



GST Advantage™ RO with VARTECH™ Technology

Industrial Gas and Steam Turbine Oil

Product Data Sheet

Customer benefits

- **Exceptional Oxidation and Thermal Stability** for long service life at severe temperatures with **Minimal Deposit Formation**
- **Low Varnish Potential** ensure varnish formation are minimized to protect the equipment
- **Outstanding Rust and Corrosion Protection**
- **High Viscosity Index** helps ensure minimum viscosity change when variations in temperature occur
- **Minimum Foaming** helps prevent sump overflow or erratic governor operation
- **Fast Air Release** minimizes possibility of pump cavitation in systems with high circulation rates and lesser resonance time
- **Rapid Water Separation** facilitates water removal
- **Hydraulic Fluid Service** for systems requiring an ISO 32/46 viscosity and pressures not exceeding 1000 psi
- **Air Compressor Lubricant** for systems requiring an ISO 32/46 viscosity, R&O oil

Applications

- Non-geared gas, steam and hydroelectric turbines
- Rotating machinery in gas and steam combined-cycle cogeneration units
- Air compressors, turbo-blowers and centrifugal pumps requiring a rust and oxidation inhibited oil
- Marine reduction gears where R&O oils are specified
- Industrial applications requiring R&O type circulating oils with extended service capability

Do not use in high pressure systems in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.



VARTECH Technology:

GST Advantage RO is formulated with VARTECH Technology which is advanced chemistry that helps:

- Improve oxidation stability
- Reduce oil degradation
- Extend oil life by limiting harmful precursors that can lead to varnish formation

VARTECH Technology inhibits varnish formation to help maintain peak performance, reliability and productivity.

Product features:

- GST Advantage RO turbine oil has exceptional thermal and oxidative stability. It is suitable for use in gas and steam turbines where extreme temperatures are experienced and require circulation systems with exceptional high temperature stability
- GST Advantage RO turbine oil combines highly refined group II base stocks and unique additive package minimizing the formation of deposits in reservoirs, high temperature bearings and other hot areas of the turbine

Typical key properties

GST ADVANTAGE™ RO WITH VARTECH™ TECHNOLOGY	TEST METHOD	TYPICAL RESULTS	
ISO Grade	ASTM	32	46
Product Code		520035	520036
Air Release @ 50°C, mins	D 3427	1.0	2.3
Flash Point, COC, °C	D 92	222	236
Oxidation Stability, TOST life, hrs to 2.0 Acid No.	D 943	10,000	10,000
D2272, RPVOT, mins	D 2272	1500	1600
Pour Point, °C	D 97	-12	-13
Viscosity, mm ² /s @ 40°C	D 445	34.20	42.40
mm ² /s @ 100°C	D 445	5.67	6.50
Viscosity Index	D 2270	104	103



Performance standards

GST Advantage™ RO with VARTECH™ Technology pending for approval of the following specifications:

- Siemens TLV 901304 and TLV 901305 (non-geared turbine)
- MAN Diesel & Turbo TQL T2 : now called MAN Energy Solutions 10000494596
- GE Specification HTGD 90117 V0001 AC
- Ansaldo Energia (Alstom) G-HTCT 689029 (new specification)
- Ansaldo Energia TG02-0171-E00000 (ISO 46)

GST Advantage RO meets requirements of the following specifications:

- Mitsubishi Hitachi Power Systems (erstwhile Mitsubishi Heavy Industries) MS04-MA-CL002 / MS04-MA-CL001
- General Electric GEK 121608, GEK 32568k, GEK 28143b, GEK 46506e, GEK27070, GEK 107395 including GE Frame 9HA.01 Gas turbines
- GEC Alstom NBA P5001A/ P50003A
- Solar Turbine ES9-224 Class II
- Suitable for use in Peter Brotherhood Steam Turbines
- ANSI/ AGMA 9005-E02-R&O
- ASTM D4304-Type I / Type III (for non-geared turbines)
- British Standard BS 489:1999
- DIN 51515-1 and 51515-2
- ISO 8068-L-TSA and L-TGA
- JIS K-2213 Type II
- Chinese Specification GB1120-2011 L-TGA and L-TSA (Type A and Type B)



Service Considerations

Premium quality turbine oils must be capable of lubricating and cooling bearings while protecting the system against rust, corrosion and harmful deposits. Since the turbine equipment is normally used in key applications, the reliability of rotating machinery and its lubricant is critical.

Periodic monitoring of the oil in service is recommended to assure satisfactory performance of the turbine. The principal reasons for monitoring are two folds: firstly, to determine the conditions of the used oil and secondly, to disclose environmental or operational problems within the equipment. The oil should be visually inspected by the operator at frequent intervals for contamination and/or appearance changes. Refer to ASTM D4378 for guidance on sampling and testing frequency. Samples should be taken from discharge side of the oil pump while system is circulating.

During service, effective purification of the lubricating oil is recommended for the removal of contaminants such as water and solids.

Care should be taken to ensure against top-up and/or contamination from other products, as this can reduce the performance characteristics of GST Advantage™ RO with VARTECH™ Technology. Carefully observe recommended flushing procedures on start-up of new equipment to avoid contamination with temporary corrosion protection materials.

Where geared industrial turbines are to be lubricated and an anti-wear or extreme pressure type of turbine oil is required, the use of GST® EP should be considered.

GST Advantage RO is not intended for use in aero-derivative gas turbines. Must not be used in breathing air compressors.

ENVIRONMENT, HEALTH and SAFETY

Information is available on this product in the Material Safety Data Sheet (MSDS) and Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal. To obtain a MSDS for this product, visit www.Caltex.com.

This bulletin was prepared in good faith from the best information available at the time of issue. While the values and characteristics are considered representative, some variation, not affecting performance, can be expected. It is the responsibility of the user to ensure that the products are used in the applications for which they are intended.

Produced by:
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