**DJS ASTM D445: 2022**
ICS 17.060; 75.080

Draft Jamaican Standard

Method of Test

for

# Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)

**BUREAU OF STANDARDS JAMAICA**

**NON OBJECTION PERIOD: 30 October 2022 – 28 November 2022**

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JS ASTM D445: 2022

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Jamaican Standards establish requirements in relation to commodities in relation to commodities, processes and practices, but not purport to include all the necessary provisions of a contract.

The attention of those using this standard specification is called to the necessity of complying with any relevant legislation.

**Amendments**

| No. | Date of Issue | Remarks | Entered by and date |
|---|---|---|---|
| | | | |

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**National Foreword**

This standard is an adoption and is identical to ASTM D445: 2021 Standard method of test for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity) published by American Society for Testing Materials (ASTM) International.

**Scope of the Standard**

1.1 This test method 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 kinematic viscosity, ν, by the density, ρ, of the liquid.

NOTE 1—For the measurement of the kinematic viscosity and viscosity of bitumens, see also Test Methods D2170 and D2171.

NOTE 2—ISO 3104 corresponds to Test Method D445 – 03.

1.2 The result obtained from this test method is dependent upon the behavior of the sample and is intended for application to liquids for which primarily the shear stress and shear rates are proportional (Newtonian flow behavior). 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 behavior, have been included.

1.3 The range of kinematic viscosities covered by this test method is from 0.2 $mm^2/s$ to 300 000 $mm^2/s$ (see Table A1.1) at all temperatures (see 6.3 and 6.4). The precision has only been determined for those materials, kinematic viscosity ranges and temperatures as shown in the footnotes to the precision section.

1.4 The values stated in SI units are to be regarded as standard. The SI unit used in this test method for kinematic viscosity is $mm^2/s$, and the SI unit used in this test method for dynamic viscosity is mPa·s. For user reference, 1 $mm^2/s = 10^{-6}$ $m^2/s$ = 1 cSt and 1 mPa·s = 1 cP = 0.001 Pa·s.

1.5 **WARNING**—Mercury has been designated by many regulatory agencies as a hazardous substance that can cause serious medical issues. Mercury, or its vapor, has been demonstrated to be hazardous to health and corrosive to materials. Use Caution when handling mercury and mercury-containing products. See the applicable product Safety Data Sheet (SDS) for additional information. The potential exists that selling mercury or mercury-containing products, or both, is prohibited by local or national law. Users must determine legality of sales in their location.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

Where the words 'International Standard' appear, referring to this standard, they should be read as 'Jamaican Standard'.

Where reference is made to informative and normative annexes the following definitions should be noted:

- Informative Annex – gives additional information intended to assist in the understanding or use of the document. They do not contain requirements.

- Normative Annex – gives provisions additional to those in the body of a document. They contain requirements.

Users should note that all standards undergo revision from time to time and that any reference made herein to any standard implies its latest edition, unless otherwise stated.

This standard is voluntary.

**Acknowledgement**

Acknowledgement is made to American Society for Testing Materials (ASTM) International for permission to adopt ASTM D445: 2021.