



# TECHNICAL DATA

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## #268 SUPREME GEAR LUBE SAE 140, ISO 320,460, 680

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

Supreme Gear Lube is blended from the finest high quality severely hydrotreated 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 and thermal 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 multifunctional 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.

Continued on Next Page

TD-268 (Rev. 12/2009)

3. Prevention of the formation of sludge and carbon deposits that erode the seals.
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 automotive and industrial 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 further 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 the thermally durable multifunctional extreme pressure additive package enable 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.
4. Less wear to gears, bearings and seals.
5. Increased oil seal life

Continued on Next Page

6. Lower operating temperatures
7. Less energy consumption
8. Longer lubricant life
9. Longer equipment life
10. Reduced maintenance costs

Most types of gearing 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.

To prevent this wear, Molybdenum Disulfide is further blended into the Supreme Gear Lube. Molybdenum Disulfide provides the boundary lubrication that is needed by plating itself to the metal surfaces of the gears and bearings. Once plated, Molybdenum Disulfide 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 Moly film also provides a smooth finish surface on all of the moving surfaces of the gear drives. This smooth finish minimizes the action of cold welding and vibration, which can occur during start up after the 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 contains an adhesive-cohesive additive 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 surface of the gears and bearings regardless of how thoroughly it is wiped away.

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, Daimler-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 D-94, AGMA 90005 E-02 AGMA 250.04, AGMA 251.02, DIN 51517 Part 3 (CLP), and Cincinnati Milicron P-59.

### TYPICAL PROPERTIES

<b>SAE Grade</b>	<b>140</b>	<b>----</b>	<b>----</b>	<b>----</b>
<b>ISO Grade</b>		<b>320</b>	<b>460</b>	<b>680</b>
AGMA Grade	----	6EP	7EP	8EP
Specific Gravity @ 60°F/15°C	.8724	.871	.8708	.8722
Viscosity SUS @ 100°F/38°C (ASTM D-445)	1578-2551	1568-1849	2146-2753	3313-3749
Viscosity cSt @ 40°C (ASTM D-445)	290-325	299-353	403-520	616-745
Viscosity cSt @ 100°C (ASTM D-445)	25.00-32.00	27.94-33.34	29.50-40.50	34.50- 51.50
Viscosity Index (ASTM D-2270)	125	150	120	110
Flash Point °F/°C (ASTM D-92)	490°/254°	490°/254°	510°/260°	490°/254°
Fire Point °F/°C (ASTM D-92)	540°/282°	540°/228°	550°/288°	540°/282°
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 (ASTM D-130)	1a	1a	1a	1a
Four Ball EP Test (ASTM D-2783)				
Weld Point, kgs.	400	400	400	400
Load Wear Index	67.91	69.50	67.91	67.91
Four Ball Wear Test (ASTM D-4172)				
Scar Diameter, mm	0.28	0.28	0.28	.28
Coefficient of Friction	0.1	0.1	0.1	.1

TD-268  
Page 5

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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	3,000
FZG A/8.3/90 (ASTM D-5182)				
Failure Load	13 <sup>th</sup> Stage	13 <sup>th</sup> Stage	13 <sup>th</sup> Stage	13 <sup>th</sup> Stage
Oxidation Test (ASTM D-2893)				
312 hours @ 203°F/95°C				
% Viscosity Increase	3	3	3	5%
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: #268 Supreme Gear Lube is available in 420lb drums, 225 lb drums, 120 lb. kegs and 40 lb pails.