



LUBRICANTS

Diamond Class® AW Turbine Oil

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

Diamond Class AW Turbine Oil is formulated with premium hydrocracked base oils and a proprietary additive system to provide outstanding oxidation resistance, deposit control and wear protection. 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. 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. An ashless antiwear additive provides wear protection for gears and bearings.

Diamond Class AW Turbine Oil is filtered to an ISO Cleanliness Code of 18/16/13 for use in circulating systems with tight tolerances where particle contamination can cause operational problems. The bulk oil is filtered at the blending terminal prior to filling any package containers, and is filtered again upon delivery in bulk to the customer's bulk tank.

Applications

- Combined-cycle and co-generation gas turbines
- Gas turbines and steam turbines with gear drives

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

- ABB G12106
- Alstom Power HTGD 90 117, for turbines with gear drives
- ASTM D4304-06a, Type II Turbine Oil
- British Standard 489
- Cincinnati Machine P-38 (ISO VG 32)
- 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
- DIN 51524 Part 2, Anti-wear Hydraulic Oils, Type HLP
- Elliott ring-oiled turbines, where mineral-based turbine oil is specified
- General Electric GEK 101941a, GEK 107395a, GEK 32568k, GEK 46506e, GEK 27070 (obsolete), GEK 28143a (obsolete)
- Siemens Power Generation TLV 9013 04, TLV 9013 05
- Siemens Westinghouse 21T0591 (obsolete), 55125Z3 (obsolete)
- Solar Turbines ES9-224, Rev. AA, Class II Turbine Oil
- 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

Premium

Anti-Wear

**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
- Protects against sludge and varnish formation
- Excellent wear protection for gears and bearings
- 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 ⁽¹⁾

⁽¹⁾Note: Applies only to bulk product as delivered from Phillips 66® manufacturing plants. Particle counts may vary from lab to lab.

Diamond Class® AW Turbine Oil

Typical Properties				
ISO Grade		32	46	68
Specific Gravity @ 60°F		0.862	0.868	0.872
Density, lbs/gal @ 60°F		7.18	7.23	7.26
Color	ASTM D1500	0.5	0.5	0.5
Flash Point (COC), °C (°F)	ASTM D92	220 (428)	231 (448)	243 (469)
Pour Point, °C (°F)	ASTM D97	-39 (-38)	-36 (-33)	-30 (-22)
Viscosity	ASTM D445			
cSt @ 40°C		32.0	46.0	68.0
cSt @ 100°C		5.4	6.8	8.8
Viscosity Index	ASTM D2270	102	102	102
Acid Number, mg KOH/g	ASTM D974	0.10	0.10	0.10
Air Release, minutes	ASTM D3427	2.2	2.2	2.2
Copper Corrosion, 3 hrs @ 100°C	ASTM D130	1a	1a	1a
Demulsibility, minutes to pass	ASTM D1401	15	15	15
Foam Test, Seq. I, mL	ASTM D892	0/0	0/0	0/0
Four-Ball Wear, Scar Diameter, mm	ASTM D4172	0.50	0.50	0.50
FZG Scuffing Test, Failure Load Stage	ASTM D5182	10	10	10
Oxidation Stability				
TOST, hours	ASTM D943-04a	>10,000	>10,000	>10,000
RPVOT, minutes	ASTM D2272	>1,800	>1,800	>1,800
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>.