



No.: 14 TS- 13REV
May 20, 2014

TO: Service Locations

FROM: Service Systems Development

SUBJECT: **EPA10/GHG14 Diesel Exhaust Fluid (DEF) in Fuel System/Diesel Fuel in DEF System Contamination**

ISSUE

Major fuel system damage can occur when DEF is introduced into the fuel system. A no-start condition, engine overspeed, or engine ran backwards complaints can all be caused by DEF in the fuel system.

Likewise, DEF system damage can occur when diesel fuel is introduced into the DEF system. DEF quality fault codes (SPN 3364) and NOx conversion fault codes (SPN 4364) can be caused by diesel fuel in the DEF system.

CAUSE

DEF in the fuel system is caused by accidentally adding DEF to the fuel tank. DEF is about 70% water and is non-combustible. The high water content in DEF can cause corrosion and major fuel system and fuel injector damage.

Diesel fuel in the DEF system is caused by accidentally adding diesel fuel to the DEF tank. The hydrocarbons in the diesel fuel can cause seal failure in the various components of the DEF system.

Possible Symptoms for DEF in the Fuel System:

- Rust deposits
- Crystallization on fuel filters and fuel module
- Strong ammonia smell from fuel filters and fuel module
- Higher separation in fuel sample

REQUIRED ACTION

1. Refer to the Contaminated Fluids section of the *EPA07/10/GHG14 DD Platform Electronics & Troubleshooting Manual (DDC-SVC-MAN-0084)*, located in Power Service Literature (PSL), to diagnose a Diesel Exhaust Fluid in Fuel concern.

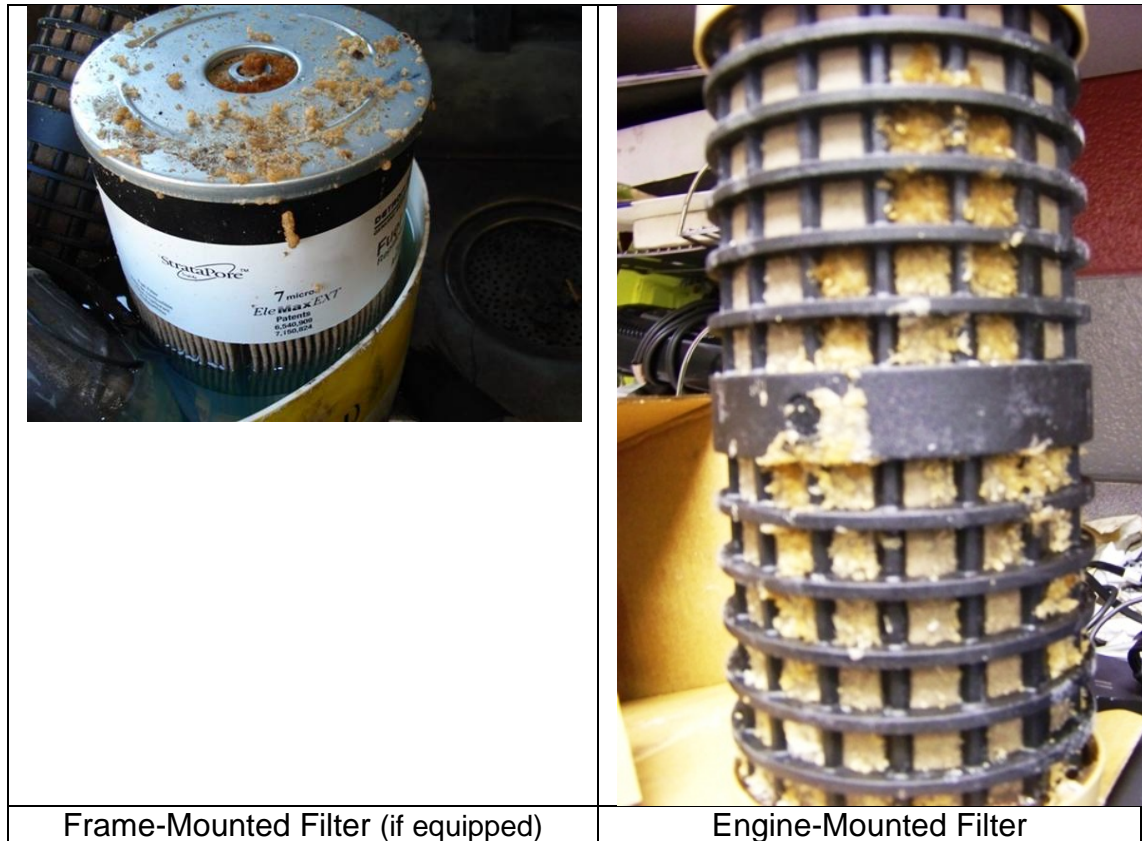
EXAMPLES OF FUEL COMPONENTS CONTAMINATED WITH DEF**Figure 1 – Examples of Fuel Filters Contaminated with DEF**



Figure 2 – Examples of Fuel Filter Modules Contaminated with DEF

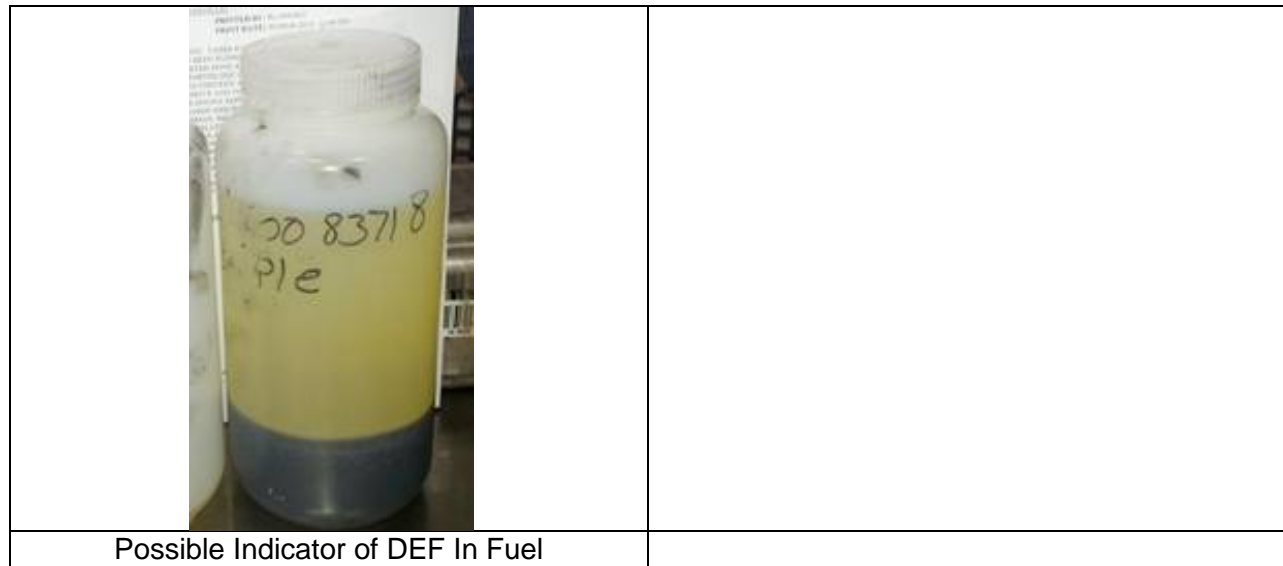


Figure 3 – Fuel Samples

ADDITIONAL INFORMATION

Fuel samples pulled from fuel tanks have proven to be ineffective in determining DEF in fuel related failures. DEF and diesel fuel do not mix. Because DEF is heavier than fuel, the DEF is pulled into the engine when it is running. The water separator/coalescer system in the fuel filter module is designed to handle a normal amount of water accumulation in diesel fuel, mainly from condensation and fuel handling. When DEF is added to the fuel tanks, this is usually a larger quantity (2.5 gal +). Because this liquid would be drawn into the fuel filter module at one time, the water separator/coalescer cannot effectively separate the DEF from the fuel at this rate. A small amount of DEF will then be trapped in the fuel filter module and some will pass through to the fuel system potentially causing damage. It is possible to have a "DEF in fuel" failure and find no evidence of DEF in the fuel tank(s). It is also possible for fuel pulled from tanks to show no DEF in a Fuel Analysis. If fuel tank samples are taken, they must be taken from the bottom of the fuel tank by using the bottom drain (if equipped) or suitable siphon equipment that can reach the bottom of the tank.

REQUIRED MATERIAL

For DEF in the fuel system failure, refer to the Contaminated Fluids section of the *EPA07/10/GHG14 DD Platform Electronics & Troubleshooting Manual (DDC-SVC-MAN-0084)*, located in Power Service Literature (PSL) for a list of parts that must be replaced.

For diesel fuel in the DEF system failure, Table 1 provides a list of parts that must be replaced.

Part Description	Comments
DEF Tank	Chassis OEM Part
DEF Tank Header	Chassis OEM Part
DEF Supply Line From DEF Tank To DEF Pump	Chassis OEM Part
DEF Return Line From DEF Pump To DEF Tank	EPA10 Only, Chassis OEM Part

DEF Line From DEF Pump To DEF Metering Unit	EPA10 Only, Chassis OEM Part
DEF Line From DEF Pump To DEF Dosing Unit	GHG14 Only, Chassis OEM Part
DEF Return Line From DEF Dosing Unit To DEF Tank	GHG14 Only, Chassis OEM Part
DEF Pump	Detroit Diesel Part
DEF Metering Unit	EPA10 Only, Detroit Diesel Part
Aerosol Line From DEF Metering Unit To DEF Nozzle	EPA10 Only, Detroit Diesel Part
DEF Dosing Unit	GHG14 Only, Detroit Diesel Part

Table 1 – Parts to be Replaced for Diesel Fuel in the DEF System

REPAIR PROCEDURE

If DEF is found in the fuel, follow the proper repair procedures listed in the Contaminated Fluids section of the *EPA07/10/GHG14 DD Platform Electronics & Troubleshooting Manual (DDC-SVC-MAN-0084)*, located in Power Service Literature (PSL). All OEM fuel lines must be cleaned or replaced if found to be corroded or damaged. Fuel tanks must be drained of the contaminated fuel, and the fuel disposed per Federal, State, and local rules.

If fuel is found in the DEF system, follow the proper repair procedures listed in the *EPA07/10/GHG14 Exhaust – EGR - ATS Manual (DDC-SVC-MAN-0083)*, located in Power Service Literature (PSL).

CLAIM PROCESS

DEF in the fuel system or fuel in the DEF system are not warrantable failures. Any failures that occur to fuel system components as a result of DEF in the fuel system will not be covered under warranty or extended coverage (if any).

CONTACT INFORMATION

Please contact the Detroit™ Customer Support Center at 800-445-1980 or email csc@daimler.com if you have any questions.