



# 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, thermally durable, parasyntetic gear lubricant 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 hydrofinished, 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 parasyntetic base oils is a highly specialized, non-corrosive, thermally stable, 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.**
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 trend among automotive and industrial gear drive manufacturers is to operate the equipment at higher speeds, loads, power densities and increased torque which results in higher operating temperatures and extreme thermal stress on the gear lubricants.

Therefore, it is important that gear lubricants possess thermal stability and thermal durability characteristics. Gear lubricants without these properties rapidly oxidize and decompose at high temperatures which results in: the formation of sludge, varnish, and carbon deposits on the gears, bearings and seals; abraded seals, premature seal hardening and brittleness; and loss of the extreme pressure additives' ability to protect against excessive wear, spalling and overall distress to the gears and bearings.

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Supreme Gear Lube resists oxidation and thermal stress at operating temperatures 150°F to 175°F higher than conventional gear lubricants because of the use of parasynthetic base oils and a thermally stable, thermally durable, multifunctional, extreme pressure additive package. This combination provides the following benefits:

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

Most gearing is designed to perform under hydrodynamic lubrication conditions. That is, a full fluid 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. Boundary lubrication is needed to prevent excessive wear when this full fluid film is destroyed.

Micron Moly®, a proven friction reducer, is added to Supreme Gear Lube to provide boundary lubrication. Micron Moly®, a liquid soluble type moly, plates itself to the metal surfaces of the gears and bearings. Once plated, Micron Moly® forms an indestructible, long-lasting, solid lubricant film 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.

Micron Moly® also provides a smooth finished surface on all moving parts 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 fuel economy cost savings.

Supreme Gear Lube contains an adhesive-cohesive additive, which allows the product to tenaciously stick and cling to the gears and bearings. This ensures that Supreme Gear Lube retains 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 to function and lubricate limited slip, positraction, and high offset hypoid gear rear ends and differentials.***

Supreme Gear Lube meets and exceeds the following specifications:

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 B22-0003; Meritor/Rockwell Standard O-76A and O-76B; Eaton-Roadranger; Terex EEMS19003; VME Americas Specifications: EEMS19003F, EMS19107; White Motors MS0016; Volvo; Volkswagen; US Steel 224; David Brown S1.53.101 Type E; AGMA 9005-D94, AGMA 9005-E02, AGMA 250.04, AGMA 251.02; DIN 51517 Part 3 (CLP); and Cincinnati Machine P-34, P-35, and P-59.

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**TYPICAL PROPERTIES**

<b>ISO Grade or SAE Grade</b>	<b>140</b>	<b>320</b>	<b>460</b>	<b>680</b>
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 (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	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 <sup>th</sup> Stage	13 <sup>th</sup>	13 <sup>th</sup>	13 <sup>th</sup>
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