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Standard Test Methods for Soluble Nitrocellulose Base Solutions[1]

This standard is issued under the fixed designation D 365; 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.

ϵ^1 NOTE—Keywords and unit of measurement statement were added editorially in May 1996.

1. Scope

1.1 These test methods cover the testing of soluble nitrocellulose base solutions that are made by dispersing various kinds and concentrations of soluble nitrocellulose (cellulose nitrate) in various solvent mixtures.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements see Section 11.

2. Referenced Documents

2.1 *ASTM Standards:*

D 301 Test Methods for Soluble Cellulose Nitrate[2]
D 333 Test Methods for Clear and Pigmented Lacquers[3]
D 1193 Specification for Reagent Water[4]
D 1200 Test Method for Viscosity by Ford Viscosity Cup[5]
E 300 Practice for Sampling Industrial Chemicals[6]

3. Significance and Use

3.1 Since the desired specifications and compositions of soluble nitrocellulose base solutions vary greatly, these methods are used to establish whether limits that shall be as agreed upon between the producer and the user have been met.

4. Sampling

4.1 Select the sampling method from those listed in Practice E 300.

[1] These methods are under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and are the direct responsibilities of Subcommittee D01.55 on Factory-Applied Coatings on Preformed Products.

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[2] *Annual Book of ASTM Standards*, Vol 06.03.

[3] *Annual Book of ASTM Standards*, Vol 06.02.

[4] *Annual Book of ASTM Standards*, Vol 11.01.

[5] *Annual Book of ASTM Standards*, Vol 06.01.

[6] *Annual Book of ASTM Standards*, Vol 15.05.

CONSISTENCY (VISCOSITY)

5. Consistency Tests

5.1 *For Consistencies from 3 to 500 s*—Determine the consistency by falling-ball consistency test described in Method D 301 for those solutions having a consistency from 3 to 500 s when tested in that apparatus.

5.2 *For Consistencies Less than 3 s*—Determine the consistency by Test Method D 1200 for those solutions having a consistency of less than 3 s when tested in the falling-ball apparatus referred to in 5.1.

5.3 *For Consistencies over 500 s*—Determine the consistency using the apparatus and procedure described in Sections 6 and 7 for those solutions having a consistency greater than 500 s when tested in the falling-ball apparatus referred to in 5.1.

6. Apparatus

6.1 The consistency test apparatus, shown in Fig. 1, shall consist of the following:

6.1.1 *Glass Tube* (preferably heat-resistant glass),[7] 2 ± 1⁄32 in. (50 ± 1.5 mm) in inside diameter and 10 in. (255 mm) in length, with marks 5 ± 1⁄16 in. (177 ± 1 mm) apart, the upper one being 3 in. (75 mm) from the top of the tube.

NOTE 1—The steel ball can be removed (in order to leave the same material in the tube for a check run) by removing the lower stopper. However, a small air bubble is usually introduced in this way. It is preferable to invert the tube, removing the guide to get the ball out. It is often necessary to put a few drops of solvent in the guide lip to loosen it from the tube on account of the solution drying at the edge of the tube. When the latter method is used for removing the ball, a larger bubble traverses the tube than when the former method is used, but a large bubble moves sufficiently fast, even in a very viscous solution, to escape at the top in a few minutes, whereas small bubbles take hours to escape.

6.1.2 *Steel Ball*, 0.625± 0.001 in. (15.88 ± 0.02 mm) in diameter, and weighing 16.536± 0.10 g.

6.1.3 *Aluminum Guide Cone* of light gage aluminum (approximately 0.02 in. (0.5 mm) in thickness) as shown in Fig. 1. The orifice of the guide cone shall be 7⁄8 in. (22 mm) in diameter, the conical portion 1 in. (25 mm) in height, the cylindrical portion 1⁄2 in. (12.7 mm) in height, and the outside diameter shall be slightly under 2 in. (50 mm) so as to fit

[7] Borosilicate glass is satisfactory for this purpose.