



LUBRICANTS

## Ramar® Diesel XDO

Phillips 66® Ramar Diesel XDO is a high-quality, zinc-free, heavy-duty diesel engine oil designed for use in all 2-stroke cycle and 4-stroke cycle railroad locomotive diesel engines. It also is recommended for use in railroad-type diesel engines used in marine service or in stationary service for power generation. It is formulated with a new technology, reduced ash (9 TBN) additive package that is particularly recommended for use in modern EMD and GE power units running on low or ultra-low sulfur diesel fuel.

Ramar Diesel XDO is formulated with an advanced additive technology that provides improved oxidative stability, soot dispersancy and wear protection for use in the newer, low exhaust emissions, low oil consumption railroad diesel engines. It has excellent oxidation resistance, high dispersancy and improved TBN retention to protect against deposit formation and help maintain engine cleanliness, even in extended drain or severe service intervals. It provides excellent wear protection and is non-corrosive to yellow metals. The additive package is zinc-free to protect silver bearings and bushings found in older EMD diesel engines, and is non-chlorinated to permit easier recycling or disposal of used oil.

Ramar Diesel XDO meets or exceeds the performance requirements of the LMOA Generation 5 and GE Generation 4 Long Life railroad diesel engine oil standards. The low-SAPS formulation is designed for use in diesel engines operating on low or ultra-low sulfur diesel fuel, and also is compatible with the future exhaust aftertreatment technologies under development for use in these engines.

### Applications

- All 2-stroke cycle and 4-stroke cycle railroad locomotive diesel engines, including newer, low exhaust emissions power units
- Railroad-type diesel engines used in marine service
- Railroad-type diesel engines used in stationary service for power generation or offshore drilling equipment

Ramar Diesel XDO is recommended for use in locomotive diesel engines manufactured by:

- ALCO Engine Division of White Industrial Power, Inc.
- Baldwin-Lima-Hamilton
- Cleveland Engine Division of General Motors
- Electro-Motive Diesel (EMD)
- Fairbanks Morse
- General Electric Company

**Railroad  
Locomotive &  
Marine Diesel  
Engine Oil**

KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY. 



## Features/Benefits

- New technology, reduced ash (9 TBN) additive package for modern railroad locomotive diesel engines
- High dispersancy-detergency to protect against sludge and varnish formation
- Improved TBN retention for extra protection in longer or more severe service intervals
- Helps keep engines clean and extend oil filter life
- Minimizes port blocking in 2-stroke cycle engines
- Protects against rust and corrosion
- Non-corrosive to silver engine components in older EMD engines
- Non-chlorinated additive system for easier recycling or disposal of used oil
- Low-SAPS formulation for compatibility with future exhaust aftertreatment technologies

## Ramar® Diesel XDO

Typical Properties	
<b>SAE Grade</b>	<b>40</b>
Specific Gravity @ 60°F	0.888
Density, lbs/gal @ 60°F	7.39
Color, ASTM D1500	7.5
Flash Point (COC), °C (°F)	270 (518)
Pour Point, °C (°F)	-27 (-17)
Viscosity, Kinematic	
cSt @ 40°C	158
cSt @ 100°C	15.4
Viscosity Index	98
Sulfated Ash, ASTM D874, wt %	1.0
Total Base Number (TBN), ASTM D2896	9
Zinc, wt %	<0.001

## 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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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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