



Designation: D2422 – 97 (Reapproved 2013)

Standard Classification of Industrial Fluid Lubricants by Viscosity System¹

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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 to 3200 cSt (mm^2/s) as measured at a reference temperature of 40°C. In the category of petroleum-base fluids, this covers the range from kerosine 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.

2. Referenced Documents

2.1 *ASTM Standards*:²

D341 Practice for Viscosity-Temperature Charts for Liquid Petroleum Products

2.2 *SAE Standard*:³

J 300 Engine Oil Viscosity Classification

2.3 *ISO Standard*:⁴

ISO 3448 Industrial Liquid Lubricants—ISO Viscosity Classification

¹ This classification is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.L0.11 on Tribological Properties of Industrial Fluids and Lubricates.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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

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

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 variation that he uses will still guarantee maximum and minimum values that are not outside the limits of the standard viscosity grade limits. However, the lubricant purchaser or the equipment designer shall not normally specify control closer than the maximum and minimums established herein for a given grade. Any exception to this rule shall be handled outside the scope of this system and on a direct consumer-supplier relationship.