



DIESEL EXHAUST FLUID

EZ DEF is a mixture of 32.5% high purity synthetic urea and 67.5% water that is used in Selective Catalytic Reduction (SCR) systems in diesel engines. DEF is the primary ingredient used to help convert NOx to harmless nitrogen and water. EZ DEF is stable, colorless, non-flammable, non-toxic and is classified as minimum risk for transportation. EZ DEF conforms to the ISO-22241-1 specification for DEF, is API registered and meets or exceeds OEM specifications.

Equipment Needs

With the implementation of new EPA requirements, 2010 brought significant changes in the on-road diesel engine vehicle. While some vehicles attempted to use high levels of exhaust gas recirculation to reduce NOx emissions, many vehicles began using SCR systems. Diesel exhaust fluid is injected into the exhaust stream just ahead of the SCR catalyst and converts NOx to harmless nitrogen and water. This greatly reduces NOx a significant contributor to greenhouse gases in the air with overall reduction in total diesel emissions reduced by 90%.

Usage Rate

Diesel exhaust fluid usage will depend on the fuel usage, load of the vehicle, and the level of emissions the engine design naturally produces. A usage rate of 1-2% of diesel fuel use is expected. The EPA requirements for diesel exhaust fluid systems in light duty is a minimum of 4,000 miles between fill up of tank. Light duty car manufacturers often target DEF fill up with oil change for diesel pickups about every 5,000 to 7,000 miles. Commercial vehicles and off-road equipment must not use diesel exhaust fluid faster than the fuel capacity of the equipment. An operator should fill the diesel exhaust fluid tank with every fuel stop. What happens if someone doesn't use diesel exhaust fluid? The system will first give warning lights that diesel exhaust fluid tank is low. Next comes a "limp" mode with reduced speed or performance. The final stage is either engine shutdown or very limited operation.

Physical and Chemical Properties

Boiling Point	>100°C
Freezing Point	-11°C
Urea Concentration	32.5%, +/-0.7%
Density/Specific Gravity, at 20°C	1.087-1.093 kg/m3
Refractive Index, at 20°C	1.3814-1.3843
Alkalinity (Ammonia)	0.2%, max
Biuret	0.3%, max
Formaldehyde	Below limits of detection
Insoluble matter	20 ppm, max
Phosphates	0.5 ppm, max
Calcium	0.5 ppm, max
Iron	0.5 ppm, max
Copper	0.2 ppm, max
Zinc	0.2 ppm, max
Chromium	0.2 ppm, max
Nickel	0.2 ppm, max
Aluminium	0.5 ppm, max
Magnesium	0.5 ppm, max
Sodium	0.5 ppm, max
Potassium	0.5 ppm, max
Water Quality	Deminerlized, ISO 3696 applicable



Storage and Handling

All DEF is designed to breakdown at elevated temperatures. Industry standard requirements specify storage between -5° C (23° F) to 30° C (86° F) for maximum shelf life. The box housing the DEF bottle helps prevent exposure to sunlight and other UV light, also helping to maintain shelf life. DEF is typically made with a shelf life up to 2 years from the time of manufacture. Signs of problems in storage will include crystals forming in containers, pressurization of sealed bottles or loss in volume.



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