Technical Data Sheet

- Long Oil Life
- Enhanced wear protection

Shell **Turbo** *S2 GX 46*

High performance industrial steam, gas and combined cycle turbine lubricant including those with gearbox

Shell Turbo S2 GX 46 has been developed to meet the severe demands imposed by modern steam turbine, gas turbine and combined cycle turbine applications while exceeding major OEM requirements. Shell Turbo S2 GX oils are based on high quality hydrotreated base oils a combination of zinc-free additives technology that provide enhanced resistance to oxidation and degradation with extended oil life, excellent wear protection, minimized deposit and sludge formation even under cyclic peak loading conditions, protection against rust and corrosion and excellent water separating performance.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Strong Control Against Oxidation**

  The use of inherently oxidatively stable base oils together with an effective additive system provides a high resistance to oxidation. The result is extended oil life, minimizing the formation of aggressive corrosive acids, deposits and sludge, helping to reduce your operating costs.

- **Enhanced Operation Efficiency**

  Demulsibility, rapid air release, resistance to foaming, and filter blockage are critical factors for oil in the latest geared turbine designs (especially turbines which have shorter oil residence times). Shell Turbo S2 GX 46 offers excellent performance in all four areas, ensuring that optimum operating conditions are maintained.

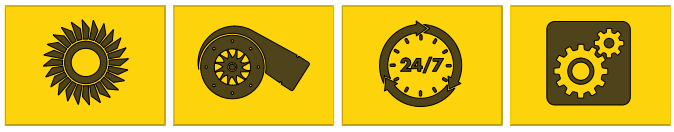
- **Excellent Rust and Corrosion Protection**

  Prevents the formation of rust and guards against onset of corrosion ensuring equipment protection for equipment following exposure to humidity or water during operation and during shut-downs minimizing maintenance.

- **Protection for Gears**

  Shell Turbo S2 GX 46 is developed with selective additive technology that provides excellent wear protection and can be used as the lubricating oil of choice in modern steam, gas and combined cycle turbines, especially those needing enhanced anti-wear performance to protect highly loaded gearboxes. The FZG Gear Rig Test (ASTM D5182) demonstrates Shell Turbo S2 GX 46 exceeding the requirements of major OEM specification, which combined with its enhanced prevention of deposit formation enables a reliable prevention of potential critical component failure and the risk of unplanned turbine shutdown.

Main Applications



Specifications, Approvals & Recommendations

Shell Turbo S2 GX 46 meets & exceeds international specification and requirements of the major turbine manufacturers including those shown below. Further OEM approvals are currently being sought:

- ASTM 4304 2017
- GB (China) 11120-2011, L-TSE, L-TGE and L-TGSE
- DIN 51515 Part 1 L-TDP & Part 2 L-TGP, 51524-2 HLP
- JIS K 2213: 2006 Type 2
- ISO 8068:2006 L-TSA, L-TGA, L-TSE, L-TGE, L-TGB, L-TGSB, L-TGF, L-TGSE
- Solar ES 9-224AA Class II
- Siemens Power Generation TLV 9013 04 & TLV 9013 05
- Siemens Turbo Compressors (spec 800 037 98)
- Siemens Finspong: MAT812101, MAT812106, MAT812108
- MAN Energy Solutions: TED 1000494596
- General Electric Power GEK 32568Q, GEK 46506E, GEK 28143B, GEK 101941A, GEK 107395B, GEK 121608
- Baker Hughes: ITN52220.02, ITN 52220.03, ITN52220.04

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Typical Physical Characteristics

Properties			Method	Shell Turbo S2 GX 46
Kinematic Viscosity		mm^2/s	ISO 3448	46
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	46
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	6.90
Viscosity Index			ASTM D2270	105
Density	@15°C	g/cm^3	IP 365	0.860
Flash Point		°C	ASTM D92	220
Pour Point		°C	ASTM D97	-27
Neutralisation Number		mg KOH/g	ASTM D974	0.10
Rust Preventing Properties			ASTM D665 A & B	No Rust
Water Separability	minutes to 3 mL emulsion	minutes	ASTM D1401	15
Foaming Characteristics - Seq I Tendency Stability		ml/ml	ASTM D892	50/0
Foaming Characteristics - Seq II Tendency Stability		ml/ml	ASTM D892	25/0
Foaming Characteristics - Seq III Tendency Stability		ml/ml	ASTM D892	50/0
Load Carrying Capacity (FZG Gear Machine)		failure load stage	ISO 14635-1 A/8.3/90	9
Oxidation Stability - RPVOT		minutes minimum	ASTM D2272	1 000
Oxidation Stability - Modified RPVOT		% of RPVOT		85
Oxidation Stability - TOST Lifetime		hours minimum	ASTM D943	10 000

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

- **Health and Safety**

  Shell Turbo S2 GX 46 is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

  Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

  Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from https://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.