



TECHNICAL DATA

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239S020 SUPER LUBE SUPREME ARCTIC with DYNAVIS® SAE 0W-20

Super Lube Supreme Arctic with Dynavis® is a premium high performance full synthetic, multi-grade fluid that is specially formulated to provide superior protection and performance in transmissions, torque convertors, final drives, hydraulics and wet brakes as well as machines with combined systems in Caterpillar and other OEM front end loaders, haul trucks, dozers and other heavy duty off-road equipment used in the construction and mining industries particularly during cold temperature operation. Super Lube Supreme Arctic with Dynavis® is specially formulated and engineered to meet and exceed the rigorous specifications of Caterpillar's TO-4Mjgh specification. Super Lube Supreme Arctic with Dynavis® is also recommended for applications with the following original equipment manufacturer requirements:

- Allison C-4
- Komatsu Micro-Clutch
- Vickers 35VQ25

Super Lube Supreme Arctic with Dynavis® is blended from a unique combination of select synthetic base fluids. This unique combination provides Super Lube Supreme Arctic with Dynavis® with the following advantages:

1. Superior low temperature pumpability
2. Improved cold weather startability and less engine drag during start-up
3. Excellent protection for components during cold weather operation
4. A wide ambient temperature operating range
5. Exceptional resistance to thermal degradation to prevent the formation of high temperature deposits
6. Exceptional oxidative and thermal stability
7. Exceptional low volatility characteristics
8. Enhanced film strength at high operating temperatures
9. Low coefficients of traction, which result in improved fuel economy benefits
10. Compatibility with all elastomers and transmission friction materials, resulting in longer component life and reduced seal leakage

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To provide Super Lube Supreme Arctic with Dynavis® with multi-grade properties an extremely shear stable viscosity index improver is further blended into the product. This extremely shear stable polymer viscosity index improver provides the Super Lube Supreme Arctic with Dynavis® with a viscosity index of **>180**. This extremely high viscosity index allows the Super Lube Supreme Arctic with Dynavis® to provide the proper viscometric properties that are needed for maximum efficiency over a wide range of operating temperatures and pressures. By maintaining its viscometric properties in the optimum viscosity range for the hydraulic pump Super Lube Supreme Arctic with Dynavis® will provide the following performance benefits:

- 1. Improved viscometric properties over a wide range of temperatures.**
- 2. Less warm-up time during low temperature operation.**
- 3. Faster and smoother response of the hydraulic system at low temperatures.**
- 4. Improved start-up at lower temperatures**
- 5. Less power required and consumed at cold start-up than conventional fluids.**
- 6. Reduced risk of pump cavitation and lubricant starvation at low operating temperatures.**
- 7. Improved volumetric and hydro-mechanical efficiency.**
- 8. Less internal pump leakage at high operating temperatures.**
- 9. Excellent resistance to recirculation resulting in a reduction in heat build-up and an increase in hydraulic system responsiveness.**
- 10. Less hydraulic system fade.**
- 11. Stable pump performance , especially during high operating temperatures**
- 12. Excellent protection from wear during periods of high operating temperatures and high pressures.**
- 13. Higher flow rate at peak operating temperature.**
- 14. Stress on the overall system is kept in check.**
- 15. Significantly less wear and tear on hydraulic system components such as pumps hoses and seals.**
- 16. An increased Temperature Operating Window (TOW) that allows the fluid to perform consistently and reliably with in a wide range of temperatures from cold to hot.**
- 17. Ability to exhibit lower viscosity at cold temperatures and delivery of stay-in-grade viscosity at high operating temperatures.**
- 18. Minimization of friction and wear and reduced fuel consumption over a wide temperature range.**
- 19. Elimination of seasonal changes.**
- 20. Increased hydraulic power.**
- 21. Enhanced energy efficiency.**

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- 22. Improved productivity (more work can be done in the same amount of time).**
- 23. Lower energy consumption for the same amount of work.**
- 24. Reduced Greenhouse gas emissions**
- 25. Lower operating temperatures.**
- 26. Reduced risk of overheating and equipment shutdown.**
- 27. Potential fuel savings and reduced emissions.**
- 28. Reduced operating and maintenance costs.**

Also blended into these 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 and a highly shear stable viscosity index improver. This combination allows the Super Lube Supreme Arctic Dynavis® 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. Efficient transmission clutch operation and optimum torque transfer.**
- 5. Increased transmission clutch life.**
- 6. Increased machine breakout force**
- 7. Prevention of clutch chatter**
- 8. 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.**
- 9. Excellent wear protection for gears, bearings and friction materials.**
- 10. Excellent compatibility with all types of seal and elastomeric materials commonly used in power-shift transmissions.**
- 11. Superior protection against copper corrosion and rusting of ferrous metal parts.**
- 12. Excellent low temperature fluidity in order to provide easier cold weather starting and better wear protection under low temperature operating conditions.**
- 13. Excellent wear protection to provide superior anti-wear protection to high pressure hydraulic systems.**
- 14. 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.**

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- 15. Maximum equipment reliability and productivity**
- 16. Longer drain intervals**
- 17. Longer equipment life and reduced risk of premature component failure.**
- 18. Less downtime and longer trouble-free equipment life and operation**

Further blended into the synthetic base oils, the highly specialized additive package and the highly shear stable viscosity index improver 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 Arctic with Dynavis® meets and exceeds the following specifications: Caterpillar TO-4M Arctic; Allison C-4; Allison TES 439; Komatsu KES 07.802; Komatsu KES 07.868.1, Komatsu-Dresser; Tremec TTC; Terex Construction Equipment; Vickers M2950S and Vickers 35VQ25.

Super Lube Supreme Arctic with Dynavis® 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, TES-389, TES -468 specifications

General Ambient Temperature Recommendations*

Compartment	°F Temperature Range	°C Temperature Range
Hydraulics & Hydrostatic Transmissions	-40° to 104°	-40° to 40°
Transmissions	-40° to +50°	-40° to +10°
Final Drives	-40° to 32°	-40 to 0°

***These are general recommendations. Always follow the ambient temperature recommendations found in SEBU6250-20 Caterpillar Machine Fluids Bulletin July 2014 for a particular machine type or in the OEMs' Operators and Maintenance Manual for a particular piece of equipment.**

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Typical Properties

SAE Grade	0W-20
Specific Gravity @ 60°F (15.5°C)	0.8511
Viscosity @ 40°C ASTM D-445	35.50-37.5
Viscosity @ 100°C ASTM D-445	7.4-7.82
Viscosity Index ASTM D-2270	184
Brookfield Viscosity, cP @ -18°C ASTM D-2893	825
Brookfield Viscosity, cP @ -20°C ASTM D-2893	1,000
Brookfield Viscosity, cP @ -30°C ASTM D-2893	2,425
Brookfield Viscosity, cP @ -40°C ASTM D-2893	7,720
Low Temperature Pumpability Viscosity, cP @ -40°C ASTM D-4684	8,150
High Temperature High Shear Viscosity, cP ASTM D-4683	2.64
Flash Point °F (°C) ASTM D-92	410° (210°)
Pour Point °F (°C) ASTM D-97	-60° (-51°)
Four Ball EP Test ASTM D-2783 Weld Point, kg-f	250
Four Ball Wear ASTM D-4172 Scar Diameter, mm	0.38
Timken EP Test ASTM D-2782 OK Load, lbs.	60
Foam Test (ASTM D-892) Sequence I	0/0
Sequence II	0/0
Sequence III	0/0
FZG Gear Test, 100 RPM, 121°C, 20 hrs. Load Stage 10 (ASTM D-4998) mg of weight loss	50
Vickers 35 VQ25 Pump Wear Test Mgs of weight loss on vanes	12
Mgs of weight loss on rings	30
Rust Test (IH BT-9)	Pass
Homogeneity (CAT Procedure)	No precipitation

Typical Properties Continued

Fluroelastomer Seal test (Cat Procedure)	Pass
Friction Property VC70 Friction	Pass
Allison C-4 THOT Tan Increase Carbonyl Viton Seal Compatibility Sludge	1 0.6 Pass No sludge
Copper Strip Corrosion Test (ASTM D-130)	1a
Sulfated Ash Content % wt.(ASTM D-874)	1.6
Zinc, ppm	1030
Phosphorus, ppm	876
Calcium, ppm	4100