



Standard Test Methods for High-Gravity Glycerin^{1,2}

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1. Scope

1.1 These test methods cover the procedures for the sampling and testing of glycerin (1,2,3-propanetriol) for use in the manufacture of alkyd resins and other synthetic resins.

1.2 *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.*

1.3 For hazard information and guidance, see the supplier's Material Safety Data Sheet.

2. Referenced Documents

2.1 ASTM Standards:

D 891 Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals³

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)⁴

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer and Related Products⁴

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter⁵

E 300 Practice for Sampling Industrial Chemicals⁶

3. Significance and Use

3.1 These test methods provide a measurement of purity of high-gravity glycerin. The results of these measurements can be used for specification acceptance.

4. Sampling

4.1 Sample the material in accordance with Practice E 300.

5. Procedure

5.1 *Apparent Specific Gravity*—Determine the apparent specific gravity by a pycnometer method that is accurate to 0.0002, such as in Test Methods D 891 or D 4052.

5.2 *Color*—Determine the color in accordance with Test Method D 1209.

5.3 *Sulfate Ash*—Weigh to the nearest 0.001 g, 50 g of glycerin sample, into an open, shallow dish of porcelain, platinum, or other suitable material. Heat the dish carefully until the contents can be ignited with a flame and allow it to burn without further application of heat in a place free of drafts. When burning ceases, allow the dish to cool to room temperature and then moisten the residue with 0.5 mL of concentrated sulfuric acid. Cautiously heat the dish until fumes are no longer evolved and the carbon is completely consumed. Ignite, cool in a desiccator, and weigh to 1 mg. Repeat until weight is constant within 1 mg. Calculate the percent of sulfate ash, *A*, as follows:

$$A = (R/S) \times 100 \quad (1)$$

where:

R = sulfate ash, g, and

S = specimen used, g.

NOTE 1—The sulfate ash procedure is equivalent to the “Residue on Ignition” determination for glycerin in the Pharmacopeia of the United States, nineteenth revision.

5.4 *Acid Value*—Determine the percent acid in accordance with Test Method D 1613.

6. Precision and Bias

6.1 *Precision*—The precisions of the test procedures presented in these test methods have not been determined.

6.2 *Bias*—The biases of the test procedure presented in this standard have not been determined because no material having an accepted value is available.

7. Keywords

7.1 glycerine; glycerol; high-gravity glycerin; 1;2;3-propanetriol; trihydroxy propane

¹ These test methods are under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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² Also known as 1,2,3-propanetriol and glycerol.

³ *Annual Book of ASTM Standards*, Vol 15.05.

⁴ *Annual Book of ASTM Standards*, Vol 06.04.

⁵ *Annual Book of ASTM Standards*, Vol 05.02.

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

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