



OUR ENERGY COMES THROUGH®

# Superlube TMS®

Heavy Duty Diesel Engine Oil

*Advancements That Deliver  
Maximum Engine Protection*



# Premium Performance for All Your

## Cenex Superlube TMS Delivers Enhanced Protection, Less Downtime, Longer Engine Life

Today's diesel engines are working harder than ever, increasing the need for performance driven lubricants that work harder still. As diesel engine requirements and energy market conditions evolve, Cenex Superlube TMS is evolving too—not to merely keep pace, but to **exceed requirements above and beyond those of other leading oils**.

Superlube TMS features an enhanced formulation that targets the toughest challenges of contemporary diesel operating environments—viscosity breakdown, soot control, wear, extended drain intervals, engine life, and environmental protection.

These field proven advancements provide far reaching benefits that deliver **Maximum Engine Protection** for cleaner engines, reduced wear, and worry free operation.



Over 250 million miles of proven fleet performance

## Protects New and Older Diesel Engines

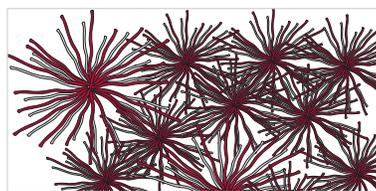
Superlube TMS SAE 15W-40 delivers superior protection for new diesel engines (Caterpillar, Cummins, Detroit Diesel, Volvo and Mack engines) with exhaust emission control systems (Exhaust Gas Recirculation, Diesel Particulate Filters and NOx Catalysts) and older diesel engines operating on either low sulfur or ultra low sulfur diesel fuel.

## Viscosity Retention and Shear Resistance

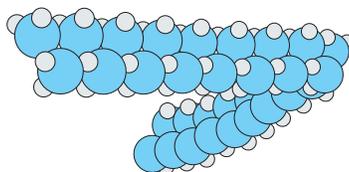
Most heavy duty diesel oils use long chain polymer technology to thicken oil and ensure that it meets the "fresh from the bottle" viscosity requirements. However, after the oil has been in use, these long chain polymers are sheared into smaller molecules, reducing the oil's viscosity and wear protection capabilities, allowing greater metal to metal contact of critical engine parts.

Superlube TMS features advanced radial polymer technology that maintains viscosity much longer, throughout the life of the oil. This impressive performance is the result of the strikingly different shape of the advanced radial polymers in Superlube TMS. Rather than breaking apart, these advanced polymers are designed to retain their shape, minimizing viscosity breakdown.

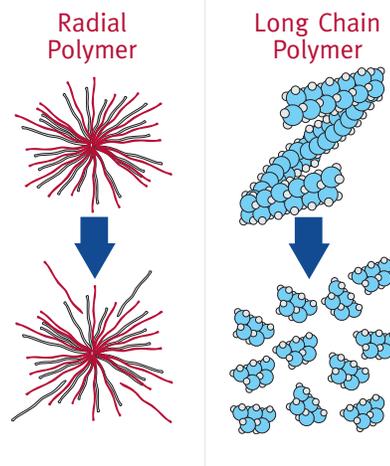
Superlube TMS Advanced Radial Polymer Technology



Outdated Long Chain Polymer Technology



The Shearing Process



The superior design of Superlube TMS's radial polymers make them highly resistant to shearing, improving viscosity control and engine protection.

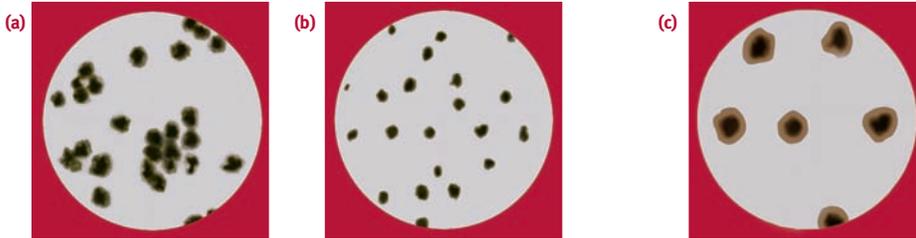
# Equipment Needs



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## Superior Soot Control Reduces Wear, Cuts Oil Consumption, and Extends Engine Life



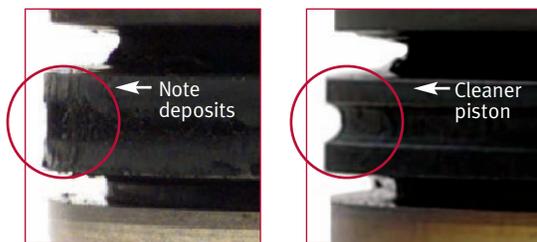
(a) Soot in diesel engine crankcase lubricants form massive structures in the oil which causes thickening, abrasive wear, excessive oil consumption, and reduced engine life.

(b) Cenex lubricants with Wear Saver Technology™ disperse soot to finer particles resulting in less oil thickening.

(c) Superlube TMS surrounds each soot particle with a protective layer that keeps them apart and reduces abrasive wear.

## Outstanding Engine Cleanliness

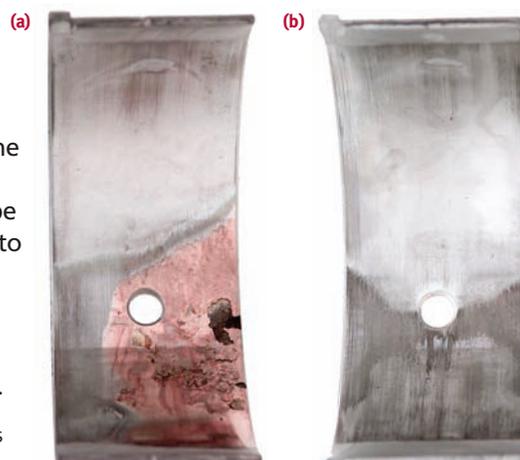
Superlube TMS provides excellent protection against piston deposits to help maintain oil consumption control, protecting sensitive exhaust after treatment systems.



Superlube TMS keeps pistons cleaner longer by preventing build up of carbon and lacquer deposits.

## Exceptional Protection Against Corrosive Wear

The prevention of corrosive bearing wear, caused by acid formation in the engine, is one of the most important parameters for extended drain protection. Superlube TMS offers a high, long lasting TBN to save your precious metals.



(a) Acids cause corrosive wear.

(b) Superlube TMS neutralizes acids for superior bearing protection.

## Improved Protection at Cold Start Up

At engine start up, the time when most engine wear occurs, the advanced radial polymer technology in Superlube TMS enables the oil to reach critical engine parts faster, even at low operating temperatures.

## Protects Engines Against:

- Oil Thickening
- Soot, Sludge and Varnish
- Wear
- Acid Accumulation
- TBN Loss
- Viscosity Shear Loss

## Premium Performance

- Provides Cleaner Engines
- Reduces Oil Consumption
- Minimizes Downtime
- Enables Longer Engine Life
- Protects Engines at Cold Start-up

## Expect Consistent Results When Using Biodiesel

CHS Inc. formulation scientists and engineers have demonstrated the performance capability of Superlube TMS when using Biodiesel fuel. Testing protocols included extensive fleet testing with B20 diesel fuel and laboratory bench testing.

# Superlube TMS<sup>®</sup>

## Heavy Duty Diesel Engine Oil



### Applications:

- ▶ Newer diesel engines with exhaust emission control systems
- ▶ Older on- and off-highway diesel engines requiring unsurpassed protection
- ▶ Construction and agricultural equipment operating under demanding conditions
- ▶ Stationary diesel engines, such as irrigation and standby generators

### Industry Specifications

Superlube TMS SAE 15W-40 and SAE 10W-30 are designed to meet or exceed the following API Service Categories: CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4 and CF/SM.

Superlube TMS SAE 15W-40 and SAE 10W-30 also meet and/or exceed numerous industry specifications and engine manufacturers' requirements, including: Cummins 20081, 20071, 20072\*, 20076\*, 20077\*, 20078, Caterpillar ECF-3/1, Detroit Diesel 93K218/15/14, 7SE270, Mack EO-O Premium Plus, EO-N Premium Plus, EO-M, Volvo VDS-4/3/2 Mercedes Benz 228.3\*, Global DHD-1\*, ACEA E7-08\*, ACEA E9-08\*, JASO DH-2, MIL-L-2104E/F, Allison C-4/3\*.

\*SAE 15W-40 Viscosity Grade

### Superlube TMS Typical Properties

SAE Viscosity Grade	15W-40	10W-30
Viscosity, cSt @ 100°C	15.3	11.7
Viscosity, cSt @ 40°C	119.8	77.6
Viscosity Index	135	144
API Gravity	30.2	31.4
Pour Point, °C (°F)	-34 (-29)	-41 (-42)
MRV-TP1, Viscosity, cP @ °C	26,000 @ -25	22,000 @ -30
CCS Viscosity, cP @ °C	6,300 @ -20	6,200 @ -25
Sulfated Ash, % wt.	0.99	0.99
TBN (D2896)	10	10

### LubeScan™ Used Oil Analysis

LubeScan is a comprehensive used oil analysis program designed to identify and troubleshoot potential engine problems before costly repairs are needed.

#### LubeScan:

- Aids in diagnosing the condition of oil lubricated equipment
- Helps indicate excess contamination
- Assists in determining optimum drain intervals
- Increases potential resale value of tested equipment

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