
**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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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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 Documents 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28, *Petroleum and related products, fuels and lubricants from natural or synthetic sources*.

This third edition cancels and replaces the second edition (ISO 20884:2011), which has been technically revised. The main changes compared to the previous edition are as follows:

- extension of the scope to include hydrotreated vegetable oil (HVO) and the synthetic fuel “gas to liquid” (GTL);
- inclusion of specific procedural steps for instruments utilizing monochromatic excitation.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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

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1 Scope

This document 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 30 % (V/V) fatty acid methyl esters (FAME),
- motor gasolines containing up to about 10 % (V/V) ethanol,
- synthetic fuels such as hydrotreated vegetable oil (HVO) and gas to liquid (GTL) having sulfur contents in the range of 5 mg/kg to 45 mg/kg.

Products with higher oxygen content show significant matrix effects, e.g. pure FAME used as biodiesel, nevertheless, pure FAME can be analysed when the corresponding procedures are followed (see 5.3 and 8.1).

Other products can be analysed with this test method, though precision data for products other than those mentioned have not been established for this document.

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

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>