

Technical note 3

Biodiesel and EnviroxTM fuel efficiency additive

Introduction

European Legislation has set targets for reduced greenhouse gas emissions from transport sources. EU Directive (2003/30/EC) has set targets to replace 5.75% of transport fuels with biofuels by 2010/11. National governments have responded individually to support the introduction of such fuels and biodiesel in the UK biodiesel attracts a fuel duty reduction of 20p per litre.

What is biodiesel?

Biodiesel is a generic term given to material used as a partial or total replacement for fossil derived diesel that has been derived from processing vegetable oils, animal fats and cellulosic materials.

First generation biodiesel is fatty acid methyl ester (FAME), where the oils and fats are converted to fuel-grade biodiesel meeting the European biodiesel specification EN14214. The physical properties of the finished product, usually termed B100, are broadly similar to those of diesel fuel, although some properties such as viscosity, oxidative stability and cold flow characteristics may be significantly different.

The European diesel fuel specification, EN 590, establishes specifications for blends of up to 5% v/v biodiesel (termed B5) in diesel fuel. B5 blends are generally accepted by the automotive industry without the need for engine modifications and without affecting the manufacturer's warranty, although the use of higher levels of biodiesel is not widely accepted.

Problems associated with higher levels of biodiesel, or low quality biodiesel, include seal failures, fuel injector and fuel system blockage or corrosion and it is prudent to avoid them.

 Saves fuel

 Reduces emissions

 Cleans engines



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Why use biodiesel?

Biodiesel has the potential to provide an environmentally sustainable alternative to fossil fuels, and it reduces some vehicle emissions and improves some aspects of fuel quality such as lubricity.

Envirox™ in biodiesel

Envirox™ fuel efficiency additive is a unique dispersion of solid, stable cerium oxide nanoparticles which when dosed into bulk diesel fuel delivers fuel consumption and emissions benefits. These benefits have been demonstrated throughout a range of different automotive diesel fuels including B5. Laboratory studies and field experience have shown that Envirox™ is compatible with biodiesel at levels typically used in commercial diesel fuels (B5). The results of tests on conventional diesel fuel have shown that Envirox™ promotes combustion chamber clean up and fuel economy benefits by remaining stable and active throughout the combustion process. Laboratory tests have also shown that combustion chamber deposits derived from B100 biodiesel are reduced with the use of Envirox™ fuel efficiency additive.