian, High-Frequency, Linear-Oscillation (SRV)	50 g
ASTM D8022	Roll Stability, Presence of Water	454 g
DIN 51805	Flow Pressure, Kesternich Method	50 g
ISO 14635	FZG Gear Test	2 L
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Below 0°C	800 g
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Room Temperature	800 g
• SAVLAB SPECTRA	Fourier Transform Infra-Red, FTIR, Spectra Only	50 mL
US Steel LT-37	Grease Mobility	50 mL



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Hydraulic Fluid Tests

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Method	Test Description	Sample Size
• ASTM D92	Flash Point, Cleveland Open Cup	250 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 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, 0°C and Above	125 mL
• 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)	1 L
• ASTM D892	Foaming, Sequence I - III (Specify option A if required)	1 L
ASTM D943	Oxidation Characteristics (2.0 TAN or 1000 Hours)	600 mL
ASTM D972	Evaporation Loss (Grease) - Specify Time and Temperature	150 mL
ASTM D974	Acid Number	50 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
ASTM D1401	Emulsion Characteristics / Water Separability	100 mL
ASTM D1500	Color	150 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 D2270	Viscosity Index (Includes D445 at 40°C and 100°C)	125 mL
• ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
ASTM D2532	Viscosity Stability at Low Temperature	125 mL
ASTM D2603	Sonic Shear, Oils	100 mL
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
• ASTM D2896	Base Number	50 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 mL
ASTM D3427	Air Release / Gas Bubble Separation	500 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
• ASTM D4172	Four Ball Wear	100 mL
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
ASTM D4310	Sludging & Corrosion Tendency Up to 1000 Hours	1 L
• ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C	150 mL
• ASTM D4739	Base Number	20 mL
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	10 mL
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-5°C to -40°C)	50 mL
ASTM D5182	FZG Gear Test - Up to 12 Stages and 14 Stages	2 L
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D6130	Elemental Analysis by ICP, Aqueous / Coolants / Sulfur, 5 elements	10 mL
• 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, New Oil	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 D7214	FTIR Analysis, Oxidation by Peak Area Increase	50 mL
• ASTM D7216	Elastomer Compatibility, ACM, Polyacrylate	1.2 L
• ASTM D7216	Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
• ASTM D7216	Elastomer Compatibility, HNBR, Nitrile	1.2 L
• ASTM D7216	Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L



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Hydraulic Fluid Tests

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Method	Test Description	Sample Size
• ASTM D7216	Elastomer Compatibility, VMQ, Silicone	1.2 L
• ASTM D7624	FTIR Analysis, In-Service Fluid, Nitration	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
• CEC L-112	Elastomer Compatibility, RE6 FKM	500 mL
• CEC L-112	Elastomer Compatibility, RE7 ACM	500 mL
• CEC L-112	Elastomer Compatibility, RE8 HNBR	500 mL
• CEC L-112	Elastomer Compatibility, RE9 AEM	500 mL
ISO 4406	Particle Count	50 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, AU, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, FKM2, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, HNBR, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, NBR1, 1000 Hours	500 mL
ISO 6072	Elastomer Compatibility, Hydraulic Fluid, NBR2, 1000 Hours	500 mL
• SAVLAB LPYC	Density, Pycnometer	120 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



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Marine Fuel Tests

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Method	Test Description	Sample Size
• ASTM D97	Pour Point	100 mL
ASTM D381	Gum Content of Gasoline (Washed and Unwashed)	50 mL
• ASTM D445	Kinematic Viscosity, 0°C and Above	125 mL
ASTM D482	Total Ash	80 g
ASTM D525	Oxidation Stability (Gasoline)	200 mL
• ASTM D664	Acid Number	50 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 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 D4052	Specific Gravity (Includes API Gravity)	50 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	30 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive, 23 Elements	30 mL
ASTM D4530	Carbon Residue, Micro	150 mL
ASTM D4737	Cetane Index (Calculated from D1298 and D86)	500 mL
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
ASTM D6371	Cold Filter Plug Point	150 mL
NACE TM0172	Corrosive Properties of Cargoes in Petroleum Product Pipelines	1 L
SAVLAB TBR-BFR	Bunker Fuels	150 mL
SAVLAB WHAT	Fuel Additive Water Uptake	100 mL



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Marine Lubricant Tests

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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 D445	Kinematic Viscosity, 0°C and Above	125 mL
• ASTM D664	Acid Number	50 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 D1298	Density / API Gravity, Hydrometer	350 mL
• ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
• ASTM D2670	Falex Pin & Vee Wear	200 mL
• ASTM D2896	Base Number	50 mL
• ASTM D4683	High Temperature High Shear / TBS Viscosity, 150°C, New and Used 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 D5293	Cold Cranking Simulator, Temperature Scan	120 mL
• ASTM D5453	Sulfur	10 mL
• ASTM D5762	Nitrogen	10 mL
• ASTM D5800	Noack Volatility	150 mL
• ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
• ASTM D6278	Kurt Orbahn Shear Stability, 30 Passes	1 L
• ASTM D6795	Engine Oil Filterability (EOFT)	1 L



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Turbine Lubricant Tests

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Method	Test Description	Sample Size
• ASTM D445	Kinematic Viscosity, Used or In-Service Oil	125 mL
• ASTM D445	Kinematic Viscosity, 0°C and Above	125 mL
• ASTM D664	Acid Number	50 mL
ASTM D893	Insolubles, Pentane	25 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 D974	Acid Number	50 mL
ASTM D1401	Emulsion Characteristics, Water Separability	100 mL
• ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Single Run	150 mL
• ASTM D2272	Rotating Pressure Vessel Oxidation Test (RPVOT) Run to Hard Break	150 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2709	Water and Sediment	100 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)	60 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
ASTM E1858	Oxidation Induction Time by PDSC	25 g
CEC L-085-T99	Oxidation Induction Time by PDSC	25 g
ISO 4406	Particle Count	50 mL



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Wind Turbine Lubricant Tests

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In-Service Condition Monitoring

Method	Test Description	Sample Size
• ASTM D97	Pour Point	100 mL
• ASTM D445	Kinematic Viscosity	125 mL
• ASTM D664	Acid Number	50 mL
• ASTM D892	Foaming, Sequence I - III	1 L
ASTM D893	Insolubles, Pentane	25 mL
ASTM D974	Acid Number	50 mL
ASTM D2500	Cloud Point	100 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 mL
• ASTM D4739	Base Number	20 mL
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	10 mL
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-5°C to -40°C)	50 mL
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
• ASTM D6304	Water by Karl Fischer	100 mL
• ASTM D7216	Elastomer Compatibility	1.2 L
• ASTM D7414	FTIR Analysis, In-Service Fluid, Oxidation	50 mL
ISO 4406	Particle Count	50 mL

Qualification

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	125 mL
• ASTM D664	Acid Number	50 mL
ASTM D665	Rust Prevention 24 Hours (Method A or B)	1 L
ASTM D665	Rust Prevention 4 Hours (Method A or B)	1 L
ASTM D974	Acid Number	50 mL
ASTM D1401	Emulsion Characteristics, Water Separability	100 mL
• ASTM D2270	Viscosity Index (Includes D445 at 40°C and 100°C)	125 mL
ASTM D2711	Demulsibility	2 L
ASTM D2782	Timken Extreme Pressure (Specify Starting Load)	4 L
• ASTM D2783	Four Ball Extreme Pressure	200 mL
ASTM D2893	Oxidation Characteristics Extreme Pressure	500 mL
• ASTM D2983	Brookfield Viscosity	60 mL
• ASTM D4172	Four Ball Wear	100 mL



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Specification: API SP, ILSAC GF-6A/GF-6B & SAE J183

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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	10 mL
• ASTM D5293	Cold Cranking Simulator, Single Temperature	120 mL
• ASTM D5293	Cold Cranking Simulator, Temperature Scan	120 mL
• ASTM D5800	Noack Volatility	150 mL
ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
• ASTM D6278	Kurt Orbahn Shear Stability, 30 Passes (GF6B Only)	1 L
• ASTM D6335	Thermo-oxidation Engine Oil Simulation Test (TEOST® 33C) (GF6A Only)	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 D7216	GF-6 Elastomer Compatibility, ACM, Polyacrylate	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, FKM, Fluoroelastomer	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, HNBR, Nitrile	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, MAC, Ethylene Acrylate	1.2 L
• ASTM D7216	GF-6 Elastomer Compatibility, VMQ, Silicone	1.2 L
ASTM D7563	Emulsion of Water and Simulated Ed85 Fuel	500 mL

Tests required to qualify for API SP or ILSAC GF-6 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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Specification: API CK / FA-4

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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	10 mL
• ASTM D5800	Noack Volatility	150 mL
• ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
• ASTM D6594	High Temperature Corrosion Bench Test at 135°C	300 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, 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

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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Tests by Category

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Molecular Characterization

Method	Test Description	Sample Size
ASTM D94	Saponification Number	25 g
ASTM D189	Carbon Residue, Conradson	50 mL
ASTM D381	Gum Content of Gasoline (Washed and Unwashed)	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 D1533	Water in Insulating Liquids by Coulometric Karl Fischer Titration	100 mL
ASTM D1662	Sulfur, Active	100 g
ASTM D1957	Hydroxyl Number	25 mL
ASTM D2007	Clay Gel Analysis	100 mL
ASTM D2273	Trace Sediment	200 g
ASTM D2369	Volatile Organic Content (VOC)	10 mL
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2699	Octane Number (Research Rating – RON)	800 mL
ASTM D2700	Octane Number (Motor Rating – MON)	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 D3524	Fuel Dilution, Diesel (Requires 250 mL of new oil and fuel)	10 mL
• ASTM D3525	Fuel Dilution, Gasoline	10 mL
ASTM D3703	Peroxide Value	200 mL
ASTM D4291	Glycol	5 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive	30 mL
ASTM D4294	Sulfur by XRF - Energy Dispersive, 23 Elements	30 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 D4927	Sulfur Content for Automatic Transmission Fluid by XRF	30 mL
• ASTM D4951	Elemental Analysis by Inductively Coupled Plasma, Wear Metals	10 mL
• ASTM D5185	Elemental Analysis by Inductively Coupled Plasma (No S)	10 mL
• ASTM D5185	Sulfur by Elemental Analysis by Inductively Coupled Plasma	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 D5554	Iodine Value	60 mL
• ASTM D5762	Nitrogen	10 mL

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Tests by Category

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Molecular Characterization

Method	Test Description	Sample Size
ASTM D5769	Benzene, Toluene, Total Aromatics by GC/MS	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 - XRF Wavelength Dispersive	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 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
ASTM E2550	Thermal Stability by Thermogravimetry	10 g
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 IRG	Fourier Transform Infra-Red, FTIR, Glycol Analysis	50 mL
• SAVLAB IRW	Fourier Transform Infra-Red, FTIR, Water Analysis	50 mL
SAVLAB PEI	Phosphorus Emissions Index (PEI) at 250°C, 1 Hour	250 mL
SAVLAB PEI & SEI	Phosphorus Emissions Index (PEI) and Sulfur Emissions Index (SEI) Package, 250°C, 1 Hour	250 mL
SAVLAB SEI	Sulfur Emissions Index (SEI), 250°C, 1 Hour	250 mL
SAVLAB SFACALC	Sulfated Ash, Calculated from ICP Results	10 mL
• SAVLAB SPECTRA	Fourier Transform Infra-Red, FTIR, Spectra Only	50 mL



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Oxidation

Method	Test Description	Sample Size
• ASTM D130	Copper Strip Corrosion	100 mL
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)	1 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 D1743	Rust Prevention Properties of Grease	50 g
ASTM D1748	Rust Protection by Humidity Cabinet	1 L
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 D2272	RPVOT, Run to End-of-Test, Hard Break	150 mL
ASTM D2274	Oxidation Stability (Petroleum Fuel Oil)	2 L
ASTM D2619	Hydrolytic Stability	250 mL
ASTM D2893	Oxidation Characteristics Extreme Pressure	500 mL
• ASTM D4048	Copper Strip Corrosion, Grease	100 g
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 D5483	Oxidation Stability of Greases by PDSC	10 g
ASTM D6186	Oxidation Induction Time by PDSC	20 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
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), Other test durations and temperatures up to 180°C available upon request	100 mL
ASTM E1269 & E1133	Specific Heat and TGA for Fluids	100 mL
ASTM E1858	Oxidation Induction Time by PDSC	25 g
• CEC L-48	Oxidation Stability of Lubricating Oils by Artificial Aging	1 L
CEC L-085-T99	Oxidation Induction Time by PDSC	5 mL
• CEC L-105	ACEA Low Temperature Pumpability	700 mL
• CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 168 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 168 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, Single Run 216 Hours	1 L
• CEC L-109	Bio-Diesel Oxidation Bench Test, in Duplicate 216 Hours	1 L

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Tests by Category

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Oxidation

Method	Test Description	Sample Size
EN 14112	Oxidation Stability (Biodiesel & Petroleum Blends) Rancimat	100 mL
EN 15751	Oxidation Stability (Bio-based FAME Only) Rancimat	100 mL
NACE TM0172	Corrosive Properties of Cargoes in Petroleum Product Pipelines	1 L
SAE J1703 COR	Corrosion Test	1.7 L
SAE J1703 HTS	High Temperature Stability	200 mL
SAE J1703 OR	Oxidation Resistance	100 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), Other test durations and temperatures up to 180°C available upon request	200 mL



Tests by Category

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Physical Properties

Method	Test Description	Sample Size
ASTM D86 Mod.	Distillation by Gas Chromatograph	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 D92	Flash Point, Grease	200 g
• ASTM D93	Flash Point, Pensky-Martins Closed Cup	250 mL
ASTM D95	Water by Distillation	100 mL
ASTM D156	Color (Saybolt Chromometer Method)	250 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/Gallon)	50 mL
ASTM D240	Gross Heat of Combustion (Specify BTUs/Pound)	50 mL
ASTM D287	API Gravity of Crude Petroleum / Petroleum Products (Hydrometer)	250 mL
ASTM D323	Reid Vapor Pressure	125 mL
ASTM D566	Dropping Point Grease	50 g
ASTM D877	Dielectric Breakdown Voltage	800 mL
ASTM D890	Water in Liquid Pine Chemicals	100 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 D924	Dissipation/Power Factor	500 mL
ASTM D972	Evaporation Loss (Grease) - Specify Time & Temperature	150 mL
ASTM D1120	Boiling Point of Coolants	100 mL
ASTM D1177	Freeze Point of Aqueous Engine Coolants	100 mL
ASTM D1218	Refractive Index & Refractive Dispersion	20 mL
ASTM D1298	Density / API Gravity, Hydrometer	350 mL
ASTM D1331	Surface and Interfacial Tension	100 mL
ASTM D1401	Emulsion Characteristics / Water Separability	100 mL
ASTM D1401	Emulsion Characteristics / Water Separability	100 mL
ASTM D1403	Cone Penetration, 1/4 or 1/2 Scale	100 g
ASTM D1404	Harmful Particles in Grease	30 g
ASTM D1500	Color	150 mL
ASTM D1544	Color of Transparent Liquids - Gardner Scale	10 mL
ASTM D1742	Oil Separation, Storage of Greases	300 g
ASTM D1768	Water & Sediment for Opaque or In-Service Oils	100 mL
ASTM D2008	UV Absorbance to Absorptivity	10 mL
ASTM D2155	Auto-Ignition Temperature (Hydraulic Fluids)	10 mL
ASTM D2265	Dropping Point	50 g
ASTM D2500	Cloud Point	100 mL
ASTM D2595	Evaporation Loss, Grease, Wide Temperature Range	25 g
ASTM D2624	Electrical Conductivity of Aviation and Distillate Fuels	1000 mL
ASTM D2709	Water & Sediment	100 mL
ASTM D2717	Thermal Conductivity	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	100 mL
ASTM D4052	Specific Gravity (Includes API Gravity)	50 mL
• ASTM D5800	Noack Volatility	150 mL
ASTM D5800 Mod.	Noack Volatility, 150°C for 12 Hours	150 mL
ASTM D5972	Freeze Point	100 mL
• ASTM D6082	Foaming, Sequence IV (Specify option A if required)	1 L
ASTM D6184	Oil Separation %, Wire Cone Method	100 g

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Tests by Category

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Physical Properties

Method	Test Description	Sample Size
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 D7213	Boiling Range Distribution of Petroleum Distillates (100°C to 615°C)	10 mL
ASTM D7321	Particulate Contamination for Biodiesel Fuels	1 L
ASTM D7619 / ISO 4406	Particle Count & Sizing (Diesel Fuels)	500 mL
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 500 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), 1000 Hours, 150°C (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	100 mL
ASTM D8544	Conductive Deposit Test (CDT), Other test durations and temperatures up to 180°C available upon request	100 mL
ASTM E659	Auto-Ignition Temperature, Liquid Chemicals	10 mL
ASTM E1269	Specific Heat	100 mL
ISO 4406	Particle Count	50 mL
SAEJ1703 COM	Compatibility	120 mL
SAEJ1703 CS	Chemical Stability	100 mL
SAEJ1703 ERBP	Equilibrium Reflux Boiling Point	200 mL
SAEJ1703 ESRB	Effect on SBR Cups	300 mL
SAEJ1703 HTS	High Temperature Stability	200 mL
SAEJ1703 OR	Oxidation Resistance	100 mL
SAEJ1703 WERBP	Wet Equilibrium Reflux Boiling Point	800 mL
SAVLAB APP	Appearance	50 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), 130°C, 72 Hours (Includes ASTM D5185 ICP pre and post – reports Cu and S change)	200 mL
SAVLAB EV-WCT	Wire Corrosion Test (WCT), Other test durations and temperatures up to 180°C available upon request	200 mL
• SAVLAB LPYC	Density, Pycnometer	120 mL
SAVLAB MIC	Microscopy	10 mL
SAVLAB pH-E70	pH Determination	150 mL
SAVLAB RBP	Reflux Boiling Point	100 mL
SAVLAB TGASCAN	TGA Thermal Scan or Isotherm	5 mL



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Viscosity

Method	Test Description	Sample Size
• ASTM D97	Pour Point	100 mL
ASTM D217	Cone Penetration, Grease, Unworked	800 g
• 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, Used or In-Service Oil	125 mL
ASTM D1084 B	T-Bar Viscosity of Adhesives	Varies
ASTM D1092	Apparent Viscosity, Grease	500 g
ASTM D1478	Low Temperature Torque - Grease	10 g
• ASTM D2270	Viscosity Index (Includes D445 at 40°C & 100°C)	125 mL
ASTM D2422 & D445	Industrial Fluid Lubricants by Viscosity System	125 mL
ASTM D2532	Viscosity Stability at Low Temperature	125 mL
ASTM D2603	Sonic Shear, Oils	100 mL
• ASTM D2983	Brookfield Viscosity, +20°C to -60°C (Per Temperature)	60 mL
ASTM E3070	Shear Thinning Index of Non-Newtonian Liquids Using a Rotational Viscometer	20 mL
• ASTM D3829	Mini-Rotary Viscosity (MRV), Single Temperature	200 mL
ASTM D4287	High-Shear Viscosity Using a Cone/Plate Viscometer	10 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-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 D4684	TP-1 MRV Viscosity, Single Temperature	100 mL
• ASTM D5133	Scanning Brookfield Viscosity and Gelation Index (-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	Cold Cranking Simulator, Temperature Scan	120 mL
ASTM D5621	Sonic Shear, Hydraulic Fluids	100 mL
ASTM D5853	Pour Point for Crude Oils	100 mL
ASTM D6022	Calculated Permanent Shear Stability Index	-
• ASTM D6278	Kurt Orbahn Shear Stability, 30 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-036-90	High Temperature High Shear Viscosity, 150°C, New Oil	150 mL
CEC L-036-90	High Temperature High Shear Viscosity, 150°C, Used Oil	150 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
DIN 51805	Flow Pressure, Kesternich Method	50 g

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Viscosity

Method	Test Description	Sample Size
SAEJ1703 LTF	Fluidity At Low Temperature	300 mL
SAVLAB CAP	Cone and Plate Viscosity	20 mL
SAVLAB FEI	Fuel Efficiency Index (FEI)	300 mL
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Below 0°C	800 g
SAVLAB LINPUMP	Lincoln Vent Meter Pumpability, Room Temperature	800 g
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
US Steel LT-37	Grease Mobility	50 mL



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Tests by Category

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Wear / Performance / Simulation

Method	Test Description	Sample Size
• 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	500 g
• ASTM D2596	Four Ball Extreme Pressure (Grease) Above 400 kg	500 g
ASTM D2622	Sulfur by XRF - Wavelength Dispersive	30 mL
ASTM D2670	Falex Pin & Vee Wear	200 mL
ASTM D2670 Mod.	Falex Pin & Vee Wear - Custom Configuration	200 mL
ASTM D2711	Demulsibility - Procedure A (No EP Additives)	2 L
ASTM D2711	Demulsibility - Procedure B (Contains EP Additives)	2 L
ASTM D2714	Block on Ring Friction and 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 D3233	Falex Extreme Pressure	200 mL
ASTM D4170	Fretting Wear, Grease	25 mL
• ASTM D4172	Four Ball Wear	100 mL
ASTM D4289	Elastomer Compatibility NBR L and CR Grease	400 g
ASTM D4289	Elastomer Compatibility NBR L or CR Grease	200 g
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 D5620	Drain and Dry Mode Using Falex Pin & Vee Block Test Machine	100 mL
ASTM D5706	Extreme Pressure Properties of Lubricating Greases Using SRV	20 g
ASTM D5707	Friction and Wear Properties of Lubricating Grease Using SRV	20 g
ASTM D6079	Lubricity by HFRR	10 mL
ASTM D6425	Friction and Wear Properties of Extreme Pressure (EP) Using SRV	20 mL
ASTM D7217	Extreme Pressure Properties of Solid Bonded Films Using a High-Frequency, Linear-Oscillation SRV	100 g
ASTM D7420	Tribomechanical Properties of Grease Lubricated Plastic Socket Suspension Joints Using a High-Frequency, Linear-Oscillation SRV	100 g
ASTM D7421	Extreme Pressure Properties of Lubricating Oils Using High-Frequency, Linear-Oscillation Using SRV	100 g
ASTM D7594	Fretting Wear Resistance of Lubricating Greases Under High Hertzian Contact Pressures Using a High-Frequency, Linear-Oscillation SRV	50 g
ASTM G 99	Wear Testing with a Pin-on-Disk Apparatus.	100 g
DIN 51834	Tribological Test - Translatory Oscillation Apparatus - Part 2: Determination of Friction and Wear Data for Lubricating Oils.	100 g
DIN ISO 7148-1	Tribological Test - Metallic Bearing Materials for Plain Bearings Under Conditions of Boundary Lubrication	100 g
DIN ISO 7148-2	Tribological Test - Polymer-Based Plain Bearing Materials Under Specified Working Conditions	100 g



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