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BSI Standards Publication

Liquid petroleum products — Investigation on test method for measurement of the oxidation stability of diesel and diesel/FAME blends by Acid Number after ageing

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National foreword

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Liquid petroleum products - Investigation on test method for measurement of the oxidation stability of diesel and diesel/FAME blends by Acid Number after ageing

Produits pétroliers liquides - Recherche de la détermination de la stabilité à l'oxydation du gazole et des mélanges gazole/EMAG par l'indice d'acide après vieillissement

Flüssige Mineralöl-Erzeugnisse - Bericht über die Bestimmung der Oxidationsstabilität von Diesel und Diesel/FAME-Mischungen durch Bestimmung der Säurezahl nach Verälterung

This Technical Report was approved by CEN on 17 August 2015. It has been drawn up by the Technical Committee CEN/TC 19.

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European foreword

This document (CEN/TR 16885:2015) has been prepared by Technical Committee CEN/TC 19 “Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin”, the secretariat of which is held by NEN.

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1 Scope

This Technical Report describes the investigation into the development of a standard test method to determine oxidation stability of diesel fuel and fatty acid methyl ester (FAME) blends in diesel by the use of determining the acid number after ageing at elevated temperature. It provides conclusions following this work that have been discussed by CEN. The result thereof is that no European Standard has been developed.

2 Context and creation of a dedicated subgroup

In case of poor diesel or biodiesel quality, ageing of the fuel in the fuel system under high pressure and temperature (recirculation of fuel, high injector temperature, long storage in the vehicle fuel tank) may cause various car problems due to the formation of acidity through oxidation (i.e. deposit of sediments, deposit of lacquer, corrosion, lube oil deterioration).

Acidity of the fuel is therefore considered as a relevant parameter to evaluate oxidation stability of the Diesel fuel. Test methods based on the measurement of the acid number (AN) after an ageing step were studied. An ageing test temperature of 115 °C which is significantly higher than the test temperature of 95 °C applied in EN ISO 12205 [1] has been chosen because it better discriminates fuel's oxidation stability. Additionally, it is closer to the temperature range prevailing in fuel systems of current and future engine technologies (i.e. common rail systems).

Customer complaints related to fuel degradation linked to oxidation stability in France are shown in Figure 1.

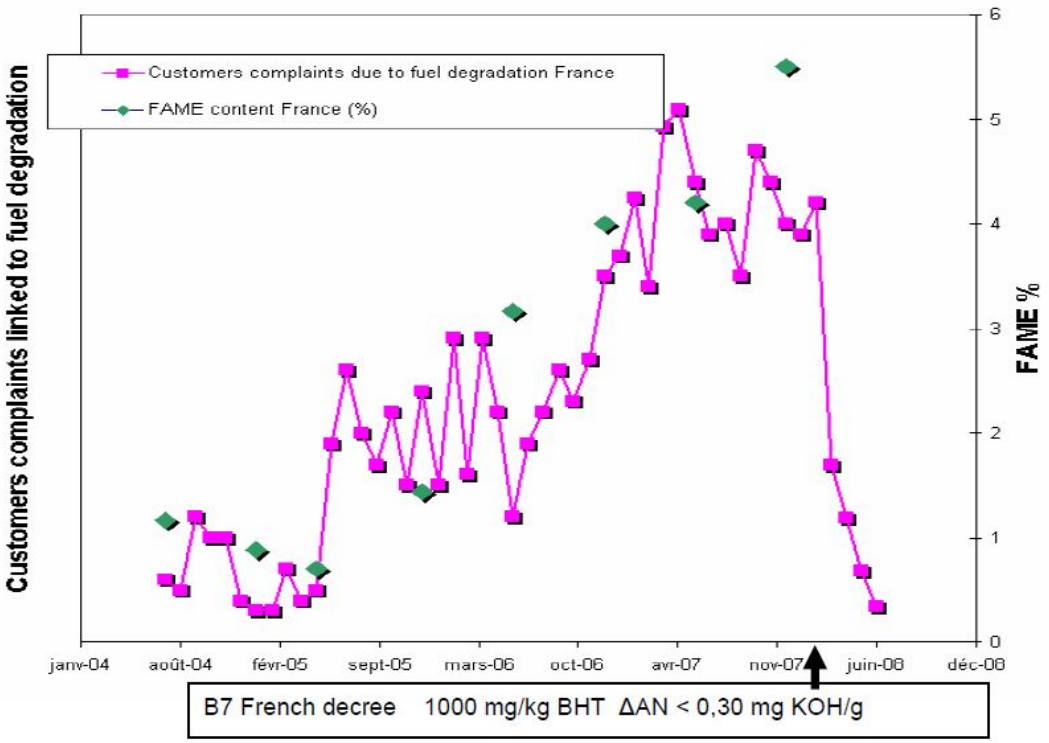

Figure 1 — Customer complaints linked to fuel degradation in France