PHILLIPS 66 LUBRICANTS

Turbine Oil

Long-Life, Rust & Oxidation-Inhibited Circulating 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 provide a very high level of oxidation resistance for long service life.

Turbine Oil is formulated 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, and provide long service life. It protects system components against rust and corrosion. It has excellent water-separating properties to minimize the formation of emulsions, and is resistant to excessive 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 32568j, GEK 27070 (obsolete), GEK 28143b (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

KEEPING THE WORLD RUNNING SMOOTHLY

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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**
AGMA Grade	**0**	**1**	**2**	**3**
Specific Gravity @ 60°F	0.862	0.868	0.873	0.870
Density, lbs/gal @ 60°F	7.18	7.23	7.27	7.24
Color, ASTM D1500	0.5	0.5	0.5	0.5
Flash Point (COC), °C (°F)	220 (428)	232 (450)	243 (469)	277 (531)
Pour Point, °C (°F)	-37 (-35)	-33 (-27)	-27 (-17)	-24 (-11)
Viscosity				
cSt @ 40°C	31.8	46.0	68.0	100
cSt @ 100°C	5.4	6.7	8.8	11.3
SUS @ 100°F	164	238	352	522
SUS @ 210°F	44.4	48.7	55.9	65.0
Viscosity Index	103	97	102	99
Acid Number, ASTM D974, mg KOH/g	0.08	0.08	0.08	0.08
Air Release, ASTM D3427, minutes	0.8	2.0	2.0	2.0
Copper Corrosion, ASTM D130, 48 hrs @ 80°C	1a	1a	1a	1a
Demulsibility, ASTM D1401, minutes to pass	20	20	20	25
Foam Test, ASTM D892, Seq. I, mL	0/0	0/0	0/0	0/0
Oxidation Stability				
TOST, ASTM D943-04a, hours	>15,000	>15,000	>15,000	>15,000
RPVOT, ASTM D2272, minutes	>1,200	>1,200	>1,200	>1,200
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/EN/products/Pages/MSDS.aspx.

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Typical properties are average values only and do not constitute a specification. Minor variations that do not affect product performance are to be expected during normal manufacture, and at different blending locations. Product formulations are subject to change without notification.

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