



# TECHNICAL BULLETIN

## *Diesel Exhaust Fluid (DEF)*

The need for the reduction of exhaust emissions is increasing rapidly on a worldwide scale. In the US, Class 7-8 trucks using diesel engines manufactured after January 1, 2010 are required to meet lower Nitrogen Oxide (NO<sub>x</sub>) emissions per the 2010 EPA Tailpipe Standard.



A method commonly being adopted for use to meet this new standard is the Selective Catalytic Reduction (SCR) system. This system is used in combination with a synthetic fluid to reduce NO<sub>x</sub> emissions by converting them into nitrogen (N<sub>2</sub>) and water (H<sub>2</sub>O).

The synthetic fluid used is a 32.5% Aqueous Urea Solution (AUS). Its common name in the US is Diesel Exhaust Fluid (DEF) and in Europe it is referred to as AUS 32. DEF is defined by AUS 32 specifications, and the specifications must meet or exceed the DIN 70070 quality standard, the DIN V 70071 analytical standard, and the ISO 55141-1 standard.

UL has developed a specification with regard to DEF; it is UL 87C – Operated Dispensing Devices for Diesel Exhaust Fluid.

Precision Associates Inc has produced an EPDM rubber compound, number 23747, that will withstand the effects of DEF. It complies with all the static and dynamic material level tests of UL 87C as it relates to gaskets and seals.

Below are the test results for immersion in UL 87C, Supplemental SA Test Fluid.

### Test Results for PAI Compound 23747

#### Immersion

1,000 Hours @ RT in Aggressive DEF\*

Property	UL 87C Criteria	23747
Tensile Strength Change	-40% max	+3.2%
Elongation Change	-40% max	-0.4%
Volume Change	-1% to 40%	-0.1%
Weight Change	-10% max	+0.6%
Compression Set	35% max	18.8%

\***Aggressive DEF:** DEF, Sulfuric Acid, Glacial Acetic Acid and Sodium Chloride. This mixture represents contaminants that could enter the DEF solution making it more aggressive towards rubber materials.

Note: Compound 23747 has been tested and meets the requirements of UL 87C, but it has not been certified by Underwriters Laboratories.



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