** SOLUTION **

Title	Mack Chassis - Oil Diluted With Fuel; Fuel In Oil, Diagnostic Information - All Emissions Prior To US17+OBD16 (Common Rail Fuel System), Model Year 2017 And Older

Mack Models

Mack Model	LEU , LR , MRU - TerraPro , TE - TerraPro , CHU - Pinnacle, Axle back , CXU - Pinnacle, Axle front , GR - Granite , GU - Granite , PI - Pinnacle , TD - Titan

Emission Standard

Emission Standard	US07 , US10 , US10+OBD13 , US14 , US14+OBD15 , US14+OBD16

Engine family

Engine family	MP7 , MP8 , MP10

** SOLUTION **

Cause

In cases where engine oil is found to be diluted with fuel, it is necessary to confirm that the contaminant is fuel, and is the only contaminant present. An oil analysis will confirm the contaminants and in turn determine the route of remaining diagnosis and repair.

Solution

For any vehicle with symptoms of oil contamination or dilution, including oil level above full (overfilled, making oil), low oil pressure codes, odors, etc.:

A. Oil analysis should be requested before proceeding with any repair. There are two types of analysis:

- GC (Gas Chromatograph) ASTM D3524 is the recommended method.
- FTIR (Fourier Transform Infrared Spectroscopy) is **not** an accurate method for fuel dilution measurements.

B. The following information should be included on the analysis sheet and considered as possible contributing factors when reviewing the report:

- Mileage
- Engine hours
- Mileage/hours since last oil service
- Oil manufacturer
- Oil product name/code
- Oil viscosity (weight)
- Oil grade

C. If the above data indicates a high percentage of fuel dilution and the oil life does not exceed recommended service intervals, perform the following dye test:

1. Put dye in the fuel filter on the engine.
2. Pressurize/prime the system with the hand pump
3. Remove the valve cover
4. Ensure there is shielding in place to prevent oil sling from the geartrain.
5. Run the engine for no longer than 10-15 seconds.
4. Inspect the following areas with a black light during and after operation:

- Injector plunger, solenoid, and side body
- Fuel gallery plugs at the front and back of the cylinder head

NOTE: A small amount of fuel observed around the injector plungers is normal.

D. Repair as needed.

E. Resecure the valve cover and run the truck for a short period of time. Check to see if oil level has increased.

NA_Sister solutions	K22396588
Solution visibility	Dealer distribution

Function(s)/component(s) affected

Function affected	Engine , fuel system , engine lubrication

Function Group

Function Group	22 lubricating and oil system , 23 fuel system, excluding gas propulsion

Customer effect

Main customer effect	fluid , diagnostics/methodology , efficiency/abnormal behavior
Fluid problem	dilution , consumption , contamination , level incorrect
Fluid implicated	Oil , Fuel
Fluid pressure	low pressure

Conditions

Vehicle operating mode	when driving , when stationary
Frequency of occurrence of problem	random

Administration

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