



SHELL TURBO[®] OILS T

Premium quality turbine and general purpose R&O inhibited circulating oils

Product Description

Shell Turbo[®] Oils T are premium quality lubricating oils designed to provide excellent lubrication of steam turbines and many other industrial applications. These oils are made from severely hydroprocessed (API Group II) base oils, which have been carefully selected to provide satisfactory viscosity/temperature characteristics, low foaming tendencies and good water separation properties. In addition, they contain proven additives to protect equipment against rusting and to resist oxidation for long service life. **Shell Turbo Oils T** are available in four ISO viscosity grades from 32 to 100. Grade nomenclature conforms to the ASTM/ISO viscosity system.

Turbine Applications

Shell Turbo[®] Oils T have a long and successful record of providing dependable turbine lubrication with excellent performance. Shell Turbo[®] Oils T meet the requirements of major turbine builders including GE, Siemens, Westinghouse, ABB Alstom, Elliot and Demag Delaval Steam Turbines. The appropriate grade of Shell Turbo[®] Oil T used in a given application should be in accordance with the viscosity recommendation of the equipment manufacturer. General recommendations for the various kinds of turbines are:

| | Viscosity cSt at 40°C | Lubricant |
|---|-----------------------|-----------------------|
| Steam Turbines: | | |
| • Direct Drive – ring oiled w/water cooling | 54-75 | Turbo Oil T 68 |
| • Direct Drive – forced feed | 30-38 | Turbo Oil T 32 |
| • Gear Drive – forced feed | 54-75 | Turbo Oil T 68 |
| Hydroelectric Turbines: | | |
| • Large Vertical Machines | 54-75 | Turbo Oil T 68 |
| • Small Vertical Machines | 30-38 | Turbo Oil T 32 |
| • Horizontal Machines | 30-38 | Turbo Oil T 32 |

General Applications

- a wide range of lubrication applications
- general purpose plant lubrication
- non-anti-wear hydraulic and circulating oil systems
- non-EP gear oils

Shell Turbo® Oils T meet the American Standards Institute (ANSI)/American Gear Manufacturers Association (AGMA) 9005-D94 requirements for R&O oils. Standards for machine tool lubrication established by the STLE include a classification for Hydraulic Fluid and General Purpose Lubricants.

Shell Turbo® Oils T for Hydraulic Fluid and General Purpose Lubricants

| STLE Standard No. | STLE Identifying No. | Recommended Shell Lubricant |
|------------------------------|---------------------------------|--|
| ASLE 64-1 | H-150 | Turbo Oil T 32 |
| ASLE 64-2 | H-215 | Turbo Oil T 46 |
| ASLE 64-3 | H-315 | Turbo Oil T 68 |

Features/Benefits

- excellent oxidation stability
- non-corrosive to metals
- fast separation of water and good de-aeration properties

Approvals

- Alstom Power HTGD 90 117 and NBA P50001
- Siemens TLV 9013 04
- Cincinnati Lamb; P-38, P-55 and P-54

Meets or Exceeds Requirements

- General Electric GEK 28143A
- General Electric GEK 46506
- General Electric GEK 32568F
- Siemens/Mannesmann Demag 800 037 98
- Man Turbo SP 079984 D0000 E99
- Westinghouse 21 T0591
- Solar Turbines ES 9-224U
- ISO 8068
- ASTM D 4304, Type I (non-EP)
- DIN 51515 Part 1
- JIS K-2213 Type 2
- BS 489-1999

Typical Properties of Shell Turbo® Oils T

| | Test Method | ISO Viscosity Grade | | | |
|---|-------------|---------------------|---------|---------|-------|
| | | 32 | 46 | 68 | 100 |
| Product Code | | 65602 | 65603 | 65605 | 65558 |
| Gravity, °API | D 1298 | 32.2 | 31.8 | 31.4 | 30.7 |
| Color | D 1500 | 1.0 | 1.0 | 1.0 | 1.5 |
| Flash Point, COC, °F | D 92 | 420 | 430 | 440 | 450 |
| Pour Point, °F | D 97 | -20 | -10 | -10 | +10 |
| Viscosity: | | | | | |
| @ 40°C, cSt | D 445 | 32 | 46 | 68 | 100 |
| @ 100°C, cSt | D 445 | 5.45 | 6.90 | 8.95 | 11.5 |
| Viscosity Index | D 2270 | 105 | 105 | 105 | 102 |
| Acid Number, mg KOH/g | D 974 | 0.05 | 0.05 | 0.05 | 0.05 |
| Cu Corrosion, 3 hrs @ 212°F | D 130 | 1b | 1b | 1b | 1b |
| Rust Test | D 665B | Pass | Pass | Pass | Pass |
| Demulsibility, separation time, minutes | D 1401 | 15 | 15 | 20 | 20 |
| Modified Turbine Oil Stability Test*, hrs | Mod D 943 | 11,000 | 11,000+ | 11,000+ | ----- |
| RBOT, minutes | D 2272 | 1100+ | 1100+ | 1100+ | 1100+ |

Test allowed to run past usual end point of 10,000 hours until acid number of 2.0 mg KOH/g reached.

Handling & Safety Information

For information on the safe handling and use of this product, refer to its Material Safety Data Sheet <http://www.shell-lubricants.com/msds/>. If you are a Shell Distributor, please call **1+800-468-6457** for all of your service needs. All other customers, please call **1+800-840-5737** for all of your service needs. Information is also available on the World Wide Web: <http://www.shell-lubricants.com/>.