



TECHNICAL DATA

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239S SUPER LUBE SUPREME SAE 10, 30 AND 50

Super Lube Supreme is a premium high performance para-synthetic fluid that is specially formulated to meet the demanding requirements of modern transmission, final drive, oil immersed brake and hydraulic systems of front end loaders, haul trucks, dozers and other heavy duty off-road equipment to the construction and mining industries. Super Lube Supreme is specially formulated and engineered to meet and exceed the rigorous specifications of Caterpillar's TO-4 specification as well as the Allison C-4 requirements for transmission and drive train fluids.

Today's drive-trains are more complex in design and are using more advanced high-tech materials to improve power transfer and performance capabilities of heavy-duty earth moving equipment in terms of load, speed, control, precision and reliability. As a result of these complex designs the equipment requires the use of fluids that are formulated specifically to optimize friction control performance, wear protection, materials compatibility thermal and oxidation stability, shear stability, protection against foaming and rust and corrosion protection. Because of these aspects the lubricants that are used in this application must be specially formulated to meet and exceed these requirements in order to provide balanced clutch-friction retention and slippage control, compatibility with clutch materials and elastomers, increased levels of anti-wear and load carrying capability to reduce gear, bearing and pump wear, oxidative stability to prevent the formation of sludge and deposit formation, shear stability to maintain viscosity grade and film thickness protection and protection against foaming.

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These requirements are the driving force behind Caterpillar TO-4 specification and other major OEM requirements, which outline performance requirements on elastomer seal compatibility, oxidation stability, wear performance and friction properties for fluids that are used in their equipment's powershift transmissions, final drives and hydraulic systems. These requirements and specifications are aimed at improving the performance over that of automatic transmission fluids, universal tractor transmission hydraulic fluids and CD/TO-2 fluids that were previously used in these applications.

Super Lube Supreme is blended from the finest severely hydro-treated polyalphaolefin synthetic base fluids and severely solvent refined, severely hydrofinished 100% pure paraffin base oils available. This unique combination provides Super Lube Supreme with superior oxidation, excellent film strength, excellent thermal and oxidation stability, excellent resistance to thermal degradation and lower volatility characteristics.

Blended into these para-synthetic base fluids is a very specialized non-corrosive high performance additive system that provides excellent wear protection and material compatibility while maximizing equipment life. This specialized high tech additive package allows the Super Lube Supreme to provide the following performance benefits:

1. Balanced and controlled static and dynamic friction performance to provide optimized clutch friction retention and slippage control. This results in the elimination of problems with excessive brake noise and weakening of friction binders thereby assisting in longer trouble free equipment life.
2. Elimination of clutch slippage even under heavy loads on an incline.
3. Elimination of the need to constantly adjust equipment in order to maintain a proper clutch setting.
4. Excellent oxidative and thermal stability in order to prevent and eliminate the formation of sludge and varnish that can damage seals and elastomeric clutch materials.
5. Excellent wear protection for gears, bearings and friction materials.
6. Excellent compatibility with all types of seal and elastomeric materials commonly used in power-shift transmissions.
7. Excellent stay-in-grade performance and shear stability in order to provide long term anti-wear protection and sustained applied pressure. Super Lube Supreme does not contain viscosity index improvers.
8. Superior protection against copper corrosion and rusting of ferrous metal parts.

9. Very good low temperature fluidity in order to provide easier cold weather starting and better wear protection under low temperature operating conditions.
10. Excellent hydraulic protection to provide superior anti-wear protection to high pressure hydraulic systems.
11. Excellent protection against foaming even with water contamination. This ensures that no air can become entrained into the fluid that could lead to metal-to-metal contact and wear.
12. Longer drain intervals.
13. Longer equipment life and reduced risk of premature component failure.
14. Less downtime and longer trouble-free equipment life and operation.

Further blended into the para-synthetic base oils and the highly specialized additive package is Micron Moly®. Micron Moly® is a liquid soluble type of moly that plated itself to the metal surfaces of the various components, thus forming a solid lubricant film that is able to withstand pressures up to 500,000 lbs. per square inch. This translates into better wear protection for the metallic components of the power-shift transmission and for the hydraulic system, thus extending operating life and providing an extra margin of safety for service.

Super Lube Supreme can also be used in off-highway Allison and Twin Disc transmissions that call for a C-4 type fluid (SAE 10 and 30 only), Eaton-RoadRanger, and Meritor transmissions and the most hydraulic systems of front end loaders, haul trucks, bulldozers and other crawler tractor type equipment that are common to the construction and mining industries

Super Lube Supreme meets and exceeds the following specifications: API Service Classifications GL-1, GL-2, and GL-3; Caterpillar TO-4, Allison C-4, Komatsu KES 07.802, Komatsu KES 07.868.1, Komatsu-Dresser, ZF TE-ML 01, ZF TE-ML 03C, ZF TE-ML07F, Tremec TTC, Terex Construction Equipment, Euclid Equipment, Eaton-RoadRanger Transmission Lubrication Specifications (SAE 50 only), Dana Powershift Transmission Specifications (SAE 10 and 30 only), Meritor Transmission Lubrication Specifications (SAE 50 only) and Sperry Vickers M2950S.

CAUTION: This oil is specially formulated for use in power-shift transmissions. Do not use in diesel engines. Shortened engine life could result due to heavy piston deposits.

Super Lube Supreme is not recommended for farm tractor equipment that employs a common reservoir for transmission and hydraulic systems or those Allison Transmission on-highway applications that specify the use of a fluid that meets TES-295 or TES 389 specifications.

Typical Properties

SAE Grade	10	30	50
Specific Gravity	.8664	.8908	.8986
Viscosity@ 40°C, cSt (ASTM D-445)	34.39-38.75	82.89-106.31	199.64-218.31
Viscosity@ 100°C, cSt (ASTM D-445)	6.0-6.50	10.5-12.5	18.6-19.7
Viscosity Index (ASTM D-2270)	120	110	103
Brookfield Viscosity (ASTM D-2983)			
cP @ -31°F/-35°C	90,000	---	---
cP @ -13°F/-25°C	---	105,000	---
cP @ 5°F/-15°C	---	---	21,000
MRV Low Temperature Pumpability (ASTM D-4684)			
cP @ -13°F/-25°C	5,550	---	---
cP @ 5°F/-15°C	---	7,000	---
cP @ 23°F/-5°C	---	---	547
High Temperature, High Shear @302°F/150°C, cP	3.2	4.0	5.3
Flash Point °F/°C (ASTM D-92)	425°/218°	470°/243°	510°/266°
Fire Point °F/°C (ASTM D-92)	455°/229°	500°/260°	550°/288°
Stable Pour Point °F/°C (FTM 7916 Method 203)	<-41°/<-42°	---	---
Four Ball EP Test (ASTM D-2783)			
Weld Point, kg	250	250	250
Load Wear Index	48.91	49	49
Four Ball Wear (ASTM D-4172)			
Scar Diameter, mm	.4	.4	.4
Timken EP Test (ASTM D-4172)			
OK Load, lb	60	60	60
Foam Test (ASTM D-892)			
Sequence I	0/0	0/0	0/0
Sequence II	0/0	0/0	0/0
Sequence III	0/0	0/0	0/0
Foam Test (ASTM D-892)			
Sequence I with 0.1% water	0/0	0/0	0/0
Sequence II with 0.1% water	0/0	0/0	0/0
Sequence III with 0.1% water	0/0	0/0	0/0
FZG Gear Test, 100 RPM, 121°C, 20 hrs.			
Load Stage 10 (ASTM D-4998) mg of weight loss	50	50	50

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SAE Grade	10	30	50
Vickers 35 VQ25 Pump Wear Test			
mg wt loss on vanes	12	10	---
mg wt loss on ring	30	25	---
Rust Test (IH BT-9)	Pass	Pass	Pass
Fluid Compatibility (CAT Procedure)	No sediment	No Sediment	No Sediment
Homogeneity (CAT Procedure)	No Precipitation	No Precipitation	No Precipitation
Friction Property VC70 Friction	Pass	Pass	Pass
Fluoroelastomer Seal Test (CAT Procedure)	Pass	Pass	Pass
Allison C-4 Seal Test	Pass	Pass	Pass
Allison C-4 THOT			
Tan Increase	1	1	1
Carbonyl	0.6	0.6	0.6
Viton Seal	Pass	Pass	Pass
Sludge	None	None	None
Copper Strip Corrosion Test (ASTM D-130)	1a	1a	1a
Sulfated Ash Content % wt (ASTM D-874)	1.6	1.6	1.6