



Improvement of Diesel fuel properties by using additives

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Received 22 January 2001; accepted 25 April 2001

Abstract

In this study, organic compounds of Mn, Mg, Cu and Ca metals were synthesized, and their solutions were used as Diesel fuel additives. The additives that achieved the greatest decrease in freezing point of Diesel fuel, its optimum rate of dosage and other performance effects were tested. The results showed that the organic based manganese gave the greatest decrease in freezing point. This additive reduced the freezing point to 12.4°C at the rate of dosage of 54.2 µmol Mn/l Diesel fuel. It was established that the cetane number of Diesel fuel without the additive was 46.22, whereas the cetane number was 48.24 for Diesel fuel with the optimum amount of dosage. It was observed that the organic based manganese drops the viscosity and flash point and improves the contents of the exhaust gases. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Diesel fuel additive; Cetane number; Diesel index; Freezing point

1. Introduction

The increase in energy needs has directed researchers to investigate new energy resources or to find the optimum way of using them. Therefore, improvement of fuels is an important issue. As is known, one of the commercial and industrial fuels is Diesel fuel, produced by refining crude oil. The content of the Diesel fuel is changed by the production technology and the quality of oil.

Because of being heavier and having more carbon content, Diesel fuels have some problems when being used in an engine. One of the important problems is a high freezing point that causes block age of filters, and hence, there are some difficulties when they are used in cold conditions. In order to reduce the freezing point of Diesel fuel, about 100 ppm paradine is added to it, commonly after refining.

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