
**Petroleum products — Total sediment in
residual fuel oils —**

**Part 2:
Determination using standard procedures
for ageing**

Produits pétroliers — Insolubles existants dans les fuel-oils résiduels —

*Partie 2: Détermination à l'aide de méthodes de vieillissement de
référence*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10307-2 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

This second edition cancels and replaces the first edition (ISO 10307-2:1993), which has been technically revised.

ISO 10307 consists of the following parts, under the general title *Petroleum products — Total sediment in residual fuel oils*:

- *Part 1: Determination by hot filtration*
- *Part 2: Determination using standard procedures for ageing*

Introduction

Experience has shown that the precipitation of asphaltenes from a residual fuel oil in the form of sediment can occur during storage and handling. Such sediment can cause severe difficulties, and in extreme cases can render the fuel unfit for use. Once out of solution, it is extremely difficult to reprecipitate the asphaltenes into their original state.

Fuel pre-treatment designed to accelerate the ageing/sedimentation process, followed by filtration, is a well-established technique for testing whether sediment from residual fuel oils will precipitate during storage and handling. This could involve thermal ageing (heating to a specified temperature for a specified time) or chemical ageing (addition of a specified amount of a normal alkane to test whether the balance between the required aromaticity of the asphaltenes and the available aromaticity of the oil phase is disturbed to the extent that asphaltene precipitation occurs).

A means of predicting the presence of a reserve of stability to sedimentation in residual fuel oil during storage and handling is thus a useful tool in the petroleum products industry.

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Petroleum products — Total sediment in residual fuel oils —

Part 2:

Determination using standard procedures for ageing

WARNING — The use of this part of ISO 10307 could involve hazardous materials, operations and equipment. The document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this part of ISO 10307 to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.

1 Scope

This part of ISO 10307 specifies two procedures — A (thermal) and B (chemical) — for the accelerated ageing of residual fuel oils. When combined with the hot filtration method specified in ISO 10307-1, these procedures permit the prediction of fuel oil stability, as affected by sedimentation, during storage and handling of the fuel oils.

NOTE For the purposes of this International Standard, the terms “% (m/m)” and “% (V/V)” are used to represent mass and volume fractions of a material, respectively. These expressions are deprecated under the International System and according to ISO 31-0, *Quantities and units — Part 0: General principles*, which specifies that mass and volume fractions be expressed as “mass fraction of xx %” (symbol ω) and “volume fraction of xx %” (symbol φ).

2 Normative references

The following referenced documents are indispensable for the application 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 1773:1997, *Laboratory glassware — Narrow-necked boiling flasks*

ISO 10307-1:2009, *Petroleum products — Total sediment in residual fuel oils — Part 1: Determination by hot filtration*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

potential total sediment

total sediment, determined by ISO 10307-1, after ageing a sample of residual fuel for 24 h at 100 °C under prescribed conditions

3.2

accelerated total sediment

total sediment, determined by ISO 10307-1, after dilution of a sample of residual fuel with hexadecane in the ratio of 1 ml per 10 g of sample under carefully controlled conditions, followed by storage for 1 h at 100 °C