



## Designation: D2422 – 97 (Reapproved 2018)

# Standard Classification of Industrial Fluid Lubricants by Viscosity System<sup>1</sup>

This standard is issued under the fixed designation D2422; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This classification is applicable to all petroleum-base fluid lubricants and to those nonpetroleum materials which may be readily blended to produce fluid lubricants of a desired viscosity, that is, lubricants for bearings, gears, compressor cylinders, hydraulic fluids, etc.

1.2 This classification is applicable to fluids ranging in kinematic viscosity from 2 cSt to 3200 cSt ( $\text{mm}^2/\text{s}$ ) as measured at a reference temperature of 40 °C. In the category of petroleum-base fluids, this covers the range from kerosene to heavy cylinder oils.

1.3 Fluids of either lesser or greater viscosity than the range described in 1.2 are, at present, seldom used as industrial lubricants. Should industrial practices change, then this system, based on a mathematical series of numbers, may be extended to retain its orderly progression.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D341 Practice for Viscosity-Temperature Charts for Liquid Petroleum Products**

<sup>1</sup> This classification is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.L0.11 on Tribological Properties of Industrial Fluids and Lubricates.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

2.2 *SAE Standard:*<sup>3</sup>

**J 300 Engine Oil Viscosity Classification**

2.3 *ISO Standard:*<sup>4</sup>

**ISO 3448 Industrial Liquid Lubricants—ISO Viscosity Classification**

## 3. Significance and Use

3.1 This classification establishes a series of definite viscosity levels so that lubricant suppliers, lubricant users, and equipment designers will have a uniform and common basis for designating, specifying, or selecting the viscosity of industrial fluid lubricants.

3.2 This classification is used to eliminate unjustified intermediate viscosities, thereby reducing the total number of viscosity grades used in the lubrication of industrial equipment.

3.3 This system provides a suitable number of viscosity grades, a uniform reference temperature, a uniform viscosity tolerance, and a nomenclature system for identifying the viscosity characteristics of each grade.

3.4 This system implies no evaluation of lubricant quality and applies to no property of a fluid other than its viscosity at the reference temperature. It does not apply to those lubricants used primarily with automotive equipment and identified with an SAE number.

## 4. Basis of Classification

4.1 Twenty viscosity grades are given in **Table 1**.

4.2 Each grade shall be designated by its nominal viscosity at 40 °C.

4.3 The permissible variance in viscosity of each grade shall be as shown in the two right-hand columns of **Table 1**. These limits are based upon a  $\pm 10\%$  deviation from the mathematical values which were used as the basis of construction of this system.

4.4 The lubricant supplier may choose to exert a manufacturing control on a given product that is closer than this  $\pm 10\%$  tolerance. It is to be understood that any different percentage

<sup>3</sup> Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.

<sup>4</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.