

## Diesel Exhaust Fluid

aka

# DEF

Everything you wanted to know  
about DEF, but were afraid to ask.

Glenn Boyette  
Mississippi Department of Revenue  
Deputy Office Director; Business Taxes

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### WHAT DEF IS & ISN'T?

- ▶ Diesel Exhaust Fluid (DEF) is **NOT** a fuel additive and it is **NOT** put into the fuel tank of the vehicle.
- ▶ DEF is not subject to fuel tax in any jurisdiction as it is not used to propel the vehicle and is not added to any fuel.


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### WHY USE DEF?

- ▶ In 2010, new diesel trucks had to start meeting lower emission levels (maximum 2 grams per brake HP). The manufacturers of new diesel cars and trucks started using a Selective Catalytic Reduction system (SCR). All manufacturers except Navistar have begun using the SCR system.


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### HOW DOES DEF WORK?

- ▶ It differs from the standard EGR (exhaust gas recirculation) system as the EGR system re-circulates the exhaust back to the engine's cylinders. A well run DEF system will allow a 5% fuel savings whereas the old EGR system will cost 3-5% more in fuel.



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### IS EVERYONE USING DEF?

- Navistar believes the EGR is still better as you don't have the hassle of the extra tank, the space and weight of the tank/DEF (weighs a little more than 9 LBS per gallon), etc.



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### WHAT IS IT MADE OF?

- ▶ DEF is a mixture of 32.5% Aqueous Urea (ammonia) and 67.5% de-ionized water.
- ▶ The urea is a mixture of synthetic ammonia and carbon dioxide. Urea is also used in making plastics, animal feed, fertilizer and cleaning supplies.



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### DOES IT LOOK & SMELL LIKE FUEL?

▶ DEF is non flammable and non hazardous. It smells like ammonia. The vehicle has a separate DEF tank which is distinguished by a unique blue colored cap. The opening is 19mm to prevent a standard 22mm diesel pump nozzle from going in. You can not add DEF to diesel or diesel to DEF.



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### DOES DEF FREEZE?

▶ DEF will freeze at about -11 degrees centigrade but will thaw and will not be affected. A DEF tank on a truck has a small heater coil in the bottom so it melts a small quantity right away when starting out on a cold morning.



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### HOW IS DEF PLACED INTO A TANK?

- The DEF is "sprayed" into the exhaust system (not the diesel fuel). It is sprayed at a rate of about 2%, although the ratio can go to 5%.
- When sprayed into the exhaust system it will break the nitrogen oxides down into nitrogen and water, reducing the NOX emissions.



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### WHERE & HOW IS IT BOUGHT?

- USA requires every truck stop to sell.
- Also sold at fuel suppliers and parts houses.
- Comes in bulk, totes and 2.5 gallon jugs
- A unit can run about 300 miles per gallon of DEF.



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### HOW BIG IS THE TANK?

- ▶ Capacity of a DEF tank on a truck is 6-30 gallons.
- ▶ If you run out of DEF, you will notice poor performance of the engine and eventually the truck will not start.



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### WHERE IS A DEF TANK LOCATED?



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WHAT DOES A DEF TANK LOOK LIKE?



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QUESTIONS?



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