

# INTERNATIONAL STANDARD

**ISO**  
**3837**

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## **Liquid petroleum products — Determination of hydrocarbon types — Fluorescent indicator adsorption method**

*Produits pétroliers liquides — Détermination des groupes  
d'hydrocarbures — Méthode par adsorption en présence d'indicateurs  
fluorescents*



Reference number  
ISO 3837:1993(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 3837 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

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## Introduction

The determination of the total volume percent [% (V/V)] of saturates, olefins and aromatics in petroleum fractions is important in characterizing the quality of petroleum fractions as gasoline blending components and as feeds to catalytic reforming processes, and in characterizing petroleum fractions and products from catalytic reforming and from thermal and catalytic cracking as blending components for motor and aviation fuels. This information is also important as a measure of the quality of aviation turbine fuels.

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# Liquid petroleum products — Determination of hydrocarbon types — Fluorescent indicator adsorption method

**WARNING —** This 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 consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

## 1 Scope

This International Standard specifies a fluorescent indicator adsorption method for the determination of hydrocarbon types over the concentration ranges from 5 % (V/V) to 99 % (V/V) aromatic hydrocarbons, 0,3 % (V/V) to 55 % (V/V) olefins, and 1 % (V/V) to 95 % (V/V) saturated hydrocarbons in petroleum fractions that distill below 315 °C.

Restrictions inherent in the method and the determination of precision may limit its application as noted.

### NOTES

- 1 This method may apply to concentrations outside these ranges, but the precision has not been determined.
- 2 This test method is intended for use with full boiling range products. Cooperative data have established that the precision statement does not apply to petroleum fractions with narrow boiling ranges near the 315 °C limit. Such samples are not eluted properly, and results are erratic.
- 3 The applicability of this test method to products derived from fossil fuels other than petroleum, such as coal, shale or tar sands, has not been determined and the precision statement does not apply to such products.
- 4 The precision of this test method has not been determined with oxygenated fuels and thus does not apply to automotive gasolines containing lead anti-knock mixtures.
- 5 The oxygenated blending components methanol, ethanol, methyl *tert*-butyl ether, *tert*-amyl methyl ether and ethyl *tert*-butyl ether do not interface with the determination of hydrocarbon types at concentrations normally found in commercial petroleum blends. These oxygenated compounds are not detected since they elute with the al-

cohol desorbent. Other oxygenated compounds must be individually verified. When samples containing oxygenated blending components are analyzed, the hydrocarbon type results can be reported on an oxygenate-free basis or, when the oxygenate content is known, the results can be corrected to a total-sample basis.

- 6 Samples containing dark-coloured components that interfere with reading the chromatographic bands cannot be analyzed.

## 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 756-1:1981, *Propan-2-ol for industrial use — Methods of test — Part 1: General*.

ISO 3171:1988, *Petroleum liquids — Automatic pipeline sampling*.

ASTM D 3663-84, *Test method for surface area of catalysts*.

ASTM D 4815-89, *Test method for analysis of C<sub>1</sub> to C<sub>4</sub> alcohols and MTBE in gasoline by gas chromatography*.