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Irish Standard  
I.S. EN ISO 16591:2010

# Petroleum products - Determination of sulfur content - Oxidative microcoulometry method (ISO 16591:2010)

## I.S. EN ISO 16591:2010

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English Version

**Petroleum products - Determination of sulfur content - Oxidative  
microcoulometry method (ISO 16591:2010)**

Produits pétroliers - Dosage du soufre - Méthode par  
microcoulométrie oxydante (ISO 16591:2010)

Mineralölzeugnisse - Bestimmung des Schwefelgehaltes  
- Oxidatives mikrocoulometrisches Verfahren (ISO  
16591:2010)

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## **Foreword**

This document (EN ISO 16591:2010) has been prepared by Technical Committee ISO/TC 28 "Petroleum products and lubricants" in collaboration with Technical Committee CEN/TC 19 "Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2011, and conflicting national standards shall be withdrawn at the latest by June 2011.

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STANDARD**

**ISO  
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**Petroleum products — Determination of  
sulfur content — Oxidative  
microcoulometry method**

*Produits pétroliers — Dosage du soufre — Méthode par  
microcoulométrie oxydante*



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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 16591 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

# Petroleum products — Determination of sulfur content — Oxidative microcoulometry method

**WARNING** — The use of this International Standard may involve hazardous material, 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 method for the determination of the sulfur content by oxidative microcoulometry of petroleum light and middle distillates with a final boiling point not higher than 400 °C. It is applicable to materials with sulfur contents in the range of 1 mg/kg to 100 mg/kg. Products with sulfur contents above 100 mg/kg can be analysed after dilution with a suitable sulfur-free solvent. Products with sulfur contents below 1 mg/kg can also be analysed by a modified technique described in Annex A. The precision quoted only applies to measurements in the 1 mg/kg to 100 mg/kg range. Nitrogen interferes with the analysis at concentrations above 0,1 % (*m/m*), and chlorine interferes at concentrations above 1,0 % (*m/m*), but these interferences are overcome by the addition of sodium azide to the cell electrolyte. Bromine and organometallic compounds also interfere with the analysis at concentrations above approximately 500 mg/kg.

NOTE 1 The microcoulometric method is capable of analysing light liquid hydrocarbons boiling in the range from 26 °C to 274 °C (for example, naphtha and MS samples) that undergo pyrolysis at 900 °C to 1 200 °C. The combustion of high boiling components (for example, diesel) can result in the formation of carbonaceous deposits in the inlet portion of the combustion tube, which need to be removed frequently.

NOTE 2 The results obtained using this International Standard on light and light-middle distillates generally approximate to those obtained using ISO 4260.

NOTE 3 For the purposes of this International Standard, the term “% (*m/m*)” is used to represent the mass fraction of a material.

## 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 3170, *Petroleum liquids — Manual sampling*

ISO 3171, *Petroleum liquids — Automatic pipeline sampling*

ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method*

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

ISO 12185, *Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method*

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