



TEC-GUARD

DEFEND

RAILROAD & MARINE ENGINE OIL 10

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Tec-Guard Defend Railroad & Marine Engine oil is a superior, Low Ash Heavy Duty engine oil formulated to address the emerging fuel and emission standards coming to large, medium speed locomotive, marine vessels, and electric-powered generators. It is designed for Progress Rail (formerly EMD) and GE Tier 4 engines used in a wide range of railroad, inland marine, mining and stationary engine applications. **Tec-Guard Defend Railroad & Marine Engine oil** is suitable for use where LOMA Gen 7 and GE Tier 4 is required.

Tec-Guard Defend Railroad & Marine Engine oil contains a Silver allow compatible thermally stable ashless additive package with an extremely shear-stable viscosity improver to protect under conditions of extreme heat in today's smaller engines which create more heat and pressure than previous generation. The ashless formulation is designed with no zinc nor chlorine to meet stringent government regulations. This also allows for use with alternate fuels such as distillates and asphaltene. The protection afforded by this unique additive technology allows **Tec-Guard Defend Railroad & Marine Engine oil** to provide protection beyond that of a normal SAE 40 grade lubricant by controlling film thickness on critical engine parts such as Top Ring pistons.

The combination of premium synthetic and highly refined mineral base oils eliminate wax formation allowing the engine to reduce emissions and oil consumption. These heavy weight base stocks also drastically reduce volatility in high-temperature areas of the engine leaving thicker layers of the protective films which reduce wear and improve fuel economy. Reduced volatility also reduces soot and other deposits that collect to retard and place stress on internal engine components.

Features

- **Improved anti-wear protection:** maintains film thickness under severe operating conditions for maximum engine performance
- **Advanced dispersant technology:** higher soot loading capability, addresses issues with lower oil consumption and longer oil sump residence time
- **Optimized TBN level and retention:** supports extended drains, formulated and OEM approved use with ultra low sulfur diesel fuel, reduced sulfated ash, enhanced particulate emission control (TBN can be optimized to customer's specific application)
- **Improved thermal and oxidative stability:** excellent engine cleanliness and sludge control, superior oil viscosity control, minimize oil degradation, effectively addresses increased locomotive utilization rates and power generation
- **Outstanding extreme temperature performance:** wide operating temperature range allows for quick start-up

Recommendations & Specifications

Recommended for use in medium speed, high output turbocharged late model distillate fueled engines such as EMD, GE, and Caterpillar, both two and four stroke, for use in:

- Military patrol vessels, high speed ferry/passenger vessels, racing boats and luxury yachts
- Life and rescue boat engines, emergency generators, auxiliary engines
- Marine gearing applications where FZG Level 12 is required
- Fully compatible with conventional mineral oils and mineral oil systems
- Can be used in confidence in engines containing silver bearing components due to non-zinc formulation
- Generation 7 engines

Note: Tec-Guard makes no warranty or representation either expressed or implied, including warranty of merchantability or fitness concerning this product except that it conforms to the chemical description on the label. All risks resulting from the use of this product are to be borne by the buyer at its sole expense. Neither Tec-Guard nor the seller shall be responsible in any manner for any personal injury or property damage, or other type of loss resulting from the handling, storage, or use of this product

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Property	Test Method ASTM-D	SAE 40	20W-40
Zinc, ppm	6481	<10	<10
Flash Point °C/°F	92	216/420	216/420
Pour Point °C/°F	97	-12/12	-22/-7
Low Temp Viscosity cP @-15		N/A	4815
Viscosity cSt @ 100°C	445	13.5	15.2
VI	2270	125	140
Color	1500	7	7
TBN	2896	10	10
Ash	874	<1.0	<1.0

Typical test data are average values only.

Minor variations which do not affect product performance are to be expected during normal manufacturing.

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