



Turbine Oil

Phillips 66® Turbine Oil is a very high quality, rust and oxidation (R&O)-inhibited circulating oil developed for use in industrial steam turbines, rotary air compressors, and many other industrial applications. It is specially formulated to protect against sludge and varnish formation to provide long service life.

Turbine Oil is formulated with premium hydrocracked base oils and a proprietary additive system to provide excellent protection against rust, corrosion, and deposit formation. It has excellent oxidation resistance and thermal stability at high temperatures to minimize sludge and varnish formation providing long service life. It protects system components against rust and corrosion and has excellent water-separating properties to minimize the formation of emulsions providing superior resistance to foam buildup that can interfere with proper lubrication.

Applications

- Direct-drive steam turbines and hydroelectric turbines
- Air tools and other pneumatic equipment lubricated through air line lubricators
- Centrifugal and rotary air compressors
- Lightly loaded enclosed gear drives where the OEM specifies a R&O type oil (ISO VG 68, 100)
- Electric motor bearings, fan bearings, and blower bearings
- Vacuum pumps, deep-well water pumps, and machine tools

Turbine Oil meets the requirements of the following industry and OEM specifications:

- ABB G12106
- Alstom Power HTGD 90 117, for turbines without gear drives
- Ansaldo Energia AE94.3A & AE94.2 without gear drives (ISO VG 46) (approved)
- ANSI/AGMA Standard 9005-E02, R&O Inhibited Oils
- ASTM D4304-06a, Type I Turbine Oil
- British Standard 489
- China National Standard GB 11120-2011 L-TSA (ISO VG 32 & 68) (approved)
- Denison Hydraulics HF-1
- DIN 51515 Part 1, Lubricating Oils, Type L-TD
- DIN 51517 Part 2, Lubricating Oils, Type CL
- DIN 51524 Part 1, Hydraulic Oils, Type HL
- General Electric GEK 46506e, GEK 32568I, GEK 121608, GEK 27070 (obsolete), GEK 28143b (obsolete), GEK 120498 (obsolete)
- Siemens Power Generation TLV 9013 04, TLV 9013 05
- U.S. Military MIL-PRF-17672D, Symbol 2075 T-H (ISO VG 32), 2110 T-H (ISO VG 46), 2135 T-H (ISO VG 68)
- U.S. Steel 126

Long-Life

Rust & Oxidation-Inhibited

**KEEPING THE
WORLD
RUNNING
SMOOTHLY.**





Features/Benefits

- Excellent oxidation resistance and thermal stability for long service life
- Protects against sludge and varnish formation
- Protects against rust and corrosion
- Excellent water-separating properties
- Low carbon-forming tendency for use in air compressors
- Good foam resistance

Turbine Oil

Typical Properties					
ISO Grade		32	46	68	100
Specific Gravity @ 60°F		0.862	0.868	0.871	0.874
Density, lbs/gal @ 60°F		7.18	7.23	7.25	7.28
Color	ASTM D1500	0.5	0.5	0.5	0.5
Flash Point (COC), °C (°F)	ASTM D92	220 (428)	232 (450)	243 (469)	277 (531)
Pour Point, °C (°F)	ASTM D97	-40 (-40)	-40 (-40)	-34 (-29)	-27 (-17)
Viscosity					
cSt @ 40°C	ASTM D445	31.8	46.0	68.0	100
cSt @ 100°C		5.4	6.7	8.8	11.3
Viscosity Index	ASTM D2270	106	102	100	100
Acid Number, mg KOH/g	ASTM D974	0.04	0.04	0.04	0.04
Air Release, minutes	ASTM D3427	3.0	3.0	4.0	4.0
Copper Corrosion, 3 hrs @ 100°C	ASTM D130	1a	1a	1a	1a
Demulsibility, minutes to pass	ASTM D1401	20	20	20	25
Foam Test, Seq. I, mL	ASTM D892	0/0	0/0	0/0	0/0
Foam Test, Seq. II, mL		0/0	0/0	0/0	0/0
Foam Test, Seq. III, mL		0/0	0/0	0/0	0/0
Oxidation Stability					
TOST, hours	ASTM D943-04a	>10,000	>10,000	>10,000	>10,000
RPVOT, minutes	ASTM D2272	>1,550	>1,500	>1,000	>800
Rust Test	ASTM D665 A&B	Pass	Pass	Pass	Pass

Health & Safety Information

For recommendations on safe handling and use of this product, please refer to the Safety Data Sheet via <http://www.phillips66.com/SDS>.