



TECHNICAL DATA

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9000 SYNSHIELD™ OTR PLUS SAE 5W-40 FULL SYNTHETIC ENGINE OIL

SynShield™ OTR Plus SAE 5W-40 is a premium advanced performance, full synthetic, heavy-duty diesel engine oil specially formulated to provide maximum protection against wear, oxidation, deposit formation, soot contamination and aeration. SynShield™ OTR Plus SAE 5W-40 provides excellent fuel economy, equipment durability and longevity.

SynShield™ OTR Plus SAE 5W-40 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 emission compliant 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 5W-40 provides advanced performance 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 5W-40 provides the following performance advantages:

- Superior wear protection— 71% less wear than conventional 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 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

Further blended into SynShield™ OTR Plus SAE 5W-40 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 and reduced maintenance.

SynShield™ OTR Plus SAE 5W-40 is suitable for use in applications that specify API Service Classification CK-4. Meets and exceeds Military Specification MIL-PRF-2104K; ACEA E7-22; ACEA E11-22; 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 228.3; MB 228.31; MTU Category Type 2 and 2.1; Renault VI RLD-3, RLD-4; Scania LDF-2; Volvo VDS 4, VDS 4.5; Navistar; John Deere; CHN (Case-New Holland).

TYPICAL PROPERTIES

SAE Grade	5W-40
Viscosity 40°C cSt (ASTM D445)	85.50-89.00
Viscosity 100°C cSt (ASTM D445)	13.50 –15.00
CCS Viscosity @ -30°C cP (ASTM D5293)	5,913
High Temperature High Shear Viscosity 302°F/150°C Cp (ASTM D4683)	3.91
Mini-rotary Viscosity-TP.1 @ -35°C cP (ASTM D4684)	20,900
Viscosity Index (ASTM D2270)	164
Flash Point °F/°C (ASTM D92)	437°/225°
Stable Pour Point °F/°C (FTM 7916 Method 203)	<-41°/<-42°
Sulfated Ash Content % Wt. (ASTM D874)	0.98
Total Base Number (ASTM D2896)	9.74
NOACK Volatility (ASTM D5800) % Evaporation Loss @ 250°C	10.7%
Shear Stability % Viscosity Loss 90 Passes (ASTM D7109)	10%
Foam Test (ASTM D892 Option A)	
Sequence I	0/0
Sequence II	0/0
Sequence III	0/0