



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN ISO 3104:2020

Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:2020)

Produits pétroliers - Liquides opaques et transparents - Détermination de la viscosité cinématique et calcul de la viscosité dynamique (ISO 3104:2020)

Mineralölerzeugnisse - Durchsichtige und undurchsichtige Flüssigkeiten - Bestimmung der kinematischen Viskosität und Berechnung der

09/2020



National Foreword

This European Standard EN ISO 3104:2020 was adopted as Luxembourgish Standard ILNAS-EN ISO 3104:2020.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

ILNAS-EN ISO 3104:2020

EUROPEAN STANDARD **EN ISO 3104**

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2020

ICS 75.080

Supersedes EN ISO 3104:1996

English Version

**Petroleum products - Transparent and opaque liquids -
Determination of kinematic viscosity and calculation of
dynamic viscosity (ISO 3104:2020)**

Produits pétroliers - Liquides opaques et transparents
- Détermination de la viscosité cinématique et calcul de
la viscosité dynamique (ISO 3104:2020)

Mineralölerzeugnisse - Durchsichtige und
undurchsichtige Flüssigkeiten - Bestimmung der
kinematischen Viskosität und Berechnung der
dynamischen Viskosität (ISO 3104:2020)

This European Standard was approved by CEN on 16 July 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

ILNAS-EN ISO 3104:2020 - Preview only Copy via ILNAS e-Shop

European foreword

This document (EN ISO 3104:2020) has been prepared by Technical Committee ISO/TC 28 "Petroleum and related products, fuels and lubricants from natural or synthetic sources" in collaboration with 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 March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 3104:1996.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 3104:2020 has been approved by CEN as EN ISO 3104:2020 without any modification.

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

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



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Reagents and materials	2
6 Apparatus design and requirements	3
7 Verification	6
7.1 Viscometer.....	6
7.2 Liquid-in-glass thermometer.....	6
7.3 Digital contact thermometer.....	7
7.4 Timer.....	7
8 Re-calibration	7
9 Quality control	7
10 Sample preparation	7
10.1 Pre-analysis sample conditioning.....	7
10.2 Visual inspection and filtering.....	8
11 Procedure A — Manual equipment	8
12 Procedure B — Automated equipment	10
13 Cleaning of the viscometer tube	11
14 Calculation	11
14.1 Procedure A — Manual viscometers.....	11
14.2 Procedure B — Automated viscometers.....	12
15 Expression of results	13
16 Precision of procedure A	13
16.1 Determinability, d	13
16.2 Repeatability, r	14
16.3 Reproducibility, R	14
17 Precision of Procedure B	15
17.1 Determinability, d	15
17.2 Repeatability, r	15
17.3 Reproducibility, R	15
18 Test report	15
Annex A (normative) Viscometer types, calibration and verification	17
Annex B (normative) Thermometers for kinematic viscosity test	18
Annex C (normative) Conditioning of samples prior to manual or automated analysis	22
Annex D (normative) Calculation of acceptable tolerance zone (band) to determine conformance with a certified reference material	23
Bibliography	24