



Designation: D 4016 – 9302

Standard Test Method for Viscosity of Chemical Grouts by Brookfield Viscometer (Laboratory Method)¹

This standard is issued under the fixed designation D 4016; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.15 on Stabilization With Admixtures.

Current edition approved May 15, 1993; Nov. 10, 2002. Published September 1993; January 2003. Originally published as D 4016 – 81. Originally approved in 1993. Last previous edition approved in 1993 as D 4016 – 8493.

1. Scope *

1.1 This test method covers the determination of viscosity of catalysed chemical grouts with the Brookfield viscometer (laboratory method), over the range from 1.0 to 1000 cP (0.001 to 1 Pa·s).

1.2 *This standard does not purport to address all of the safety problems, if any, 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.*

2. Terminology—Referenced Documents

2.1 ASTM Standards:

D 653 Terminology Relating to Soil, Rock, and Contained Fluids²

D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction²

3. Terminology

3.1 For common definitions of terms used in this standard, refer to Terminology D 653.

3.2 Definitions of Terms Specific to This Standard:

2.1.1—

3.2.1 coefficient of viscosity—the ratio between the applied shear stress and the rate of shear. This coefficient is a measure of the resistance to flow of the liquid. It is commonly called the viscosity of the liquid. The cgs unit of viscosity is 1 g/cm·s (1 dyn/s cm²) and is called a poise (P). Viscosities of thin liquids are normally given in hundredths of a poise or centipoises (cP). The SI unit of viscosity is 1 Pa·s (1 N·s/m²) and is equal to 10 P, or 1000 cP.

2.1.2—

3.2.2 Newtonian liquid—a liquid in which the shear stress is proportional to the rate of shearing strain. This constant ratio is the viscosity. Non-Newtonian behavior can be determined with the Brookfield instrument by taking measurements at different spindle speeds.

3. Summary of Test Method

3.1 A rotating spindle is immersed in a container of catalysed chemical grout. An index to the viscosity is read directly on the instrument scale.

4. Significance and Use

4.1 This test Summary of Test Method

4.1 A rotating spindle is intended for materials that will penetrate soil voids and rock fissures. Viscosity alone is not necessarily an exact index immersed in a container of catalysed chemical grout. An index to the viscosity is read directly on the instrument scale.

² Annual Book of ASTM Standards Vol 04.08.

*A Summary of Changes section appears at the end of this standard.