INDUSTRIAL FLUIDS

FIRE RESISTANT TURBINE LUBRICANTS

for Industrial Applications

Typical Property	Turbinol[R] 1223	Turbinol[R] 1122
Viscosity in centistokes at		
210°F.	6.02	4.82
100°F.	51.7	31.9
40°F.	750	320
Viscosity, SSU		
210°F.	45.9	42.1
100°F.	240	150
40°F.	3460	1480
Pour Point, °F.	-5	-20
Specific Gravity, 25/25°C.	1.142	1.173
Density, grams/ml		
210°F.	1.07	1.13
100°F.	1.11	1.17
40°F.	1.14	1.20
Moisture, % maximum	0.10	0.10
Acidity, NN maximum	0.10	0.10

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Typical Property	Turbinol 1223	Turbinol 1122
Specific Heat, BTU/lb/°F.		
60°F.	0.37	0.36
100°F.	0.38	0.38
150°F.	0.40	0.39
200°F.	0.42	0.41
Thermal Conductivity, BTU/hr/°F./ft.		
60°F.	0.073	0.074
100°F.	0.073	0.074
150°F.	0.073	0.073
200°F.	0.072	0.073
Vapor Pressure, mm HG at 200°F.	0.002	0.002
Solubility in Water	Negligible	Negligible

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Fire Resistance

Typical Property	Turbinol 1223	Turbinol 1122
Flash point, °F.	480	470
Fire point, °F.	620	650
AIT, °F. (ASTM D2155)	910	1050
AIT, °F. (ASTM D286)	> 1000	> 1000
High Pressure Spray (AMS 3150C)	Intermittent flashing, self-extinguishing	Intermittent flashing, self-extinguishing
Hot Manifold (FS 791)		
1300°F.	Flashes, does not propogate	Flashes, does not propogate
950°F.	Does not flash or burn	Does not flash or burn
Molten Metal Test at 1300°F.	No ignition	No ignition

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Performance Properties

Typical Property	Turbinol 1223	Turbinol 1122
Rust Test (ASTM D665) 24 hr., distilled water	Pass	Pass
Foam Test (ASTM D892) Sequence 1, 2, 3	Pass	Pass
Oxidation and Corrosion Test (168 hrs., air)		
Test temperature	250°F.	250°F.
Metal weight changes in mg/cm^2		
Magnesium	0.00	-0.02
Aluminum	+0.01	+0.02
Cadmium	+0.03	+0.04
Steel	+0.04	-0.01
Copper	-0.16	-0.16
Acidity increase, NN	0.00	+0.02
100°F. viscosity increase, %	+4.6	+3.6
Alcor Deposition Test (Oil in 250°F., 48 hrs. 1000 ml/min. air flow)		
Tube temperature	450°F.	450°F.
Overall rating	22.7	29.5
Critical temperature	515°F.	>460°F.
Filter deposit, mg.	0.8	0.4

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Typical Property	Turbinol 1223	Turbinol 1122
Four Ball Wear Test, scar diameter in mm. 625 rpm, 167°F., 1 hr.		
Steel on steel		
10 kg load	0.44	0.40
40 kg load	0.58	0.58
Steel on bronze		
10 kg load	0.42	0.42
40 kg load	0.65	1.01

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Compatibility with Materials

Metals

Turbinol 1223 and Turbinol 1122 are compatible with all commonly used metals of construction.

Packings, Seals, Hoses and Bladders

The following polymeric non-metallic materials are compatible with Turbinol 1223 and Turbinol 1122: butyl, EPR, EPT, Viton, Teflon, nylon and silicones. Materials are available from a number of suppliers. Turbinol 1223 is classed as a synthetic straight phosphate ester fire resistant fluid and lubricant.

Paints

Cured epoxy, phenolic, polyurethane and nylon based paints are satisfactory for use with Turbinol 1223 and Turbinol 1122.

Other Lubricants

Turbinol 1223 and Turbinol 1122 are miscible in all proportions with Turbinol 153. They will dissolve only small amounts (3-5%) of most types of petroleum oils.

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Toxicity and Safe Handling

Animal studies indicate that Turbinol 1223 and Turbinol 1122 can be classed as practically non-toxic when considered as an industrial fluid. They are non-irritating when the skin is exposed to the fluid.

In case of skin contact wash off with soap and water as a hygienic procedure. In the case of eye contact flush with copious amounts of water.

Due to their low order of toxicity, Turbinol 1223 and Turbinol 1122 require no special handling precautions.

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