

How DEF Works



Diesel Exhaust Fluid (DEF) is used in conjunction with SCR technology to reduce harmful pollution from heavy duty diesel vehicles by more than 90% due to the EPA's implementation of the 2010 EPA Diesel Emission Standards.

WHAT IS SCR

Selective Catalytic Reduction (SCR) Technology uses Diesel Exhaust Fluid, a solution comprised of 32.5% urea & 67.5% de-ionized water to reduce NOx emissions to near zero.

SCR is a well established, safe technology that is already used in the denoxing of power plants burning fossil fuels

ADVANTAGES OF SCR

- Better Fuel Economy
- Meets 2010 Vehicle Emission Standards for Diesel Engines
- Improves Engine Lubrication & Filter Life

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.

The below table shows the shelf life of DEF continuously exposed to these temperatures for the entire time period. Cycles where the maximum daily temperature is similar to what is shown below will have longer shelf life than shown. Shelf life for product in inventory should be based on the average daily temperature not the day's maximum temperature.

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