



# Standard Test Method for Viscosity of Silicone Fluids<sup>1</sup>

This standard is issued under the fixed designation D4283; 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 test method covers the measurement of the kinematic viscosity of silicone fluids for polish applications.

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

1.3 *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 consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

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

[D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids \(and Calculation of Dynamic Viscosity\)](#)

## 3. Significance and Use

3.1 The viscosity of silicone fluids is typically measured by kinematic viscosity. Test Method [D445](#) describes the basics and background for this measurement. The purpose of this test method is to set forth specific conditions and recommend apparatus for measuring viscosity of silicone fluids.

## 4. Apparatus

4.1 *Viscometer Recommendations:*

4.1.1 *Ostwald Viscometer*—up to 5000 cSt.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D21 on Polishes and is the direct responsibility of Subcommittee D21.02 on Raw Materials.

Current edition approved Oct. 1, 2015. Published November 2015. Originally approved in 1983. Last previous edition approved in 2010 as D4283 – 98 (2010). DOI: 10.1520/D4283-98R15.

<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.

4.1.2 *Ubbelohde Viscometer*—up to 100 000 cSt.

4.1.3 *Cannon Fenski*—up to 5000 cSt.

4.2 *Constant Temperature Bath*, of  $25 \pm 0.2$  °C.

4.3 *Cleaning Solution for Viscometers*, such as toluene, alcoholic KOH.

4.4 *Fluid Standards*, for calibrating viscometers.

4.5 *Stopwatch*.

## 5. Preparation of Sample

5.1 After charging the fluid to the selected viscometer and placing it in the constant temperature bath, keep in bath for a minimum of 15 min to reach the proper temperature level.

## 6. Calibration and Standardization

6.1 *Viscometer Constant (F)*—Consult the manufacturer's instructions for calibrating individual viscometers.

## 7. Procedure

7.1 Follow manufacturer's directions for using their viscometers.

## 8. Calculation

8.1 Calculate the viscosity of silicone fluids as follows:

$$\text{Efflux Time (s)} \times \text{Viscometer Constant (F)} = \text{Viscosity (cSt)}$$

## 9. Precision and Bias

9.1 *Precision*—Duplicate results by the same operator shall not be considered suspect unless they differ by more than  $\pm 5\%$ .

9.2 *Bias*—This test has no bias because the values produced are defined only in terms of this test method.

## 10. Keywords

10.1 Ostwald viscometer; polish; silicone fluids; silicone oil; viscosity

*ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.*

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.*

*This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or [service@astm.org](mailto:service@astm.org) (e-mail); or through the ASTM website ([www.astm.org](http://www.astm.org)). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; <http://www.copyright.com/>*