



TECHNICAL DATA

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711SYNSHIELD™ OTR PLUS SAE 10W-30 API CK-4

SynShield™ OTR Plus SAE 10W-30 is a premium advanced performance, synthetic plus, heavy-duty diesel engine oil specially formulated to provide maximum protection against wear, oxidation, deposit formation, soot contamination and aeration. SynShield™ OTR Plus SAE 10W-30 excellent fuel economy, equipment durability and longevity.

SynShield™ OTR Plus SAE 10W-30 exceeds the requirements for API heavy-duty diesel engine oil Service Categories: CK-4, CJ-4, CI-4, CI-4 Plus and older. The product is particularly suitable for use in 2007 and 2010 emission complaint engines that utilize heavy EGR and exhaust after-treatment devices such as Diesel Particulate Filters (DPFs) with or without Diesel Oxidation Catalysts (DOCs) and Selective Catalytic Reduction (SCR). SynShield™ OTR Plus SAE 10W-30 can also be used in low- emission certified diesel engines that are equipped with EGR, older non-EGR containing diesel engines, and off-highway diesel engines.

SynShield™ OTR Plus SAE 10W-30 provides the following performance advantages:

- Superior wear protection— 71% less wear than conventional 10W-30 CJ-4 oils
- Superior thermal and oxidative stability resulting in a greater resistant to viscosity thickening and the formation of deposits, sludge and varnish on critical engine parts
- Superior protection against deposits – 46% greater soot-handling than conventional 10W-30 CJ-4 oils
- Excellent soot dispersency for protection against soot overloading
- Enhanced detergency and dispersency to provide high temperature piston cleanliness.
- Superior engine cleanliness
- Longer filter life and excellent protection against filter plugging especially during high soot conditions
- Exceptional valve-train wear protection
- Exceptional ring and liner wear protection that results in improved oil consumption control
- Improved fuel economy benefits and excellent fuel economy retention
- Excellent protection against oxidation and corrosion in the presence of biodiesel
- Excellent shear stability for stay-in-grade performance throughout the entire oil drain interval
- Excellent cold cranking startability and low temperature pumpability to ensure the engine oil reaches critical engine parts faster in colder temperature in order to minimize wear
- Low ash formula helps protect exhaust catalysts and particulate filters on low emission vehicles
- Superior low volatility characteristics to control oil consumption
- Excellent protection against oil aeration and foaming
- Excellent resistance to corrosion
- Superior resistance to corrosive and abrasive wear
- Excellent gasket and seal life
- Prolonged after-treatment (DPF and DOC) life
- Longer drain intervals for lower overall maintenance costs
- Increased engine life and durability especially for older model engines
- Improved overall and optimized engine durability and reliability
- Maximized uptime and reliability

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Further blended into SynShield™ OTR Plus SAE 10W-30 are two proven frictional modifiers, Micron Moly®, a liquid soluble type of moly, and Schaeffer Mfg.'s own proprietary additive Penetro®. Once plated, these frictional modifiers form a long lasting, slippery, tenacious lubricant film, which prevents metal-to-metal contact and damaging frictional wear which results in:

- Increased fuel economy.
- A low coefficient of friction.
- Significantly less bearing, ring, piston, cylinder and valve-train wear.
- Increased engine efficiency, durability and life.
- Less downtime with reduced maintenance

SynShield™ OTR Plus SAE 10W-30 meets and exceeds the following manufacturers' specifications and requirements: API Service Classifications CK-4/CJ-4; Military Specification MIL-PRF-2104K; ACEA E7-12; ACEA E9-12; Global Specification DHD-1; Caterpillar ECF-3; Cummins CES 20081, CES 20086; Detroit Diesel Power Guard Oil Specifications: DDC93K218 and DDC93K222; Deutz DQC III-10 LA; Ford WSS-M2C171-E, WSS-M2C171-F1; JASO DH-2; Mack EO-O Premium Plus, Mack EOS-4.5; MAN 3275, MAN 3575; MB 228.31; MTU 2.1; Renault VI RLD-3, RLD-4; Volvo VDS 4, VDS 4.5; Navistar; John Deere; CHN (Case-New Holland).

TYPICAL PROPERTIES

SAE GRADE	10W-30
Specific Gravity @ 60°F/15°C	.8666
Viscosity 40°C cSt (ASTM D-445)	81.85
Viscosity 100°C cSt (ASTM D-445)	12.17
Viscosity Index ASTM D-2270	144
CCS Viscosity @ -25°C cP (ASTM D-5293)	5619
Mini-rotary Viscosity-TP1 @ -25°C cP (ASTM D-4684)	14,300
High Temperature High Shear Viscosity 302°F/150°C cP (ASTM D-4683)	3.54
Flash Point °F/°C (ASTM D-92)	469°/243°
Pour Point °F/°C (ASTM D-97/D-5950)	-43.6°/-42°
Sulfated Ash Content % Wt. (ASTM D-874)	1
Total Base Number (ASTM D-2896)	10.2
Noack Volatility % Evaporative Loss (ASTM D-5800)	10.5
Shear Stability % Viscosity Loss – 90 Passes (ASTM D-7109)	9.02%
TEOST MHT (ASTM D-7097)	
Total Deposits, mg	20.7