

SUBJECT: Diesel Exhaust Fluid Discussion

September 4, 2012

Diesel Exhaust Fluid (DEF) is an aqueous solution of high grade Urea in a 32.5% concentration, diluted in 67.5% de-ionized water conforming to ISO 22241 standards. DEF is injected into the exhaust system to aid in the reduction of NOx emissions. The US Council for Automotive Research (USCAR) has mandated a standard design and size for the filler cap and neck on the DEF system. The DEF tank utilizes a 19mm filler neck as opposed to the 22mm neck on a diesel tank. This makes it very difficult to inadvertently put fuel in the DEF system, but accidental introduction of DEF into the fuel system is still a possibility. Caps are color coded blue to further differentiate from the fuel cap.



DEF's effects on the fuel supply system are common to that of water. Having DEF enter the fuel system can lead to high pressure fuel pump and injector wear, rust, corrosion, pitting, distortion of materials, plugged fuel return lines and may exhibit the following symptoms;

- No start
- Engine knocking
- Hard start
- Poor driveability
- Rough running
- Exhaust smoke
- Reduced power
- Fuel rail pressure slow to build

If DEF is added to the diesel fuel tank, do not turn the ignition key to run or start. Turning the key will distribute the DEF solution throughout the fuel system.

In the event DEF is introduced to the fuel system, use the following procedure;

- Drain and clean fuel from tank, removing tank if necessary. (dispose of all contaminated fuel in full accordance to local laws and regulations)
- Fill fuel tank with fresh clean fuel.
- Drain and clean fuel filter housings of all liquids
- Perform fuel system flush
- Replace Fuel Filters
- Operate vehicle, check for driveability issues

In the event the truck still exhibits symptoms of contamination, the following components should be inspected;

- High pressure fuel pump
- Fuel lines
- Fuel rails
- Injectors
- Return lines
- Fuel pressure switches

In the event fluid other than DEF is added to the system, a DEF warning light may illuminate on the dash alerting the operator of an issue. If the DEF system is not serviced in an appropriate time, the vehicle may enter into derate or shutdown mode.



The following procedure should be performed if improper fluid is detected in the system;

- Remove DEF tank assembly
- Drain and clean tank assembly, (dispose of all fluids in full accordance to local laws and regulations)
- Reinstall tank assembly
- Fill with appropriate DEF