INTERNATIONAL STANDARD

ISO 10478

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Petroleum products — Determination of aluminium and silicon in fuel oils — Inductively coupled plasma emission and atomic absorption spectroscopy methods

Produits pétroliers — Détermination de l'aluminium et du silicium dans les combustibles — Méthodes par spectroscopie d'émission à plasma induit et spectroscopie d'absorption atomique

Reference number
ISO 10478:1994(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.

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Petroleum products — Determination of aluminium and silicon in fuel oils — Inductively coupled plasma emission and atomic absorption spectroscopy methods

WARNING — The use of this International Standard may involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this 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 method for determining the aluminium and silicon contents of fuel oils at concentrations between 5 mg/kg and 150 mg/kg for aluminium and 10 mg/kg and 250 mg/kg for silicon using inductively coupled plasma emission and atomic absorption spectroscopy.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 648:1977, *Laboratory glassware — One-mark pipettes.*

ISO 835-2:1981, *Laboratory glassware — Graduated pipettes — Part 2: Pipettes for which no waiting time is specified.*

ISO 1042:1983, *Laboratory glassware — One-mark volumetric flasks.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

ISO 3819:1985, *Laboratory glassware — Beakers.*

ISO 4788:1980, *Laboratory glassware — Graduated measuring cylinders.*

3 Principle

A weighed quantity of homogenized sample is heated in a clean platinum basin, the combustible material removed by burning and the carbon finally removed by heating in a muffle furnace at a temperature of 550 °C ± 25 °C. The residue is fused with a dilithium tetraborate/lithium fluoride flux, the fused mixture digested in a solution of tartaric acid and hydrochloric acid, and diluted to volume with water.

The solution is aspirated into either the plasma of an inductively coupled plasma emission spectrometer (ICPES), and the emission radiation of the resonance lines of aluminium/silicon measured and compared with that of standard calibration solutions, or the flame of an atomic absorption spectrometer (AAS) and the absorption of the resonance radiation of the aluminium/silicon measured and compared with that of standard calibration solutions.