



Standard Test Methods for Soluble Cellulose Nitrate¹

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1. Scope

1.1 These test methods cover the material known as soluble cellulose nitrate (also known as soluble nitrocellulose), which is shipped wet in conformance with regulations of the Interstate Commerce Commission.

1.2 The test methods appear in the following sections:

	Sections
Ash	5-7
Drying Samples	4
Nitrogen	8-10
Stability	11-13
Toluene Dilution	22-24
Viscosity	14-18

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 Notes 2-5.

2. Referenced Documents

2.1 ASTM Standards:

- D 302 Specification for Ethyl Acetate (85 to 88 Percent Grade)²
- D 303 Specification for *n*-Butyl Acetate (90 to 92 % Grade)²
- D 362 Specification for Industrial Grade Toluene²
- D 1343 Test Method for Viscosity of Cellulose Derivatives by Ball-Drop Method³
- D 4795 Test Method for Nitrogen Content of Soluble Nitrocellulose—Alternative Method³
- E 1 Specification for ASTM Thermometers⁴

3. Sampling

3.1 Samples shall be taken from not less than 10 % (at least two barrels) of each lot or batch in the shipment. In sampling the barrels, two samples of approximately 1 pt (0.5 dm³) each shall be taken from two well-separated points at least 1 ft (0.3

m) beneath the surface of the material in the barrel. These samples shall then be composited to represent each lot or batch in the shipment.

3.2 The samples shall meet the following requirements:

3.2.1 *Appearance*—The cellulose nitrate shall not be discolored and shall be free of lumps and foreign matter, such as charred particles.

3.2.2 *Ash*—Ash content shall not exceed 0.30 %, calculated on the basis of dry-weight soluble cellulose nitrate.

3.2.3 *Nitrogen*—The percent nitrogen, calculated on the basis of dry-weight soluble cellulose nitrate, shall be within the limits agreed upon by the purchaser and the manufacturer for the particular type of soluble cellulose nitrate.

3.2.4 *Stability*—The stability as determined by the 134.5 C test shall be not less than 25 min.

3.2.5 *Viscosity*—The viscosity shall be within the limits agreed upon by the purchaser and the manufacturer for the particular type of soluble cellulose nitrate.

3.2.6 *Solubility and Appearance of the Solution*—The solubility and appearance of the sample shall be equal to the reference standard for the particular type of soluble cellulose nitrate.

3.2.7 *Film Test*—The film test of the sample shall be equal to that of the reference standard for the particular type of soluble cellulose nitrate.

3.2.8 *Toluene Dilution Test*—The toluene dilution value of the sample shall be equivalent to that of the reference standard for the particular type of soluble cellulose nitrate.

DRYING SAMPLES

4. Procedure

4.1 Soluble cellulose nitrate is a flammable material, the degree of flammability varying with the extent and nature of the wetting medium. Cellulose nitrate is always wet with water or alcohol in commercial handling, shipping, and storage, in which condition it presents no unusual hazard. Dry cellulose nitrate, if ignited by fire, spark, or static electricity, burns very rapidly. Samples of dry cellulose nitrate *must not* be stored at any time. Dry only that portion required for immediate test. Wet the excess material and the samples left after testing with water and dispose of by burning on a safe burning ground.

4.2 Dry small quantities required for ash and nitrogen tests by spreading in a thin layer on a tray at room temperature for 12 to 16 h, followed by oven-drying in crucibles or weighing bottles 1 h at 100 to 105°C. The oven used for drying cellulose

¹ These test methods are under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications, and are the direct responsibility of Subcommittee D01.36 on Cellulose and Cellulose Derivatives.

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² Discontinued, see 1986 *Annual Book of ASTM Standards*, Vol 06.03.

³ *Annual Book of ASTM Standards*, Vol 06.03.

⁴ *Annual Book of ASTM Standards*, Vol 14.03.