

INTERNATIONAL STANDARD

ISO
10307-2

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Petroleum products — Total sediment in residual fuel oils —

Part 2:

Determination using standard procedures for
ageing

Produits pétroliers — Sédiment total dans les fuel-oils résiduels —

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



Reference number
ISO 10307-2:1993(E)

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.

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.

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

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*

Annex A forms an integral part of this part of ISO 10307.

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Introduction

Experience has shown that the precipitation of asphaltenes from a residual fuel oil in the form of sediment may occur during storage and handling. Such sediment may 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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Determination using standard procedures for ageing

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1 Scope

This part of ISO 10307 specifies two procedures for accelerated ageing of residual fuel oils which, combined with the hot filtration method specified in ISO 10307-1, permit the prediction of fuel oil stability to sedimentation during storage and handling.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 10307. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10307 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1773:1976, *Laboratory glassware — Boiling flasks (narrow-necked)*.

ISO 10307-1:1993, *Petroleum products — Total sediment in residual fuel oils — Part 1: Determination by hot filtration*.

ASTM D460:1990, *Method for sampling and chemical analysis of soaps and soap products*.

ASTM D850:1990, *Method for distillation of industrial aromatic hydrocarbons and related materials*.

ASTM D1015:1989, *Test method for freezing points of high-purity hydrocarbons*.

ASTM D4274:1988, *Method for testing polyurethane polyol raw materials — Determination of hydroxyl numbers of polyols*.

IP 17:1952, *Colour by Lovibond Tintometer*.

3 Definitions

For the purposes of this part of ISO 10307, the following 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.