

# INTERNATIONAL STANDARD

**ISO  
9770**

First edition  
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1989-11-01

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## **Crude petroleum and petroleum products — Compressibility factors for hydrocarbons in the range 638 kg/m<sup>3</sup> to 1 074 kg/m<sup>3</sup>**

*Pétrole brut et produits pétroliers — Facteurs de compressibilité des hydrocarbures  
dans la plage de 638 kg/m<sup>3</sup> à 1 074 kg/m<sup>3</sup>*



Reference number  
ISO 9770 : 1989 (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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 9770 was prepared by ISO/TC 28, *Petroleum and petroleum products*.

Annex A of this International Standard is for information only.

# Crude petroleum and petroleum products — Compressibility factors for hydrocarbons in the range 638 kg/m<sup>3</sup> to 1 074 kg/m<sup>3</sup>

The following standard<sup>1)</sup> is adopted as International Standard ISO 9770 : 1989:

*Manual of Petroleum Measurement Standards*

*Chapter 11.2.1M — Compressibility Factors for Hydrocarbons: 638-1074 Kilograms per Cubic Metre Range*

published August 1984 by

American Petroleum Institute  
1220 L Street, Northwest  
WASHINGTON, D.C. 20005  
USA

## NOTES

- 1 It has been agreed by the API that they will give the ISO Central Secretariat at least 12 months' notice of any intention to amend, revise or withdraw this standard.
- 2 It should be noted that API has published an erratum to the August 1984 publication and this also forms part of this International Standard. This erratum is as follows (the corrections have been included in the French-language version of the API standard appended to the French-language version of this International Standard):

## ERRATUM

Page 3, Change the first full sentence and the example at the top of the page to read as follows:

From the compressibility table, the  $F$  factor is 0.649 divided by 1,000,000 or 0.000000649. Then,

$$\begin{aligned}V_e &= 1000 / (1 - 0.000000649 \times 3450) \\ &= 1002.2 \text{ cubic metres}\end{aligned}$$

- 3 In 11.2.1M of the referenced standard the term "molecular volume" is used. The corresponding term in ISO 31-8 : 1980 (E) is "molar volume" (8-6.1). However, later text and the calculation procedure (11.2.1.5.2M) relates the quantity to the reciprocal of density, i.e. "specific volume" [3.1 in ISO 31-3 : 1978 (E)], which should be understood.
- 4 An extract from the referenced standard is reproduced in annex A for information. To illustrate the presentation of the table, one page (p. 129) has been reproduced, the title being the same for all the other pages.
- 5 In the French-language version of this International Standard, a translation of the text of the API standard is provided.

1) Copies of the API standard may be obtained through API at the above address.