



LUBRICANTS

Diamond Class® Turbine Oil

Phillips 66® Diamond Class Turbine Oil is a premium quality, rust and oxidation (R&O)-inhibited turbine oil developed for use in gas and steam turbines in severe service. It is specially formulated to protect against sludge and varnish formation in new-generation gas turbines.

Diamond Class Turbine Oil is formulated with premium hydrocracked base oils and a proprietary additive system to provide outstanding oxidation resistance and deposit control. This premium product provides long service life and significant cost savings to power generation customers by minimizing the formation of harmful sludge and varnish deposits, especially in servo valves and IGV valves where oil flow rates are low and the oil is subjected to cyclic temperatures common in peaking gas turbines. It protects system components against rust and corrosion, has excellent water-separating properties to minimize the formation of emulsions and bacteria buildup, and is resistant to excessive foam buildup that can interfere with proper lubrication and lead to premature bearing wear.

Diamond Class Turbine Oil is filtered at the blending terminal prior to filling any package containers to an ISO Cleanliness Code of 18/16/13. The bulk oil is filtered again upon delivery to the customer's facility.

Applications

- Direct-drive, combined-cycle and co-generation gas turbines ⁽¹⁾
- Direct-drive steam turbines ⁽¹⁾

⁽¹⁾**Note:** For turbines with gear drives, use Diamond Class AW Turbine Oil.

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

- ABB G12106
- Alstom Power HTGD 90 117, for turbines without gear drives
- ASTM D4304-06a, Type I & Type III Turbine Oil
- British Standard 489
- Cincinnati Machine P-38, P-54, P-55
- DIN 51515 Part 1, Lubricating Oils, Type L-TD
- DIN 51515 Part 2, Lubricating Oils, Type L-TG
- DIN 51517 Part 2, Lubricating Oils, Type CL
- DIN 51524 Part 1, Hydraulic Oils, Type HL
- Elliott ring-oiled turbines, where mineral-based turbine oil is specified
- General Electric GEK 107395a, GEK 32568I, GEK 46506e, GEK 121608
GEK 27070 (obsolete), GEK 28143b (obsolete), GEK 120498 (obsolete)
- ISO 8068, Type L-TGB, Type L-TGSB
- Siemens Power Generation TLV 9013 04, TLV 9013 05
- Siemens Westinghouse 21T0591 (obsolete), 55125Z3 (obsolete)
- 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 120, 125, 126

Premium Long-Life

Rust & Oxidation-Inhibited

Bulk Oil Meets ISO Cleanliness Code 18/16/13

KEEPING THE
WORLD
RUNNING
SMOOTHLY. 



Features/Benefits

- Outstanding oxidation resistance and thermal stability for long service life
- Outstanding control of sludge and varnish formation in base-loaded and peaking turbines
- Protects against rust and corrosion
- Excellent water-separating properties
- Resists the formation of emulsions and bacteria buildup
- Good foam resistance
- Meets ISO Cleanliness Code rating of 18/16/13⁽²⁾

⁽²⁾Note: Applies only to bulk product as delivered from Phillips 66® manufacturing plants. Particle counts may vary from lab to lab.

Diamond Class® Turbine Oil

Typical Properties				
ISO Grade		32	46	68
Specific Gravity @ 60°F		0.8607	0.8676	0.8709
Density, lbs/gal @ 60°F		7.17	7.22	7.24
Color	ASTM D1500	0.5	0.5	0.5
Flash Point (COC), °C (°F)	ASTM D92	222 (432)	238 (460)	242 (468)
Pour Point, °C (°F)	ASTM D97	-40 (-40)	-40 (-40)	-37 (-35)
Viscosity				
cSt @ 40°C	ASTM D445	32.7	47.3	70.8
cSt @ 100°C		5.5	6.9	9.0
Viscosity Index	ASTM D2270	106	101	101
Acid Number, mg KOH/g	ASTM D974	0.04	0.04	0.05
Air Release, minutes	ASTM D3427	3.0	3.0	4.0
Copper Corrosion, 3 hrs @ 100°C	ASTM D 130	1a	1a	1a
Demulsibility, minutes to pass	ASTM D1401	5	5	5
Foam Test, Seq. I, tendency/stability, mL	ASTM D892	0/0	0/0	0/0
Foam Test, Seq. II, tendency/stability, mL		0/0	0/0	0/0
Foam Test, Seq. III, tendency/stability, mL		0/0	0/0	0/0
Oxidation Stability				
TOST, hours	ASTM D943-04a	>10,000	>10,000	>10,000
RPVOT, minutes	ASTM D2272	>1800	>1800	>1800
Dry TOST				
Hours to 25% RPVOT	ASTM D7873	1740	-	-
Sludge content @ 25% RPVOT, mg/kg		58	-	-
Rust Test	ASTM D665 A&B	Pass	Pass	Pass
Cleanliness Code	ISO 4406:1999	18/16/13	18/16/13	18/16/13

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>.