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NSAI Standards

Irish Standard
I.S. EN ISO 20884:2011

# Petroleum products - Determination of sulfur content of automotive fuels - Wavelength-dispersive X-ray fluorescence spectrometry (ISO 20884:2011)

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN ISO 20884

April 2011

ICS 75.160.30; 75.080

Supersedes EN ISO 20884:2004

English Version

# Petroleum products - Determination of sulfur content of automotive fuels - Wavelength-dispersive X-ray fluorescence spectrometry (ISO 20884:2011)

Produits pétroliers - Détermination de la teneur en soufre des carburants pour automobiles - Spectrométrie de fluorescence de rayons X dispersive en longueur d'onde (ISO 20884:2011)

Mineralölerzeugnisse - Bestimmung des Schwefelgehaltes in Kraftstoffen für Kraftfahrzeuge - Wellenlängendispersive Röntgenfluoreszenz-Spektrometrie (ISO 20884:2011)

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# Foreword

This document (EN ISO 20884:2011) has been prepared by Technical Committee ISO/TC 28 "Petroleum products and lubricants" in collaboration 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of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

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# INTERNATIONAL STANDARD

# ISO 20884

Second edition
2011-04-15

# Petroleum products — Determination of sulfur content of automotive fuels — Wavelength-dispersive X-ray fluorescence spectrometry

*Produits pétroliers — Détermination de la teneur en soufre des carburants pour automobiles — Spectrométrie de fluorescence de rayons X dispersive en longueur d'onde*

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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.

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ISO 20884 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

This second edition cancels and replaces the first edition (ISO 20884:2004), which has been technically revised.



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# Petroleum products — Determination of sulfur content of automotive fuels — Wavelength-dispersive X-ray fluorescence spectrometry

**WARNING — The use of this International Standard may 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 wavelength-dispersive X-ray fluorescence (WDXRF) test method for the determination of the sulfur content of liquid, homogeneous automotive fuels from 5 mg/kg to 500 mg/kg, which have a maximum oxygen content of 3,7 % (*m/m*). This product range covers diesel fuels containing up to about 10 % (*V/V*) fatty acid methyl esters (FAME) and motor gasolines containing up to about 10 % (*V/V*) ethanol.

NOTE 1 Sulfur contents higher than 500 mg/kg can be determined after sample dilution. However, the precision was not established for diluted samples.

Products with higher oxygen content show significant matrix effects, e.g. FAME used as biodiesel. Nevertheless, FAME may be analysed when the corresponding procedures are followed (see 4.3 and 7.1).

Other products may be analysed with this test method. However, precision data for products other than those mentioned have not been established for this International Standard.

NOTE 2 For the purposes of this International Standard, the terms “% (*m/m*)” and “% (*V/V*)” are used to represent the mass fraction and the volume fraction of a material respectively.

## 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*

## 3 Principle

The sample under analysis is exposed in a sample cell to the primary radiation of an X-ray tube. The count rates of the S K-$L_{2,3}$ X-ray fluorescence and, where required, the count rate of the background radiation are measured. The sulfur content of the sample is determined from a calibration curve defined for the relevant measuring range.

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