SINCE 1839 Schaeffer MANUFACTURING COMPANY

ISO 9001 CERTIFIED

TECHNICAL DATA

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293 SUPREME GEAR LUBE
SAE 80W-90, ISO 150 AND 220

Supreme Gear Lube is a multipurpose, 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 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. 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 oxidation stability and durability to handle operating temperatures of 250°F to 300°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 can erode 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.

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The trends among automotive and industrial gear drive manufactures 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 lubricants 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 multi-functional 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
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.

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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 contains adhesive-cohesive additives that allow 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 hypoid gear rear ends and differentials.

Supreme Gear Lube meets and exceeds the following specifications and manufacturer's requirements: API Service Classification GL-5, MT-1 and PG-2, Military Specification MIL-PRF-2105E, SAE J2360, Mack GO-J, Clark MS-8 Rev 1, Ford M2C105A, M2C108C, M2C154-A, M2C158-A; General Motors specifications 9985476, 9985044; Chrysler; John Deere JIID; Komatsu Dresser B22-003, B22-005, Meritor 076-D, Eaton-Fuller's Lubricant Specifications, Terex EEMS19003, VME American's Specifications EEMS19003F, EMS19107, White Motors MS0016, Volvo, Volkswagen, US Steel 224, David Brown S1.53101 Type E, AGMA 9005, AGMA 250.04, AGMA 251.02, DIN 51517 Part 3 (CLP), Cincinnati Milicron P-59, P-74 and P-78.

Typical Properties

SAE Grade	SAE 80W-90	---–	---–
AGMA Rating	---–	4 EP	5EP
Specific Gravity 60°F	.892	.89	.8867
Viscosity 40°C cSt (ASTM D-445)	180-251	140-160	201-225
Viscosity 100°C cSt (ASTM D-445)	17.50-23.00	13.50-18.50	18.50-22.50
Viscosity Index (ASTM D-2270)	110	109	112
Brookfield Viscosity @ -26°C, cP (ASTM D-2983)	135,000	---–	---–
Flash Point °F/°C (ASTM D-92)*	470°/243°	460°/237°	470°/243°
Fire Point °F/°C (ASTM D-92)*	510°/266°	490°/254°	510°/266°
Pour Point °F/°C (ASTM D-97)	-20°/-29°	-15°/-26° to -20°/-29°	-15°/-26° to -20°/–29°
Rust Test (ASTM D-665)			
Procedure A (Distilled Water)	Pass	Pass	Pass
Procedure B (Salt Water)	Pass	Pass	Pass
Copper Strip Corrosion Test, 3 hrs. (ASTM D-130)	1a	1a	1a
Four Ball EP Test (ASTM D-2783)			
Weld Point, kg.	400	400	400
Load Wear Index, kg.	65.2	64.8	65.2
Four Ball Wear Test (ASTM D-4172)			
1 hr./40kg/130°F			
Scar Diameter, mm	0.28	.3	.3
Coefficient of Friction	0.1	.1	.1

Typical Properties Continued

SAE Grade	80W-90

ISO Grade		150	220
Timken EP Test (ASTM D-2782)			
OK Load, lbs.	70	70	70
Fail Load, lbs.	75	75	75
Falex Continuous Load (ASTM D-3233)			
Procedure A			
Failure Load, lbs.	2500	2500	2500
FZG (Four Square Gear Test)(ASTM D-5182;A/8.3/90)	13th Stage	13th Stage	13th Stage
Foam Tendency (ASTM D-892)			
Sequence I 75°F ml	0/0	0/0	0/0
Sequence II 200°F ml	0/0	0/0	0/0
Sequence III 75°F ml	0/0	0/0	0/0
Demulsibility Test (ASTM D-2711)			
Free Water	85	85	85
% Water in Oil	.5	.5	.5
Emulsion	Trace	Trace	Trace
Oxidation Test (ASTM D-2893)			
% Viscosity Increase after 312 hours @ 203°F/95°C	3%	3%	3%
L-60-1 Thermal Oxidation Test (ASTM D-5704)			
% Viscosity Increase	22	22	22
*Flash & Fire Point of Base Oil			

Packaging: #293 Supreme Gear Lube is available in 420 lb. drums, 225 lb. drums, 120 lb. kegs, 40 lb. Pails