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Petroleum products — Fuels (class F) — Specifications of dimethyl ether (DME)

Produits pétroliers — Combustibles (classe F) — Spécifications du diméthyléther (DME)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 4, *Classifications and specifications*.

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Introduction

According to its physical properties, dimethyl ether (DME) can be used as fuel. It is comparable to liquefied petroleum gas (LPG) so it can be used as heating fuel, either mixed with LPG or in its pure form. DME also has very good auto-ignition qualities which makes it a replacement fuel for diesel.

The energy efficiency chain is a key issue for choosing DME, which has a better life cycle CO_2 balance than most of the other alternative fuels. DME is a commodity which can be made from various raw materials, including natural gas, coal, black liquor, biomass, and wastes.

As some national standards have been already issued, it seems important to create an international DME specification standard in order to unify the requirements at an international commercial level and to ease the international development of DME as fuels.

This International Standard focuses on DME as heating fuel for industrial boilers and for households for cooking and heating, and as alternative to diesel for vehicles.

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Petroleum products — Fuels (class F) — Specifications of dimethyl ether (DME)

WARNING — The handling and use of products as specified in this International Standard can be hazardous if suitable precautions are not observed. This International Standard 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 International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies the characteristics of DME used as fuel of which the main component is the dimethyl ether synthesized from any organic raw materials.

This International Standard is applicable for DME used as heating fuel, industrial fuel, and to replace diesel fuel or gas oil. It does not deal with the possible additives necessary for specific end-use applications, for example, odorant typically added to heating fuel and lubricity improvers for DME used as replacement of diesel. Such additives are typically specified for the different end-use applications, at an appropriate level — national, regional, or international.

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.

ISO 17196:2014, *Dimethyl ether (DME) for fuels — Determination of impurities — Gas chromatographic method*

ISO 17197:2014, *Dimethyl ether (DME) for fuels — Determination of water content — Karl Fischer titration method*

ISO 17198:2014, *Dimethyl ether (DME) for fuels — Determination of total sulfur, ultraviolet fluorescence method*

ISO 17786:2015, *Dimethyl ether (DME) for fuels — Determination of high temperature (105°C) evaporation residues — Mass analysis method*

ISO 29945, *Refrigerated non-petroleum-based liquefied gaseous fuels — Dimethylether (DME) — Method of manual sampling onshore terminals*

3 Components and test methods

The DME for fuel specified shall conform to the detailed requirements shown in Table 1.

NOTE A more specific overview of the general physical properties of DME is given in Annex A. These properties might be of importance to the end-user, but do not form part of the trade specification as in this International Standard.

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