

# Product Information



## Full Torque™ Diesel Fuel Improver (2411 & 2421)

### Road-Tested Supplement Contains Cetane Booster For Increased Power & Year-Round Performance

Field-tested for several months on the ice roads of Alaska, LE's Full Torque™ Diesel Fuel Improver has proven to be a valuable weapon for long haul diesel engine operators fighting to keep their trucks on the road despite harsh environments. Full Torque is a cetane-boosted, detergent-containing formulation that increases power, improves fuel economy, reduces emissions, and provides smoother performance year-round in diesel engines. It is available in winter (W) and summer (S) versions.



Full Torque's cetane booster increases a fuel's cetane number up to three numbers, resulting in faster ignition time, more power, easier starts and less smoke at startup. This hard-working diesel supplement is also loaded with special detergents that keep injector systems clean and working at maximum performance, as well as ingredients that protect against wear, water and corrosion. Full Torque has been formulated to work with today's biofuels, ultra low sulfur diesel (ULSD) fuels, and renewable diesel fuels.

### Beneficial Qualities

#### Engine Performance

- Decreases ignition time and minimizes smoke at startup
- Decreases fuel pump and injector wear with improved lubricity
- Protects fuel system against rust and corrosion
- Enhances performance of fuel injectors, including high-pressure common rail systems
  - ◊ Cleans clogged injectors to restore engine to like-new performance
  - ◊ With consistent use, maintains cleanliness of injectors
- Restores lost fuel economy
- Increases power
- Decreases noise

#### Fuel Storage

- Defends fuel (including biodiesel) against breakdown and degradation, thus extending fuel storage life
- Reduces effects of water contamination
- Protects tanks and fuel lines against corrosion

#### Environmental Friendliness

- Reduces particulate emissions
- Eliminates fuel-related smoke
- Increases fuel economy
- Registered by U.S. EPA

#### Cold Weather Performance (2411)

- Provides easier cold startups
- Prevents fuel gelling by controlling wax formation
- Lowers pour point and cold filter plugging point
- Decreases cold flow temp
- Inhibits ice formation

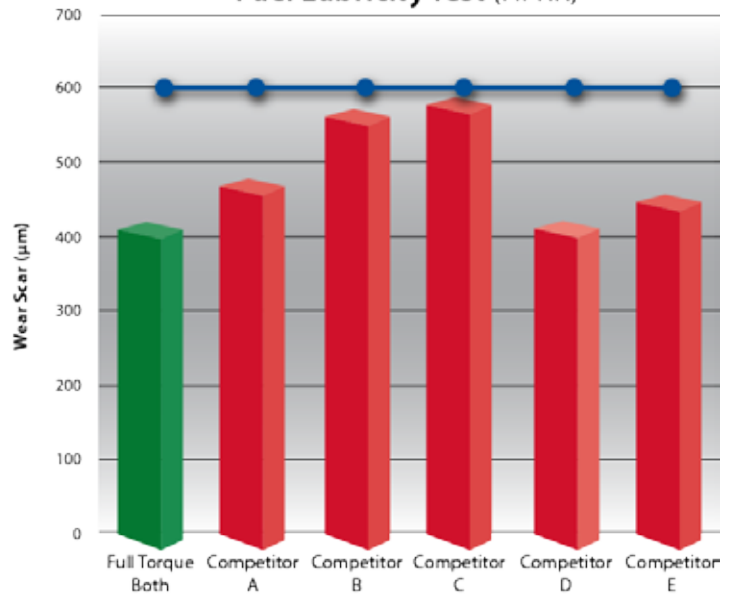
#### Available Versions

- **Full Torque™ W Diesel Fuel Improver (2411)** is recommended for use when temperatures are at or below 35°F (1.7°C).
- **Full Torque™ S Diesel Fuel Improver (2421)** delivers year-round performance.





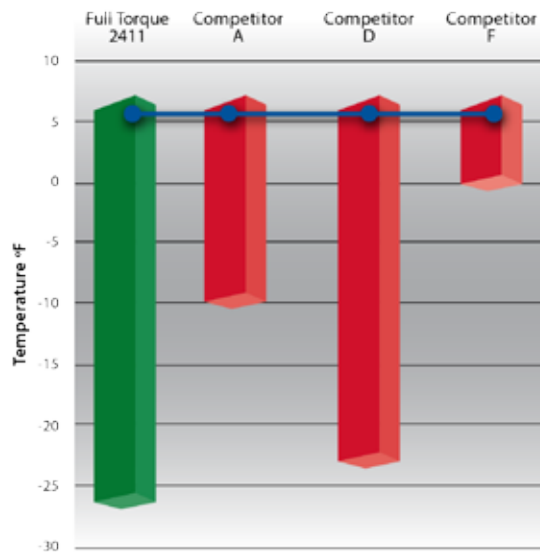
### Fuel Lubricity Test (HFRR)



#### —●— Untreated ULSD

ASTM D6079 & D7688: Evaluating Lubricity of Diesel Fuels by High-Frequency Reciprocating Rig  
Indicates measurement of wear scar in microns. Better fuel lubricity means less wear.

### Cold Filter Plugging Point Test (CFPP)

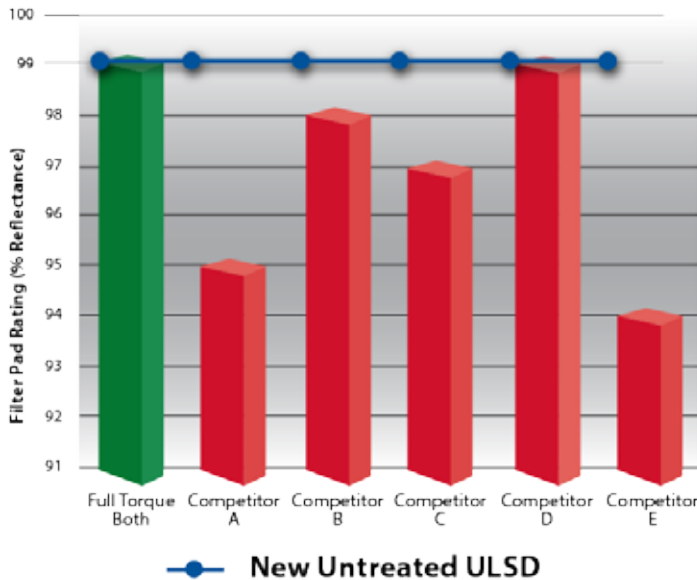


#### —●— 6 degree CFPP of untreated ULSD sample each product was tested in

ASTM D6371: Cold Filter Plugging Point of Diesel and Heating Fuels  
Full Torque performed better than three competitive fuel improvers (only winter versions were tested). This test shows a fuel improver's ability to help fuel maintain flow from tank to engine as temperatures decrease.

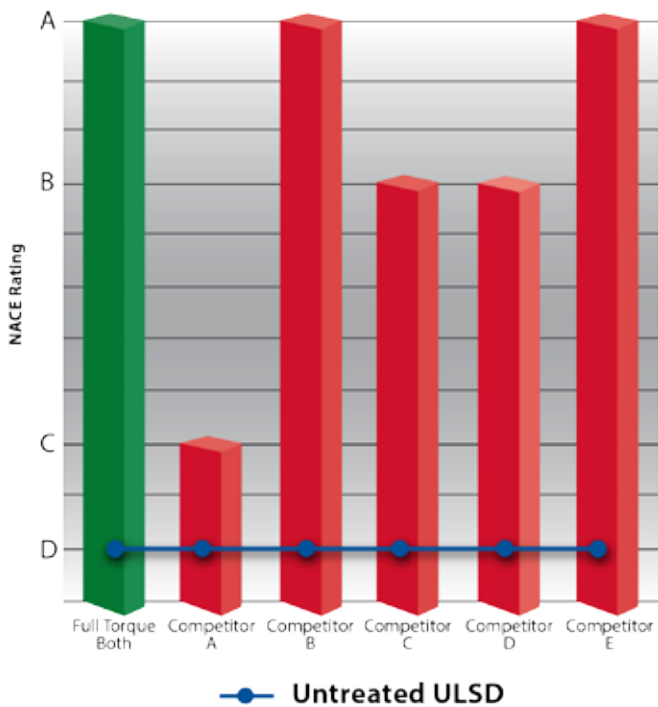


### Fuel Stability Test



ASTM D6468: High Temperature Stability of Middle Distillate Fuels  
 Filter pad rating indicates light reflectance from the filter; the lower the number, the worse the performance (indicating more deposits on the filter).

### Rust Preventative Test



NACE International was founded as National Association of Corrosion Engineers in 1943. The ratings are like grades, with "A" being the best and "D" the worst.

### Fuel Injectors



Dirty



Clean

LE's Full Torque Diesel Fuel Improver keeps fuel injectors clean for optimum atomization of the fuel. As seen in the above images, the clean injectors have an optimized spray pattern, meaning the fuel is spread out in the combustion chamber as evenly as possible to get an efficient burn, providing the engine with full power. With dirty – or clogged – injectors, the incomplete combustion means decreased power, reduced fuel economy and increased emissions.





## Full Torque™ Diesel Fuel Improver



	2411 "W"	2421 "S"
<b>Color</b>	Amber	Amber
<b>Relative Density @ 60°F/60°F, ASTM D1298</b>	0.927	0.904
<b>Flash Point °C (°F), (TCC), ASTM D56</b>	63 (145)	63 (145)
<b>Pour Point °C (°F), ASTM D97</b>	-27 (-17)*	-52 (-61)

\*It is correct for the pour point of the winter product to be higher than that of the summer product. Winterization additive is comprised of high molecular weight polymeric materials that when concentrated in the product have a high pour point. When diluted and dispersed into fuel, however, they disrupt the propagation of diesel fuel wax crystal formation, which in turn decreases the pour point of the diesel fuel.

### Typical Applications

- Diesel passenger cars
- Light duty diesel trucks
- Over the road diesel engines
- Off-road diesel construction equipment
- Stationary diesel engines
- Diesel storage tanks

### Diesel Standards

*Full Torque Diesel Fuel Improver contains no metals or ash-forming components, as desired by the Truck & Engine Manufacturers Association. When added to fuels that meet or exceed the following ASTM standards, Full Torque will do no harm.*

- ASTM D975
- ASTM D7467

### Treat Rates

Each Bottle 15 fluid oz (0.444 L)	Each Quart Bottle 32 fluid oz (0.946 L)	Each 5 Gallon Pail (18.9 L)	Each 55 Gallon Drum (208.2 L)
Treats Diesel Fuel ▶ 47 gallons 178 liters	Treats Diesel Fuel ▶ 100 gallons 380 liters	Treats Diesel Fuel ▶ 2,000 gallons 7,570 liters	Treats Diesel Fuel ▶ 22,000 gallons 83,280 liters
Treat Ratio ▶ 1:400	Treat Ratio ▶ 1:400	Treat Ratio ▶ 1:400	Treat Ratio ▶ 1:400
Fuel Savings ▶ Estimated 3.6%	Fuel Savings ▶ Estimated 3.6%		
Saves Fuel ▶ Estimated 1.7 gallons 6.4 liters	Saves Fuel ▶ Estimated 3.6 gallons 13.6 liters		
Sized for: Light Duty Diesel Trucks, Boats & Generators	Sized for: Over the Road Diesel Trucks & Bulk Fuel Storage Tanks	Sized for: Bulk Fuel Storage Tanks	Sized for: Bulk Fuel Storage Tanks
<i>Note: Same treat rate for rapid cleanup</i>	<i>Note: Same treat rate for rapid cleanup</i>	<i>Note: Same treat rate for rapid cleanup</i>	<i>Note: Same treat rate for rapid cleanup</i>

Full Torque™ is a trademark of Lubrication Engineers, Inc.

LI50092 2-15, rev. 2-17