

Technical note 1

Diesel fuel additives and Envirox™ fuel efficiency additive

Introduction

Many types of diesel fuel additives are used in the fuel supply industry. They can be segmented into three main application areas:

- Refinery additives
- Security or legally required additives
- Performance additives

The purpose of this note is to summarise these three areas and provide the context for Envirox™ fuel efficiency additive in the performance additives category.

Refinery additives

As their name suggests, these additives are incorporated into the diesel fuel during production at the refinery. The most common of these additive types are:

- Middle distillate flow improvers – used to ensure fuel does not freeze during winter
- Lubricity improvers – used to replace the lubrication lost when low, and ultra low, sulphur diesel fuels are produced.
- Cetane number improvers – used to meet the ignition quality requirement without costly refinery processing.

Security or legally required additives

These additives can be added at any point during the distribution cycle. The most common additives used for these purposes are:

- Dyes – used to colour fuel such as “red” agricultural diesel
- Markers – chemicals which do not colour fuel but which can be extracted and identified using simple laboratory or road-side tests.

 Saves fuel

 Reduces emissions

 Cleans engines

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Performance additives

These additives are typically incorporated into diesel fuel at the distribution terminal but can also be added later, such as at an end user's diesel storage tank or directly into the vehicle fuel tank.

The most common additives in these performance "packages" are:

<i>Antifoam additives</i>	used to prevent excessive fuel foaming
<i>Cetane number improvers</i>	used to improve the ignition quality of the fuel
<i>Corrosion inhibitors</i>	used to eliminate corrosion of fuel storage tanks
<i>Detergent additives</i>	used to keep fuel injectors clean

Envirox™ fuel efficiency additive

Envirox™ is a performance additive which offers significant fuel economy improvements and other important benefits compared to the conventional diesel fuel additives described above.

Envirox™ is a dispersion of nanoparticulate cerium oxide. Unlike conventional additives activity is maintained throughout the combustion process even after the regular additives have decomposed. More power can be extracted from the same amount of fuel, and combustion chamber deposits are removed, a feature which differentiates Envirox™ fuel efficiency additive from its conventional competitors.

Proven to provide fuel consumption improvements in statistically validated field trials at its recommended treat rate of 5-10 ppm of cerium oxide, Envirox™ is compatible with all standard diesel fuel additives and is also available in a performance package formulation, Envirox™ Premium Plus.

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