BS 6380:2012+A2:2020

BSI Standards Publication

Guide to low temperature properties and cold weather use of diesel fuels and gas oils

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Published by BSI Standards Limited 2020

ISBN 978 0 539 12341 8

ICS 75.160.20

The following BSI references relate to the work on this document:
Committee reference PTI/2
Drafts for comment 12/30259259 DC; 16/30338657 DC; 20/30407620 DC

Amendments/corrigenda issued since publication

Date	Text affected
31 July 2016	A1: see Foreword
30 June 2020	A2: see Foreword

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Summary of pages
This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 12, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 July 2012. It was prepared by Technical Committee PTI/2, *Liquid fuels*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

BS 6380:2012+A1:2016 superseded BS 6380:2012, which has been withdrawn.

BS 6380:2012+A2:2020 supersedes BS 6380:2012+A1:2016, which is withdrawn.

Information about this document

This British Standard has been prepared as a guide because it does not set out to cover the subject completely, but is intended to help individual users of the fuels covered, who will probably require other expert guidance in applying some of the recommendations. Some further guidance material is listed in the bibliography. This British Standard has been prepared in support of the automotive diesel specification BS EN 590 and the fuel oil specification BS 2869, but also refers to British Standards that cover in detail the storage of fuel oils.

Text introduced or altered by Amendments No. 1 and No. 2 respectively is indicated in the text by tags A1 〈A1 and A2 〈A2. Minor editorial changes are not tagged.

BS 6380:2012 was a full revision of the standard, and introduced the following principal changes:

- changes in seasonality dates. Seasonality dates are now specified in the relevant British Standards, BS 2869 for fuel oil for agricultural, domestic and industrial engines and burners, and BS EN 590 for automotive road fuel;
- a change to the cold filter plugging point test method reference to align with that currently specified in BS EN 590;
- to reflect that, as a measure to reduce greenhouse gas emissions (see The Renewable Transport Fuel Obligations Order [1]), Fatty Acid Methyl Ester (FAME) is now permitted as a component as specified with a consequent possible effect on additive addition, low-temperature solids deposition and an increased propensity for microbiological proliferation.

Hazard warnings

WARNING. This British Standard calls for the use of substances and/or procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Use of this document

As a guide, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification or a code of practice and claims of compliance cannot be made to it.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The guidance in this standard is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Particular attention is drawn to the following specific regulations:

- Hydrocarbon Oil Duties Act 1979 (as amended) [2].
- HM Revenue and Customs Notice 179 [3].

Introduction

These guidelines are intended to help users of fuels conforming to BS EN 590 and class A2 and class D of BS 2869:2010+A1 to understand the problems that might be encountered in very severe winters and to help overcome them. Kerosene does not normally present problems at low temperatures, but, where suppliers have blended Fatty Acid Methyl Ester (FAME) into kerosenes for heating/cooking applications and cold weather problems ensue, this Guide can provide useful advice. Users have found that it is not always possible to avoid fuel flow problems during extreme weather conditions. Such problems can arise because of:

a) inappropriate fuel quality for certain weather conditions encountered, e.g. summer grade fuel being in use out of season;

b) fuel systems on vehicles or burner plant that through their design give rise to sensitivity to blockage by precipitated wax;

c) the possibility of biogenic precipitates during extended exposure of fuels to sub-zero temperatures (see *Report 9/09 – Guidelines for Handling and Blending FAME* [4]);

d) fuel storage systems that are badly sited and poorly maintained;

e) fuel storage systems that are inadequately heated or protected against loss of heat, bearing in mind their conditions of service;

f) freezing of free water accumulated through the condensation of damp air entering the storage tank as fuel is withdrawn;

g) microbiological contamination that can block filters and gauze strainers. Although this is not, of itself, a low-temperature phenomenon, any entrained water from microbial metabolic process can freeze in lines and filters. (See *Guidelines for the investigation of the microbial content of petroleum fuels and for the implementation of avoidance and remedial strategies* [5].)

1 Scope

This British Standard gives guidance on the low temperature properties and cold weather use of diesel fuel conforming to BS EN 590 and gas oils conforming to class A2 and class D of BS 2869:2010+A1.

This British Standard does not address the use of 100% FAME as an automotive fuel or a heating fuel, such as that specified in BS EN 14214.

Clause 3 and Clause 4 give details of the fuel classes and their low temperature properties. Clause 5 to Clause 8 give recommendations for fuel quality and treatment, the cold weather use of bulk handling and storage systems, cold weather operation of diesel-engined vehicles and mobile automotive plant and remedial measures for fuel starvation in oil-fired burner systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 799-5, *Oil burning equipment – Part 5: Carbon steel oil storage tanks – Specification*

BS 2869:2010+A1:2011, *Fuel oils for agricultural, domestic and industrial engines and boilers – Specification*