



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.

Diamond Class AW Turbine Oil is formulated with premium hydrocracked base oils and select additives to provide outstanding oxidation resistance, excellent wear protection, protection against rust and corrosion, and resistance to foaming. It has outstanding oxidation resistance and thermal stability at high temperatures to minimize deposit 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. An ashless (non-zinc) 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 without 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 32568f, GEK 46506e, GEK 27070 (obsolete), GEK 28143a (obsolete)
- Siemens Power Generation TLV 9013 04 (approved), TLV 9013 05
- Siemens Westinghouse 21T0591 (obsolete), 55125Z3 (obsolete)
- Solar Turbines ES9-224, Rev. W, 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 Rust
& Oxidation-
Inhibited, Anti-
Wear Turbine
Oil; 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)	220 (428)	231 (448)	243 (469)
Pour Point, °C (°F)	-39 (-38)	-36 (-33)	-30 (-22)
Viscosity			
cSt @ 40°C	32.0	46.0	68.0
cSt @ 100°C	5.4	6.8	8.8
SUS @ 100°F	165	237	352
SUS @ 210°F	44.4	49.0	55.9
Viscosity Index	102	102	102
Acid Number, ASTM D974, mg KOH/g	0.14	0.14	0.10
Air Release, ASTM D3427, minutes	2.2	2.2	2.2
Copper Corrosion, ASTM D130	1a	1a	1a
Demulsibility, ASTM D1401, minutes to pass	15	15	15
Foam Test, ASTM D892, Seq. I, mL	0/0	0/0	0/0
Four-Ball Wear, ASTM D4172, Scar Diameter, mm	0.50	0.50	0.50
FZG Scuffing Test, ASTM D5182, Failure Load Stage	10	10	10
Oxidation Stability			
TOST, ASTM D943-04a, hours	>24,000	>24,000	>24,000
RPVOT, ASTM D2272, minutes	>1,700	>1,700	>1,700
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/EN/products/Pages/MSDS.aspx>.