



SLOVENSKI STANDARD SIST EN ISO 3104:1998

01-maj-1998

Naftni proizvodi - Prozorne in neprozorne tekočine - Določanje kinematične viskoznosti in izračun dinamične viskoznosti (ISO 3104:1994)

Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)

Mineralölerzeugnisse - Durchsichtige und undurchsichtige Flüssigkeiten - Bestimmung der kinematischen Viskosität und Berechnung der dynamischen Viskosität (ISO 3104:1994)

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Produits pétroliers - Liquides opaques et transparents - Détermination de la viscosité cinématique et calcul de la viscosité dynamique (ISO 3104:1994)

Ta slovenski standard je istoveten z: **EN ISO 3104:1996**

ICS:

75.080 Naftni proizvodi na splošno Petroleum products in general

SIST EN ISO 3104:1998

en

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EUROPEAN STANDARD

EN ISO 3104

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 1996

ICS 75.080

Descriptors: See ISO document

English version

Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)

Produits pétroliers - Liquides opaques et transparents - Détermination de la viscosité cinématique et calcul de la viscosité dynamique (ISO 3104:1994)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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EN ISO 3104:1996

Foreword

The text of the International Standard from Technical Committee ISO/TC 28 "Petroleum products and lubricants" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 19 "Petroleum products, lubricants and related products", the secretariat of which is held by NNI.

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 August 1996, and conflicting national standards shall be withdrawn at the latest by August 1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Endorsement notice

The text of the International Standard ISO 3104:1994 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

Annex ZA (normative)
Normative references to international publications
with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 3696	1987	Water for analytical use - Specification and test methods	EN ISO 3696	1995

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INTERNATIONAL
STANDARD

ISO
3104

Second edition
1994-10-15

**Petroleum products — Transparent and
opaque liquids — Determination of
kinematic viscosity and calculation of
dynamic viscosity**

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*Produits pétroliers — Liquides opaques et transparents — Détermination
de la viscosité cinématique et calcul de la viscosité dynamique*

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Reference number
ISO 3104:1994(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 3104 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

This second edition cancels and replaces the first edition (ISO 3104:1976), of which it constitutes a technical revision.

Annexes A, B and C form an integral part of this International Standard.

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Introduction

Many petroleum products, and some non-petroleum materials, are used as lubricants, and the correct operation of equipment depends upon the appropriate viscosity of the liquid being used. In addition, the viscosity of many petroleum fuels is important for the estimation of optimum storage, handling and operational conditions. Thus the accurate measurement of viscosity is essential to many product specifications.

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Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity

WARNING — The use of this International 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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies a procedure for the determination of the kinematic viscosity, ν , of liquid petroleum products, both transparent and opaque, by measuring the time for a volume of liquid to flow under gravity through a calibrated glass capillary viscometer. The dynamic viscosity, η , can be obtained by multiplying the measured kinematic viscosity by the density, ρ , of the liquid.

NOTE 1 The result obtained from this International Standard is dependent upon the behaviour of the sample and is intended for application to liquids for which primarily the shear stress and shear rates are proportional (Newtonian flow behaviour). If, however, the viscosity varies significantly with the rate of shear, different results may be obtained from viscometers of different capillary diameters. The procedure and precision values for residual fuel oils, which under some conditions exhibit non-Newtonian behaviour, have been included.

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 re-

cent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3105:—¹⁾, *Glass capillary kinematic viscometers — Specifications and operating instructions.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 kinematic viscosity, ν : Resistance to flow of a fluid under gravity.

NOTE 2 For gravity flow under a given hydrostatic head, the pressure head of a liquid is proportional to its density, ρ . For any particular viscometer, the time of flow of a fixed volume of fluid is directly proportional to its kinematic viscosity, ν , where $\nu = \eta/\rho$, and where η is the dynamic viscosity coefficient.

3.2 density, ρ : Mass per unit volume of a substance at a given temperature.

3.3 dynamic viscosity, η : Ratio between the applied shear stress and rate of shear of a liquid. It is sometimes called the coefficient of dynamic viscosity, or simply viscosity. Thus dynamic viscosity is a

1) To be published. (Revision of ISO 3105:1976)