



TECHNICAL DATA

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294 SUPREME GEAR LUBE SAE 140 AND ISO GRADES 320, 460, 680

Supreme Gear Lube is a multipurpose thermally stable and thermally durable para-synthetic gear lubricant that is recommended for use in all types of automotive and enclosed industrial gear drives that contain filtration systems where an extreme pressure characteristics are needed.

Supreme Gear Lube is blended from the finest high quality severely hydro-treated polyalphaolefin (PAO) synthetic base fluids and severely solvent refined, severely hydro-finished high viscosity index 100% pure paraffin base oils available. This unique combination provides Supreme Gear Lube with the following advantages:

1. Excellent low temperature properties. This results in the bearings and gears being instantly lubricated at sub-zero temperatures the moment they start turning.
2. Superior oxidation stability.
3. Excellent resistance to thermal degradation
4. Excellent hydrolytic and demulsibility characteristics
5. A high viscosity index
6. Increased wear protection and longer gear life
7. Compatibility with all types of seals.

Blended into these para-synthetic base fluids is a highly specialized non-corrosive thermally stable and thermally durable multi-functional extreme pressure additive package that provides the Supreme Gear Lube with the following performance advantages:

1. Enhanced thermal and oxidative stability and durability to handle operating temperatures of 300°F to 350°F.
2. Excellent extreme pressure properties to protect the gears and bearings from excessive wear and fatigue.
3. Prevention of the formation of sludge and carbon deposits that erode the seals.

Continued on Next Page

TD-294 (Rev 12/2009)

4. Excellent seal compatibility.
5. Enhanced protection of copper, brass and bronze components from corrosion.
6. Non-corrosivity to brass, bronze and other non-ferrous metal parts.
7. Excellent protection of components from rust and corrosion in dry conditions and in the presence of moisture.
8. Excellent resistance to water and moisture.
9. Excellent water separability characteristics.
10. Enhanced gear, bearing and seal cleanliness.
11. Excellent resistance to foaming.

The trends among industrial and automotive gear drive manufacturers is to operate the equipment at higher speeds, loads, power densities and increased torque. These trends have resulted in automotive and industrial gear drives being subjected to higher operating temperatures. These higher operating temperatures have resulted in today's gear lubricant's being subjected to extreme thermal stress. Therefore, it is important that a gear lubricant possess thermal stability and durability characteristics. Gear lubricants that do not possess these properties rapidly oxidize and decompose when subjected to high temperatures, resulting in the formation of sludge, varnish and carbon deposits on the gears, bearings and seals, abraded seals, premature seal hardening and brittleness, and a loss of the gear lubricant's extreme pressure additive chemistries ability to protect against excessive wear, spalling and overall distress to the gears and bearings.

Supreme Gear Lube's para-synthetic base fluids and the thermally stable and thermally durable multi-functional extreme pressure additive package enables the Supreme Gear Lube to resist oxidation and thermal stress at operating temperatures 150°F to 175°F higher than conventional gear lubricants. This results in:

1. A vast reduction in the formation of deposits.
2. Better heat transfer
3. Excellent protection to the gears and bearings even under the most extreme thermally stressed operating conditions.

Continued on Next Page

4. Less wear to the gears, bearings and seals.
5. Increased oil seal life.
6. Lower operating temperatures
7. Less energy consumption
8. Longer lubricant life
9. Less equipment downtime
10. Longer equipment life
11. Reduced maintenance costs

Most types of gearings are designed to operate under hydrodynamic lubrication conditions. That is a full fluid oil film must separate the metal surfaces of the gears and bearings during operation. However, during periods of cold start up, extremely high operating temperatures or high shock loading conditions this full fluid film can be destroyed. Unless a boundary lubricant is present in the gear lubricant when this full fluid film is destroyed, excessive wear can take place.

Supreme Gear Lube contains a proven friction reducer and boundary called Micron Moly®. Micron Moly® is a liquid soluble type moly that plates itself to the metal surfaces of the gears and bearings. Once plated, Micron Moly® forms an indestructible long lasting solid lubricant film that is capable of withstanding pressures up to 500,000 psi. This solid lubricant film once plated to the gears and bearings will reduce friction, vibration and wear, thus extending equipment life.

The Micron Moly® also provides a smooth finished surface on all moving parts of the gears. This minimizes the action of cold welding and vibration, which can occur during start up after gears have been standing idle and during periods of high shock loading. This in turn lessens starting loads and peak power demand, thus resulting in a realistic power cost savings

Supreme Gear Lube No contains an adhesive-cohesive additives that allows the product to tenaciously stick and cling to the gears and bearings. This ensures the Supreme Gear Lube to retain a fine film that “stays put” on the metal surfaces of the gears and bearings regardless of how thoroughly it is wiped away.

Continued on Next Page

Supreme Gear Lube contains the proper additive system that allows the product to properly function and lubricate limited slip, positraction, and high offset gear rear ends and differentials.

Supreme Gear Lube meets and exceeds the following specifications and manufacturer's requirements: API Service classifications GL-5, MT-1 and PG-2, United States Military Specifications MIL-PRF-2105E, SAE J2360, Mack GO-J, Clark MS-8 Rev 1, Ford, General Motors, Chrysler, John Deere J11D, Komatsu-Dresser B22-003, Rockwell Standard O-76A and O-76B, Eaton's Final Drive Lubricant Specifications, Terex EEMS19003, VME American's Specifications EEMS19003F, EMS1901, White Motors MS0016, Volvo, Volkswagen, US Steel 224, David Brown S1.53101 Type E, AGMA 9005-E02, AGMA 250.04, AGMA 251.02, DIN 51517 Part 3 (CLP), and Cincinnati Milicron P-59.

TYPICAL PROPERTIES

| ISO Grade or SAE Grade | 140 | 320 | 460 | 680 |
|---|------------------------|-----------------------|------------------------|------------------------|
| AGMA Grade | ---- | 6EP | 7EP | 8EP |
| Specific Gravity @15°C (60°F) | .8724 | .8724 | .8708 | .8722 |
| Viscosity SUS @ 38°C (100°F) (ASTM D-445) | 1578-2551 | 1530-1698 | 2300-2634 | 3313-3749 |
| Viscosity cSt @ 40°C (ASTM D-445) | 290-325 | 290-325 | 435-500 | 616-745 |
| Viscosity @ 100°C (ASTM D-445) | 25.00-32.00 | 25.00-32.00 | 35.00-42.00 | 34.50-51.50 |
| Viscosity Index (ASTM D-2270) | 125 | 125 | 127 | 110 |
| Flash Point °F/°C (ASTM D-92) | 490°/254° | 490°/254° | 500°/260° | 510°/266° |
| Fire Point °F/°C (ASTM D-92) | 540°/282° | 540°/282° | 550°/288° | 560°/293° |
| Pour Point °F/°C (ASTM D-97) | -25°/-32° to -33°/-36° | -15°/-26 to -20°/-29° | -10°/-23° to -15°/-26° | -10°/-23° to -15°/-26° |
| Rust Test (ASTM D-665) | | | | |
| Procedure A (Distilled Water) | Pass | Pass | Pass | Pass |
| Procedure B (Salt Water) | Pass | Pass | Pass | Pass |
| Copper Strip Corrosion Test | 1a | 1a | 1a | 1a |

(ASTM D-130)

TD-294

Page 5

Typical Properties Continued

| ISO Grade or SAE Grade | 140 | 320 | 460 | 680 |
|---|------------------------|------------------|------------------|------------------|
| Four Ball EP Test (ASTM D-2783) | | | | |
| Weld Point, kgs. | 400 | 400 | 400 | 400 |
| Load Wear Index | 67.91 | 67.91 | 69.50 | 67.91 |
| Four Ball Wear Test (ASTM D-4172) | | | | |
| Scar Diameter, mm | 0.28 | 0.28 | 0.28 | 0.28 |
| Timken EP Test (ASTM D-2782) | | | | |
| Ok Load, lbs | 70 | 70 | 70 | 70 |
| Failure Load, lbs | 75 | 75 | 75 | 75 |
| Falex EP Continuous Load (ASTM D-3233) | | | | |
| Procedure A | | | | |
| Failure Load, lbs | 2500 | 2500 | 2500 | 2500 |
| FZG A/8.3/90 (ASTM D-5182) | | | | |
| Failure Load | 13 th Stage | 13 th | 13 th | 13 th |
| Oxidation Test (ASTM D-2893) | | | | |
| % Viscosity increase after 312 hours @ 203°F/95°C | 3 | 3 | 3 | 3 |
| L-60-1 Thermal Oxidation Test (ASTM D-5704) | | | | |
| % Viscosity Increase | 22 | 22 | 22 | 22 |
| Demulsibility Test (ASTM D-2711) | | | | |
| Free Water, ml | 83 | 83 | 83 | 83 |
| % Water in oil | 0.65 | 0.65 | 0.65 | 0.65 |
| Emulsion, ml | Trace | Trace | Trace | Trace |
| Foam Tendency Test (ASTM D-892) | | | | |
| Sequence I | 0/0 | 0/0 | 0/0 | 0/0 |
| Sequence II | 0/0 | 0/0 | 0/0 | 0/0 |
| Sequence III | 0/0 | 0/0 | 0/0 | 0/0 |

Packaging: #294 Supreme Gear Lube is available in 420 lb drums, 225 lb drums, 120 lb kegs and 40 lb pails.