



TECHNICAL DATA

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#700 SUPREME 7000™ SYNTHETIC PLUS SAE 15W-40 API CJ-4/CI-4/CI-4 Plus/SM

Supreme 7000™ Synthetic Plus SAE 15W-40 is a premium quality para-synthetic, heavy-duty diesel engine oil formulated to provide improved soot handling capabilities, oxidation resistance and extended wear protection. Supreme 7000™ Synthetic Plus is recommended for use in all types of diesel engines operating on both less than 500 ppm and ultra-low sulfur diesel fuel. Supreme 7000™ Synthetic Plus exceeds the current requirements for API CJ-4 and is particularly suitable for use in 2007 emission compliant engines that utilize heavy EGR and exhaust after-treatment devices such as diesel particulate filters (DPFs), diesel oxidation catalysts (DOCs) and selective catalytic reduction (SCR). Supreme 7000™ Synthetic Plus SAE 15W-40 can also be used in low- emission certified diesel engines that are equipped with EGR, older non-EGR containing diesel engines, all types of off-highway diesel engines, especially Tier 3, Tier 4 Interim and Tier 4 Final off-highway engines, high performance gasoline engines and mixed fleet applications.

Supreme 7000™ Synthetic Plus SAE 15W-40 is blended from a unique combination of the finest quality severely hydrotreated polyalphaolefin (PAO) synthetic base fluids and severely hydrotreated and hydrocracked Group II Plus available. This unique combination provides Supreme 7000™ Synthetic Plus SAE 15W-40 with the following advantages:

1. **Superior Cold Weather Start-ability and Operating Characteristics.**
2. **Superior Oxidative Stability and Excellent Resistance to Thermal Degradation.**
3. **Excellent Low Volatility Characteristics to Provide Exceptional Oil Consumption Control and to Prevent Deposit Formation on Critical Engine Parts.**
4. **Lower Engine Cold Cranking and Oil Pumpability at Low Temperatures.**
5. **High Viscosity Index.**
6. **Low Sulfur Content.** This ensures that exhaust after-treatment devices are protected against catalyst poisoning and accumulation of particulate material, which can lead to reduced engine performance, due to increased backpressure and ultimately the failure of the exhaust after-treatment device.
7. **Extended Oil Drain Interval Capability.**

Blended into Supreme 7000™ Synthetic Plus's base stock combination is a balanced proprietary heavy-duty diesel additive technology and a highly shear stable viscosity index improver. This combination provides Supreme 7000™ Synthetic Plus SAE 15W-40 with the following performance benefits:

1. **Excellent Wear and Deposit Control Protection**
2. **Superior Thermal and Oxidative Stability**
3. **Superior Soot Busting Capabilities to Prevent Soot Build-up and Agglomeration**
4. **Exceptional Thermal Stability, for Outstanding Performance at High Engine Operating Temperatures**
5. **Excellent TBN Retention and Reserve for Effective Acid Neutralization throughout the Entire Oil Drain Interval.**

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6. **Excellent Protection Against Acidic Corrosion of Vital Engine Components**
7. **Excellent Soot Dispensancy for Protection Against Soot Overloading, Increases in Viscosity Due to Soot Thickening and Soot Abrasive Wear**
8. **Enhanced Detergency to Provide High Temperature Piston Cleanliness, Protection Against Bore Polishing and Scuffing, and Increased Engine Cleanliness**
9. **Excellent Protection against Low Temperature Sludge Build-Up and High Temperature Deposits**
10. **Reduced High Temperature Carbon Build-Up – Both in Single and Two-Piece Pistons**
11. **Exceptional Ring and Liner Wear Protection That Results in Improved Oil Consumption Control**
12. **Excellent Shear Stability for Stay-In-Grade Performance throughout the Entire Oil Drain Interval**
13. **Excellent Cold Weather Startability and Pumpability for Better Cold Temperature Starts**
14. **Excellent Anti-Foaming Properties to Protect Against Aeration and Foaming**
15. **Superior Low Volatility Characteristics to Control Oil Consumption**
16. **Longer Filter Life Especially at High Soot Levels for Better Engine Protection**
17. **Excellent High Temperature/High Shear Performance to Provide Excellent Oil Film Thickness and Engine Protection at High Operating Temperatures and Shear Rates.**
18. **Exceptional Valve-Train Wear Protection Especially During High Soot Conditions**
19. **Excellent Resistance to Corrosion**
20. **Superb Resistance to Corrosive and Abrasive Wear**
21. **Excellent Gasket and Seal Life**
22. **Prolonged after-treatment (DPF and DOC) Life**
23. **Improved Fuel Economy**
24. **Longer Drain Intervals for Lower Overall Maintenance Costs**
25. **Increased Engine Life Especially for Older Model Engines and Reduced Maintenance Costs Due to Downtime**
26. **Improved Engine Durability and Reliability**

Further blended into these synthetic blend base fluids, the highly advanced proprietary low ash performance additive package and shear stability viscosity index improver are two proven frictional modifiers, Micron Moly®, a liquid soluble type of Moly and Schaeffer Mfg's own proprietary additive Penetro®. These two proven frictional modifiers once plated form a long lasting slippery tenacious lubricant film, which prevents the metal surfaces from coming into contact with each other. By preventing metal-to-metal contact, damaging frictional wear is prevented from occurring. This prevention of metal-to-metal contact and reduction in wear results in:

- * **Increased Fuel Economy.**
- * **A Low Coefficient of Friction.**
- * **Significantly Less Bearing, Ring, Piston, Cylinder and Valve-Train Wear.**
- * **Increased Engine Efficiency.**
- * **Increased Engine Durability.**
- * **Increased Engine Life.**
- * **Less Downtime.**
- * **Reduced Maintenance**

Supreme 7000™ Synthetic Plus SAE 15W-40 meets and exceeds the following manufacturers' specifications and requirements: Military Specifications MIL-PRF-2104H and A-A-52306A; API Service Classifications CJ-4/CI-4/SM; CI-4 Plus; Global Specification DHD-1; JASO DH-1 and DH-2; Mack EO-O Premium Plus-07; Caterpillar; Caterpillar CAT ECF-1-a, CAT ECF-2, CAT ECF-3; Cummins CES 20081; Detroit Diesel 7SE 270; Detroit Diesel Power Guard Oil Specification 93K218; MTU Category Type 2 and 2.1; Navistar; ACEA E7-12 and E9-12; Deutz; Mercedes-Benz MB 228.31; Volvo VDS-4; MAN 271; MAN 3275-1; MAN 3575; MTU Oil Category Type 2 and 2.1; Renault RLD-2 and RLD-3; Scania LA, LD-F and LDF-2; Iveco; and DAF.

TYPICAL PROPERTIES

SAE Grade	15W-40
Specific Gravity @ 60°F/15°C	0.872 – 0.88
Viscosity @ 40°C cSt (ASTM D-445)	102 – 108
Viscosity @ 100°C cSt (ASTM D-445)	14.00-16.00
CCS Viscosity @ -20°C cP (ASTM D-5293)	5,700
High Temperature High Shear Viscosity 302°F/150°C cP	4.3
High Temperature High Shear Viscosity 302°F/150°C cP after 90 cycles shear (ASTM D-7109)	4.0
Mini-rotary Viscosity-TP.1 @ -25°C cP (ASTM D-4684)	20,500
Mini-Rotary Viscosity @ -20°C, cP -180hr sooted oil sample (Mack T-11A ASTM D-6896)	15,236
Viscosity Index (ASTM D-2270)	154
Flash Point °F/°C (ASTM D-92)	440°/221°
Fire Point °F/°C (ASTM D-92)	490°/254°
Pour Point °F/°C (ASTM D-97/D-5950)	-38°/<-39°
Sulfated Ash Content % Wt. (ASTM D-874)	0.951
Total Base Number (ASTM D-2896)	10
NOACK Volatility (ASTM D-5800)	
% Evaporation Loss @ 250°C	9.5%
Shear Stability % Viscosity Loss – 90 Passes (ASTM D-7109)	9.96%
Foam Test (ASTM D-892 Option A)	
Sequence I	0/0
Sequence II	0/0
Sequence III	0/0
High Temperature Foam Test (ASTM D6082 Option A)	0/0
Sequence III G	
% Viscosity Increase @ 40°C EOT	75%