

Lubrication Oils for Power Generation:

Test Packages for Lubrication Oils

Turbine Oils, ASTM D 4378 Specification In-Service Monitoring of Mineral Turbine Oils.

Test Code	Description
ASTM D 445.a	Viscosity, Kinematic, at 40°C, cSt
ASTM D 974.a	Acid Number, Color-Indicator Titration (TAN)
ASTM D 1500	Color, ASTM Color Scale
ASTM E 203	Water Content by Karl Fischer Method, Engine Coolants
ASTM D 665.a	Rust Preventing Characteristics
ISO 4406	Particle Count, Automatic Optical Particle Count
ASTM D 2272.a	Oxidation Stability by Rotating Pressure Vessel Method, RPVOT (previously RBOT)

Please contact us at sales@tol-lp.com for a quote.

	Additional Tests
ASTM D 664	Acid Number of Petroleum Products, Potentiometric Titration
ASTM D 5185	Additive Elements, Wear Metals, and Contaminants in Used Lubricating Oils and Determination of Selected Elements in Base Oils by Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)
ASTM D 6810	Antioxidant Concentration in HL Turbine Oils
ASTM D 130	Corrosion from Petroleum Products, Copper Strip Tarnish Test, 2 hours @ 100°C
ASTM D 1401	Emulsion Characteristics of Lubricating Oils (Water Separability)
ASTM D 892	Foaming Tendencies of Lubricating Oils
ASTM F 312	Microscopical Sizing, Counting Particles from Aerospace Fluids on Membrane Filters
ASTM F 311	Particulate Contamination Analysis Using Membrane Filters

Turbine Oils Test Package VAX and Radial Turbines, ISO V6 Classification

Test Code	Description
ASTM E 1478	Color and Appearance, Visual
ASTM D 445.a	Viscosity, Kinematic, at 40°C, cSt
ASTM D 445.b	Viscosity, Kinematic, at 100°C, cSt
ASTM D 2270	Viscosity, Index
ASTM D 6304	Water Content by Karl Fischer Method, Lubricating Oils and Additives
ISO 4406	Particle Count, Automatic Optical Particle Count
ASTM D 1401	Emulsion Characteristics of Lubricating Oils (Water Separability)
ASTM D 3427	Gas Bubble Separation Time of Petroleum Oils (Air Release Properties)
Atlas.a	Ferrography, Analytical
ASTM D 6595	Wear Metals and Contaminants in Lubricating Oils by Rotating Disc Electrode Atomic Emission Spectrometry, (RDE-AES)
ASTM D 892	Foaming Tendencies of Lubricating Oils
ASTM D 2272.a	Oxidation Stability by Rotating Pressure Vessel Method, RPVOT (previously RBOT)

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Hydraulic Oils:

Test Packages for Hydraulic Oils

Mineral Hydraulic Oils, ASTM D 6158 Specification Qualification Test for Type HV Fluids, Multi-grade Anti-wear

Test Code	Description
ASTM D 445.a	Viscosity, Kinematic, at 40°C, cSt
ASTM D 2422	ISO Viscosity Grade
ASTM D 445.b	Viscosity, Kinematic, at 100°C, cSt
ASTM D 2270	Viscosity Index, Calculated From Kinematic Viscosity Tests at 40°C and 100°C
ASTM D 2983	Viscosity, Low Temperature of Lubricants by Brookfield Viscometer
ASTM D 6080	Viscosity Characteristics of Hydraulic Fluids at Low Temperature
ASTM D 1298	API Gravity of Petroleum Products, Hydrometer Method (Density, Relative Density, Specific Gravity)
ASTM D 1500	Color, ASTM Color Scale
ASTM D 92.a	Flash Point, Cleveland Open Cup
ASTM D 97	Pour Point of Petroleum Oils
ASTM D 974.a	Acid Number, Color-Indicator Titration (TAN)
ASTM D 665.a	Rust Preventing Characteristics
ASTM D 665.b	Rust Preventing Characteristics in Synthetic Sea Water
ASTM D 130	Corrosion from Petroleum Products, Copper Strip Tarnish Test, 2 hours @ 100°C
ASTM D 1401	Emulsion Characteristics of Lubricating Oils (Water Separability)
ASTM D 471	Elastomer Compatibility, Hardness and Relative Volume Change
ASTM D 892	Foaming Tendencies of Lubricating Oils
ASTM D 3427	Gas Bubble Separation Time of Petroleum Oils (Air Release Properties)
ASTM D 943	Oxidation Stability, Inhibited Steam Turbine Oils
ASTM D 4310	Sludging Tendencies of Inhibited Mineral Oils
ASTM D 2070	Thermal Stability of Hydraulic Oils, 165 hours

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Lubricating Greases:

Test Packages for Lubricating Greases

Automotive Chassis Grease, ASTM D 4950 Specification Class LB, Mild to Severe Duty

Test Code	Description
ASTM D 217.b	Penetration, Cone, of Lubricating Greases, Worked
NLGI	NLGI Consistency Number
ASTM D 566	Dropping Point, Lubricating Greases
ASTM D 2266	Wear Preventive Characteristics of Grease, Four-Ball Method
ASTM D 4289	Elastomer Compatibility of Lubricating Greases and Fluids
ASTM D 1742	Oil Separation from Lubricating Grease, Bleed
ASTM D 1743	Corrosion Preventive Properties, Greases (Rust Protection)
ASTM D 2596	Extreme Pressure Properties of Greases, Four-Ball
ASTM D 4170	Fretting Wear Protection by Lubricating Greases and Fluids
ASTM D 4693	Low Temperature Performance of Grease-Lubricated Wheel Bearings

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**Automotive Wheel Bearing Grease, ASTM D 4950 Specification
Class GB, Moderate to Severe Duty**

Test Code	Description
ASTM D 217.b	Penetration, Cone, of Lubricating Greases, Worked
NLGI	NLGI Consistency Number
ASTM D 566	Dropping Point, Lubricating Greases
ASTM D 4693	Low Temperature Performance of Grease-Lubricated Wheel Bearings
ASTM D 1264.b	Water Washout Characteristics of Greases at 80°C (175°F)
ASTM D 1742	Oil Separation from Lubricating Grease, Bleed
ASTM D 1743	Corrosion Preventive Properties, Greases (Rust Protection)
ASTM D 2266	Wear Preventive Characteristics of Grease, Four-Ball Method
ASTM D 4289	Elastomer Compatibility of Lubricating Greases and Fluids
ASTM D 2596	Extreme Pressure Properties of Greases, Four-Ball

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Transformer Oils:

Test Packages for Transformer Oils

**Electrical Insulating Oils, ASTM D 3487
Qualification Tests for Oils Used in Transformers, Circuit Breakers, Switching Gear**

Test Code	Description
ASTM D 611.a	Aniline Point of Petroleum Products
ASTM D 1500	Color, ASTM Color Scale
ASTM D 92.a	Flash Point, Cleveland Open Cup
ASTM D 971	Interfacial Tension of Oil against Water by the Ring Method
ASTM D 97	Pour Point of Petroleum Oils
ASTM D 1298	API Gravity of Petroleum Products, Hydrometer Method (Density, Relative Density, Specific Gravity)
ASTM D 445.a	Viscosity, Kinematic, at 40°C, cSt
ASTM D 445.b	Viscosity, Kinematic, at 100°C, cSt
ASTM D 1816	Dielectric Breakdown Voltage, VDE Electrodes
ASTM D 2300	Gassing Tendency of Insulating Oils under Electrical Stress
ASTM D 924	Dielectric Constant and Power Factor of Electrical Insulating Liquids, 60 Hz, 25°C
ASTM D 1275.b	Corrosive Sulfur in Electrical Insulating Oil - Part B (48 hrs)
ASTM D 1533	Water Content by Karl Fischer Method, Insulating Liquids
ASTM D 974.a	Acid Number, Color-Indicator Titration (TAN)
ASTM D 2440.b	Oxidation Stability, Mineral Insulating Oil, 72 hr
ASTM D 2112	Oxidation Stability, Mineral Insulating Oils, RPVOT (previously RBOT)
ASTM D 4768	Oxidation Inhibitor in Insulating Oil by Gas Chromatography

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Test Code	Description
ASTM D 445.c	Viscosity, Kinematic, at other test temperatures
ASTM D 1524	Visual Examination of Electrical Insulating Oils
ASTM D 4059	PCBs in Insulating Oil by Gas Chromatography
ASTM D 877	Dielectric Breakdown Voltage, Disc Electrodes
ASTM D 3300	Dielectric Breakdown Voltage of Insulating Oils under Impulse Conditions
ASTM D 2440.a	Oxidation Stability, Mineral Insulating Oil, 164 hr

ASTM D 1903	Thermal Expansion of Electrical Insulating Liquids of Petroleum Origin and Askarels
ASTM D 2766	Specific Heat of Liquids and Solids
ASTM D 2717	Thermal Conductivity of Liquids (400°F maximum)