



DEF Shelf Life & Fluid Quality

DEF Overview

Diesel Exhaust Fluid (DEF) is a specific composition of urea for application in transportation to reduce the amount of nitrogen oxides (NOx) emitted into the air by diesel engines. DEF is a high purity chemical, comprised of 32.5% urea and 67.5% de-ionized water which is produced to an international standard (ISO 22241).

Since DEF was introduced to the market, questions arised related to the product's shelf life and fluid quality. This document provides guidelines and proper storage levels to maintain the chemical concentrations of Diesel Exhaust Fluid (DEF).

Inventory Storage Levels

For maximum Diesel Exhaust Fluid (DEF) shelf life, store between 68°F (20°C) and 23°F (-5°C).

- Keep DEF out of direct sunlight. If DEF is stored outside it must be kept shaded from the sun. DEF will begin to lose its urea potency if kept in direct sunlight for too long.
- Store DEF below 86°F (30°C) or in the coolest part of the storage facility. If storing DEF below 86 °F (30°C) is not possible, manage the inventory accordingly.
- If DEF will be exposed to average daily temperatures exceeding 95°F (35°C), keep inventory to a minimum. Do not purchase more DEF than will remain in inventory beyond the shelf life shown in the chart if average daily temperatures will continually exceed those shown in the chart below.
- DEF begins to freeze at 12°F (-11°C). Do not store DEF outside or in a facility where the temperature will drop below 23°F (-5°C).
- Shelf life should be based on the period of time passed the date code on the bottle. The date code is formatted as MMDDYY (i.e. 080512 = August 5, 2012).
- Selling DEF beyond its shelf life allows for the possibility of selling the customer product that does not meet the label specifications.

DEF Shelf Life vs. Temperature	
Constant Ambient Storage Temperature	Shelf Life in Months
≤50 °F (10°C)	36
<77 °F (25°C)	18
≤86 °F (30°C)	12
≤95 °F (35°C)	6
<104°F (40°C)	2

Package Sizes

Diesel Exhaust Fluid is packaged in 2.5 Gallon Jugs, 55 Gallon Drums, 330 Gallon Totes, Mini-Bulk and Bulk. All drums and totes come in both open and closed systems. Please see below for images of each package size.

2.5 Gallon Jug **55 Gallon Drum** **330 Gallon Tote** **Mini-Bulk (< 4,000 Gals)** **Bulk (> 4,000 Gals)**



Dispensing Nozzle

- UltraPure DEF jugs includes a nozzle that will allow the operator to add DEF to the tank while minimizing contamination, spilling and over filling.
- Nozzles can be reused but should be properly stored between fillings. Nozzles should be rinsed with clean water before being stored in it's re-sealable plastic bag.
- The DEF nozzle should not be used for other chemicals, like oil, coolant, etc.

Vehicles Containing DEF

DEF already in a vehicle is acceptable for consumption even if the vehicle has been exposed to temperatures above 86°F (30°C).

- DEF in vehicles is susceptible to the same degradation as in containers.
- Selective Catalytic Reduction (SCR) systems are calibrated to function properly with varying urea concentrations. Operating vehicles with a urea concentration less than 32.5% will result in higher dosage rates.
- DEF that has degraded beyond the point for the calibration to compensate will set off a warninh on the instrument panel.
- Draining DEF from the tank due to age is unnecessary unless there is a warning light on the instrument panel; however, it is highly unlikely the warning would be caused by aged DEF.
- DEF freezing in the vehicle tank will not cause any problems. Vehicles are equipped with heaters to thaw frozen DEF when the vehicle is started so the system will function normally.