

Mandatory Usage of Ultra Low Sulfur Diesel (ULSD) Fuel in US07 Emission Compliant Engines

M-200-003

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Valid for

All Mack models

Case description

U.S. Environmental Protection Agency (EPA) standards for 2007 require a major reduction in the sulfur content of diesel fuel, from 500 ppm (the standard implemented in 1993) to the new standard of 15 ppm. At the same time, the maximum allowable emission levels from diesel-powered vehicles has been reduced. To meet the EPA standards, the petroleum industry has phased in ULSD fuels during the June 2006 through mid-October 2006 time frame.

Note: Does not apply to Mack Trucks Australia.

Although ULSD fuel is now the dominant highway diesel fuel produced by fuel refiners, EPA regulations do not require fuel service stations to sell ULSD fuels. It is therefore up to the vehicle operator to ensure that ULSD fuel is being used in a vehicle equipped with a 2007 emission-compliant engine. To assist consumers, Federal regulations require that fuel pumps be labeled to identify the type of fuel being dispensed, and that labels be affixed to the vehicle fuel tank and dashboard stating that ULSD fuel is required. (Note that fuel pump labels are not required in California where the only diesel fuel available is ULSD.) During the phase-in period of ULSD, fleets who refuel vehicles at their terminals should take steps to ensure that ULSD fuel delivered to their storage tanks does not become contaminated by low-sulfur fuel (500 ppm) that may remain in the tanks. Additionally, fuel should be tested periodically to ensure it meets 15 ppm maximum sulfur content.

Vehicles equipped with US07 emission-compliant engines utilize an exhaust aftertreatment system having a Diesel Particulate Filter (DPF), some of which use a Diesel Oxidation Catalyst (DOC) to oxidize exhaust soot. If non-ULSD fuel is used in these vehicles, the DPF system will be damaged significantly, resulting in severe engine derate to the point where the engine will not run at all.

To avoid fuel gelling and other problems that can be experienced during cold-weather operations, blending of No. 1 ULSD (kerosene) and No. 2 ULSD fuels is approved by Mack Trucks, Inc. It must be verified, however, that the No. 1 fuel being used for blending meets the 15 ppm ULSD specification. The chart below shows the mixing proportions for No. 1 ULSD and No. 2 ULSD for various ambient temperatures.

Ambient Temperature	No. 2 ULSD Fuel	No. 1 ULSD
Above 0°C (32°F)	100%	0%
0°C to -10°C (32°F to 14°F)	90%	10%
-10°C to -20°C (14°F to -4°F)	70%	30%
Below -20°C (-4°F)	50%	50%

Usage of any fuel additives (except those added by the fuel supplier) is NOT approved by Mack Trucks, and adding oil to diesel fuel is NOT allowable. Use of such additives, or adding oil to the fuel, can increase the sulfur content and can result in major damage to the DPF system.

Along with the use of ULSD fuels, 2007 emission-compliant diesel engines require the use of engine oil meeting the MACK EO-O Premium Plus Diesel Engine oil (or VDS-4) specification as described in service bulletin SB210041. Use of engine oils not meeting the EO-O (or VDS-4) specification may result in more frequent cleaning intervals to remove ash from the DPF. As with the EO-O Premium Plus (or VDS-4) diesel engine oil, it is permissible to use ULSD fuel in all MACK diesel engines regardless of vintage (2004 emission-compliant MP7, ASET™, E-Tech™, E7, E6, etc.).

Use of diesel fuels other than ULSD in 2007 and later emission-certified engines is illegal and punishable by significant civil penalties. Failure of a DPF system, which is attributable to the use of the incorrect fuel (described as non-ULSD fuel, fuel blended with non-ULSD fuel, fuel with sulfur containing additives or fuel with oil added) is a non-warrantable failure, and will void the manufacturer's warranties.

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