



**THE
GOOD
STUFF**

Super-D XA[®] Diesel Engine Oil with Liquid Titanium[®]

Kendall[®] Super-D XA (eXhaust Advantage) Diesel Engine Oil with Liquid Titanium protection additive is a premium quality, part-synthetic API CK-4 engine oil developed for use in four-stroke cycle diesel engines designed to meet 2007 and later EPA on-highway exhaust emissions standards. It is specially formulated for compatibility with exhaust aftertreatment systems using diesel particulate filters (DPF), diesel oxidation catalysts (DOC) and/or selective catalytic reduction (SCR). It is back serviceable for use in pre-2007 diesel engines.

Super-D XA 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 new and older 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, which reduces wear and helps extend component life.

Super-D XA 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 XA with Liquid Titanium meets or exceeds the performance requirements of API Service Category CK-4 and is approved under the latest OEM specifications for use in low-emission diesel engines. It is backward serviceable for use where earlier API "C" category engine oils, or the concurrent earlier OEM specifications, are specified. It is formulated for use in diesel engines operating on diesel fuels with sulfur content up to 500 ppm. However, for applications not using Ultra-Low Sulfur Diesel (ULSD), consult the engine manufacturer for recommended service interval.

**Premium
Synthetic Blend
API CK-4 Diesel
Engine Oil;
Fortified with
Liquid Titanium[®]
Protection
Additive**



Applications

- On-highway diesel trucks equipped with EGR and exhaust aftertreatment systems to meet 2007/2010 emissions standards
- Older diesel equipment with conventional, non-EGR engines or ACERT engines
- Off-highway construction, earth moving and mining equipment

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

- API Service CK-4 CJ-4, CI-4 PLUS
- Cummins CES 20086
- Detroit Diesel DFS 93K222
- Mack EOS-4.5
- Mercedes-Benz Sheet 228.31 (SAE 15W-40)
- MTU MTL 5044 Type 2.1 (SAE 15W-40)
- Renault VI RLD-4
- Volvo VDS-4.5
- Ford WSS-M2C171-F1

Super-D XA with Liquid Titanium meets or exceeds the requirements of:

- ACEA E9
- Caterpillar ECF-3, ECF-2, ECF-1-a
- Chrysler MS-10902 (SAE 15W-40)
- JASO DH-2 (SAE 15W-40)
- Diesel engines manufactured by OEMs not listed above, where the OEM specifies API CK-4 engine oil

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

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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Super-D XA[®] Diesel Engine Oil with Liquid Titanium[®]

| Typical Properties | | |
|--|-------------|-------------|
| SAE Grade | 10W-30 | 15W-40 |
| Specific Gravity @ 60°F | 0.871 | 0.875 |
| Density, lbs/gal @ 60°F | 7.25 | 7.29 |
| Color, ASTM D1500 | L 4.0 | 4.0 |
| Flash Point (COC), °C (°F) | 226 (439) | 240 (464) |
| Pour Point, °C (°F) | -40 (-40) | -40 (-40) |
| Viscosity, Kinematic | | |
| cSt @ 40°C | 81.0 | 119 |
| cSt @ 100°C | 12 | 15.4 |
| Viscosity Index | 144 | 135 |
| Cold Cranking Viscosity, cP @(°C) | 6,300 (-25) | 6,400 (-20) |
| High-Temp/High-Shear Viscosity, cP @ 150°C | 3.6 | 4.4 |
| Sulfated Ash, ASTM D874, wt % | 1.00 | 1.00 |
| Total Base Number (TBN), ASTM D2896 | 10.5 | 10.5 |
| Titanium, wt % | 0.010 | 0.010 |
| Zinc, wt % | 0.122 | 0.122 |
| Phosphorus wt % | 0.1100 | 0.1100 |

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/EN/products/Pages/MSDS.aspx>.

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