



**YOU GET OUT  
WHAT YOU  
PUT IN.** 

## **Super-D FE<sup>®</sup> Diesel Engine Oil with Liquid Titanium<sup>®</sup>**

Kendall Super-D FE (Fuel Economy) Diesel Engine Oil with Liquid Titanium protection additive is a premium quality, part-synthetic API FA-4 engine oil developed for fuel economy benefits in 2014 and newer engines.

Super-D FE with Liquid Titanium is formulated with a blend of synthetic and high-quality Group II base stocks and a proprietary low-SAPS additive package to provide outstanding engine protection in late model diesel engines. It is fortified with our exclusive Liquid Titanium protection additive for enhanced oxidation resistance and protection against wear. This additive enhancement provides increased engine protection from a strongly bonded titanium shield formed on the surface of critical engine parts, despite lower HTHS requirements of FA-4.

Super-D FE with Liquid Titanium has excellent soot dispersancy to protect against abrasive wear and soot-induced oil thickening, and to ensure good low-temperature pumpability even with highly soot-laden oil. It provides excellent bearing corrosion protection and protects against sludge and varnish formation. The synthetic blend formulation provides enhanced thermal stability at high temperatures and improved low-temperature properties compared with conventional diesel engine oils.

Super-D FE with Liquid Titanium meets or exceeds the performance requirements of API Service Category FA-4, and is approved under the latest OEM specifications for use in low-emission diesel engines. It is formulated for use in diesel engines operating on diesel fuels with sulfur content up to 500 ppm.

### **Applications**

- On-highway diesel trucks where additional fuel savings are desired.
- 2010 and newer Detroit Diesel engines <sup>(1)</sup>
- 2014 and newer Cummins, PACCAR, Navistar, Volvo/Mack engines<sup>(1)</sup>

Super-D FE with Liquid Titanium is licensed or OEM-certified for:

- API Service FA-4
- Cummins CES 20087
- Detroit Diesel DFS 93K223

*(1) Based on extensive field testing, Phillips 66 has extended its Limited Product Warranty to cover the use of FA-4 in these engines for on-highway use. Volvo/Mack owners should inquire about specific conditions that may cause temporary low oil pressure.*

**Premium  
Synthetic Blend  
API FA-4 Diesel  
Engine Oil;  
Formulated for  
Fuel Economy**



## Features/Benefits

- Excellent protection for newer low-emission diesel engines and older diesel engines
- Specially formulated to protect exhaust aftertreatment systems
- Exclusive Liquid Titanium protection additive provides enhanced oxidation resistance and protection against engine wear
- Outstanding soot control for protection against abrasive wear and soot-induced oil thickening
- Outstanding resistance to viscosity and thermal breakdown at high temperatures
- Protects against sludge and varnish formation
- Protects against rust and bearing corrosion
- Excellent low-temperature pumpability with soot-laden oil
- High shear stability
- Good resistance to foaming and aeration

## Super-D FE<sup>®</sup> Diesel Engine Oil with Liquid Titanium<sup>®</sup>

Typical Properties	
<b>SAE Grade</b>	<b>10W-30</b>
Specific Gravity @ 60°F	0.870
Density, lbs/gal @ 60°F	7.25
Color, ASTM D1500	L 4.1
Flash Point (COC), °C (°F)	226 (439)
Pour Point, °C (°F)	-40 (-40)
Viscosity, Kinematic	
cSt @ 40°C	66
cSt @ 100°C	9.9
Viscosity Index	133
Cold Cranking Viscosity, cP @(°C)	5500 (-25)
High-Temp/High-Shear Viscosity, cP @ 150°C	3.13
Sulfated Ash, ASTM D874, wt %	1.00
Total Base Number (TBN), ASTM D2896	10.5
Titanium, wt %	0.010
Zinc, wt %	0.122

## Health & Safety Information

For recommendations on safe handling and use of this product, please refer to the Safety Data Sheet via <http://www.phillips66.com/SDS>

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Typical properties are average values only and do not constitute a specification. Minor variations that do not affect product performance are to be expected during normal manufacture, and at different blending locations. Product formulations are subject to change without notification.

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