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Petroleum products — Fuels (class F) — Specifications of marine fuels

Produits pétroliers — Combustibles (classe F) — Spécifications des combustibles pour la marine

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28, *Petroleum products and related products of synthetic or biological origin*, Subcommittee SC 4, *Classifications and specifications*.

This sixth edition cancels and replaces the fifth edition (ISO 8217:2012), which has been technically revised.

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Introduction

General

This document was prepared in cooperation with ship owners, ship operators, shipping associations, national standards bodies, classification societies, fuel testing services, engine designers, marine fuel suppliers, fuel additive suppliers and the petroleum industry to meet the requirements for marine fuels supplied on a world-wide basis for consumption on board ships.

The increasing demands of environmental legislation are leading to a transition in the nature of marine fuels supplied from traditional oil products derived from the processing of petroleum crude to the potential inclusion of oil products derived from renewable and/or alternative sources. This document takes into consideration the diverse nature of these fuels and incorporates a number of categories of distillate or residual fuels, even though not all categories may be available in every supply location.

Classification

The categories of fuel in this document have been classified in accordance with ISO 8216-1[1].

At the time of preparation of this document, a number of unconventional fuels have been offered to the market which do not conform exactly to this particular distillate/residual categorization. In these instances, it is recommended that the fuel characteristics or limits should be agreed between the purchaser and supplier and defined by both a category of fuel as given by this document together with any different or additional fuel characteristics or limits necessary to adequately define that fuel.

International statutory requirements

This document specifies allowable minimum flash point limits following the provisions given in the SOLAS Convention[2]. MARPOL Annex VI[3], which controls air pollution from ships, includes a requirement that either the fuel shall not exceed a specified maximum sulfur content or an approved equivalent alternative means be used. During the lifetime of this document, regional and/or national bodies may introduce their own local emission requirements, which can impact the allowable sulfur content, for example, the EU Sulphur Directive[4]. It is the purchaser's and the user's responsibility to establish which statutory requirements are to be met and specify on that basis the corresponding maximum fuel sulfur content to the supplier.

Changes with respect to ISO 8217:2012

This sixth edition reflects important and significant changes. These include substantial amendments to the scope (Clause 1) and to the general requirements (Clause 5).

Changes to the distillate fuels include the following:

— additional grades, DFA, DFZ and DFB have been added with a maximum fatty acid methyl ester(s) (FAME) content of 7,0 volume %;

— the sulfur content of DMA and DMZ has been reduced to a maximum of 1,00 mass %;

— the sulfur content of DMB has been reduced to a maximum of 1,50 mass %;

— requirements for the following characteristics have been added to winter grades of DMA and DMZ: cloud point and cold filter plugging point.

The following annexes, previously included, have been deleted, but the key information is included in the body of this document or is available in referenced industry publications:

— Sulfur content;

— Flash point;

— Catalyst fines;

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— Precision and interpretation of test results.

All other annexes have been reviewed and updated.

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Petroleum products — Fuels (class F) — Specifications of marine fuels

WARNING — The handling and use of products specified in this document can be hazardous if suitable precautions are not observed. This document does not purport to address all of the safety and health considerations that can be associated with its use. It is the responsibility of the users of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

1 Scope

This document specifies the requirements for fuels for use in marine diesel engines and boilers, prior to conventional onboard treatment (settling, centrifuging, filtration) before use. The specifications for fuels in this document can also be applied to fuels used in stationary diesel engines of the same or similar type as those used for marine purposes.

This document specifies seven categories of distillate fuels, one of which is for diesel engines used for emergency purposes. It also specifies six categories of residual fuels.

For the purposes of this document, the term "fuels" is currently used to include the following:

— hydrocarbons from petroleum crude oil, oil sands and shale;

— hydrocarbons from synthetic or renewable sources, similar in composition to petroleum distillate fuels;

— blends of the above with a fatty acid methyl ester(s) (FAME) component where permitted.

NOTE 1 Appropriate guidance about fuel treatment systems for diesel engines is published by the International Council on Combustion Engines (CIMAC)[5].

NOTE 2 Requirements for gas turbine fuels used in marine applications are specified in ISO 4261[6].

NOTE 3 For the purposes of this document, the terms "mass %" and "volume %" are used to represent the mass and volume fractions respectively.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2719, *Determination of flash point — Pensky-Martens closed cup method*

ISO 3015, Petroleum products — Determination of cloud point

ISO 3016, *Petroleum products — Determination of pour point*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method*

ISO 3733, *Petroleum products and bituminous materials — Determination of water — Distillation method*

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