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Dimethyl ether (DME) for fuels — Determination of high temperature (105°C) evaporation residues — Mass analysis method

Diméthylether (DME) pour carburants et combustibles — Détermination de la température haute (105°C) de résidus d'évaporation — Méthode gravimétrique

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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

In general, large amount of DME in the international trade and domestic transportation may be executed using sea and/or various land transportations. Throughout the loading and transportation, there may be a risk of increasing evaporation residues.

The evaporation residues can over time impact the performance of the equipment when DME is used as fuel. Therefore, evaporation residues in the DME shall be determined accurately using procedures recognized by the parties concerned.

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Dimethyl ether (DME) for fuels — Determination of high temperature (105°C) evaporation residues — Mass analysis method

WARNING — The use of this International Standard can involve hazardous materials, operations, and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user 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 a procedure of test for high temperature (105 °C) evaporation residue in DME used as fuel by the mass analysis method. This procedure is applicable to determine the amount of high temperature (105 °C) evaporation residue up to the value specified in ISO 16861.

Several tests can be applied to determine amount of evaporation residue in liquefied products. Among them, this International Standard specifies the method that has detection limit sufficient for a DME specification in ISO 16861, using less resource compared to other methods.

When more precise quantitative test is required, use of ISO 13757 instead of this International Standard is recommended.

Because of the procedure applied, the evaporation residue which has a boiling point lower than 105 °C will not be determined.

NOTE The precision of this method has been studied for a limited set of samples and content levels by a limited amount of labs. It allows establishment of a quality specification of DME but cannot be considered as a full precision determination in line with the usual statistical methodology as in ISO 4259.

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 16861, *Petroleum products — Fuels (class F) — Specifications of Dimethylether (DME)*

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

3 Principle

After approximately 100 g of liquid sample is evaporated by using an evaporation dish, the residue is weighed, to determine the evaporation residue at 105 °C in mass percentage of the total DME.

4 Reagents and materials

4.1 **Ethanol**, methanol and/or isopropanol is used for cooling bath.

4.2 **Dry ice**, used for cooling bath.

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