



**Product Data Sheet:**

# RAILROAD ENGINE OIL 413

**Product Description:**

**RAILROAD ENGINE OIL 413** is a zinc- and chlorine free diesel engine oil specially designed to provide engine cleanliness in modern railroad diesel locomotive engines and is formulated with an additive package that meets the requirements of newer diesel locomotive engines of General Electric (GE) and Electro-Motive Division (EMD) of General Motors. Today's locomotive diesel engines consumes less oil and operates at higher temperatures, thus the good TBN retention property of **RAILROAD ENGINE OIL 413** facilitates extended drain intervals.

**RAILROAD ENGINE OIL 413** has very good detergency/dispersancy qualities that provides excellent engine cleanliness, especially engine top decks. The zinc-free formulation protects silver bearings against corrosion and the non-chlorinated additive package helps in reducing used oil disposal costs.

**RAILROAD ENGINE OIL 413** is recommended for railroad diesel locomotive engines specifying LMOA Generation 5 quality oils & for medium speed two-cycle and four-cycle railroad engines, including newer diesel locomotive engines of GE and EMD of General Motors. **RAILROAD ENGINE OIL 413** is also suited for marine and stationary engines for power generation or off-shore drilling requiring zinc-free oils and for Detroit Diesel 149 series engines operating under severe conditions and stationary engines requiring API CF and CF-2 quality oils.

**Avoid mixing with zinc-containing oils!!!**

**Specifications:**

**Exceeds:** API CF / CF-2 , Locomotive Maintenance Officers Association (LMOA) Generation 5 General Electric (GE): Generation 4 Long Life. **Approved by:** Electro-Motive Diesel, Inc (EMD)

Property:	Test Method:	Typical Values:
SAE Viscosity Grade	SAE J300	40
Density @ 15°C	ASTM D4052	899 kg/m <sup>3</sup>
Kinematic Viscosity @ 40°C	ASTM D7042	154 mm <sup>2</sup> /s
Kinematic Viscosity @ 100°C	ASTM D7042	15.6 mm <sup>2</sup> /s
Viscosity Index	ASTM D2270	98
Flash Point	ASTM D92	>220°C
Pour Point	ASTM D97	<-30°C
Total Base Number	ASTM D2896	13 mgKOH/g
Sulphated Ash	ASTM D874	1.5 wt %