



Shell Turbo GT 46

High Performance Industrial Gas Turbine Lubricant

Shell Turbo Oil GT has been developed for the most severe operating conditions imposed by modern, heavy duty industrial gas turbines. Blended with Group III base oils some of Shell Turbo Oils GT's physical properties differ significantly from those of conventional turbine oils.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Outstanding oxidation stability**
The lubricant's service life depends, to a great extent, on its oxidative stability. Excellent results in both the 'hot oxidation test' (FTM5308) and the 'TOST' life test (ASTM-D943) clearly demonstrate Turbo GT's potential for extended service life compared to conventional mineral oil technology.
- **Excellent thermal stability**
Higher bearing temperatures which are particularly severe during stop/start cycling conditions, may lead to bearing deposits and the formation of harmful sludge in the system which subsequently may result in expensive "downtime" and reduce service life of system components. Shell Turbo GT gives greater protection against thermal degradation and may hence significantly contribute to lower operating and maintenance costs.
- **Excellent air release characteristics**
Effective air release with a minimum of foaming tendency as required by modern gas turbines.

Main Applications

- **Power and industrial heavy duty gas turbines**
Shell Turbo GT is used as the lubricating oil for main shaft bearings and mechanical gears as well as the governor oil in the turbine control valves in modern gas turbines.
- **Further industrial applications**
Shell Turbo GT may also be used for other industrial applications requiring a high performance gas turbine oil, such as the lubrication of turbo compressors.

Specifications, Approvals & Recommendations

- Siemens Power Generation TLV 9013 04, TLV 9013 05
- Alstom Power Turbo-Systems HTGD 90-117
- Alstom/ABB HTGD 90-117T
- General Electric – GEK 32568h, GEK 107395a, GEK 28143b – Type I (ISO 32), GEK 28143b – Type II (ISO 46)
- Solar ES 9-224W Class II
- DIN 51515-1, 51515-2
- ASTM 4304-06a Type III
- For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Typical Physical Characteristics

Properties			Method	Turbo Oil GT 46
ISO Viscosity Grade			ISO 3448	46
Kinematic Viscosity	@40°C	mm ² /s	ASTM D445	47.3
Kinematic Viscosity	@100°C	mm ² /s	ASTM D445	7.74
Viscosity Index			ASTM D2270	>125
Density	@15°C	Kg/m ³	IP 365	848
Flash Point (COC)			ASTM D92	245
Pour Point			ASTM D97	-15
Neutralisation Number			ASTM D974	0.1
Air Release, Minutes	@50°C	min	ASTM D3427	3
Copper Corrosion (3 hrs)	@100°C		ASTM D130	1b
Rust Preventing Properties			ASTM D665 A&B	No Rust

Properties		Method	Turbo Oil GT 46
Oxidation Stability - RPVOT	min	ASTM D2272	>1000
Oxidation Stability - Modified RPVOT	% of RPVOT		>95%
Oxidation Stability - TOST Lifetime	hr	ASTM D943	>8000
Oxidation Stability - TOST 1000hr sludge	mg/kg	IP 157	<40
Oxidation Test - Sludge Content / 72 hrs	@175°C mg	FTM-791b-5308-7	57
Oxidation Test - Viscosity Change / 72 hrs	@175°C %	FTM-791b-5308-7	+5

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

Health, Safety & Environment

- Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>
- **Protect the Environment**
Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**
Advice on applications not covered here may be obtained from your Shell representative.