



Designation: D6017 – 97 (Reapproved 2020)<sup>ε1</sup>

## Standard Test Method for Determination of Magnesium Sulfate (Epsom Salt) in Leather<sup>1</sup>

This standard is issued under the fixed designation D6017; 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.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

<sup>ε1</sup> NOTE—An editorial change to update the source of Federal Test Standard No. 311 was made in April 2020.

### 1. Scope

1.1 This test method covers quantitatively determining the magnesium sulfate (epsom salt) in leather.

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

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

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

[D3790 Test Method for Volatile Matter \(Moisture\) of Leather by Oven Drying](#)

2.2 *Federal Standards:*

[Federal Test Standard No. 311, Method 6541 Magnesium Sulfate \(Epsom Salt\)](#)<sup>3</sup>

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.06 on Chemical Analysis. This test method was developed from Federal Test Method Standard No. 311, Method 6541 in cooperation with the U.S. Army Natick Research Development & Engineering Center, Natick MA and the Defense Personnel Support Center Directorate of Clothing and Textiles, Philadelphia PA.

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<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.

<sup>3</sup> Available from <https://quicksearch.dla.mil>.

### 3. Significance and Use

3.1 This test method distinguishes magnesium sulfate from other water soluble non-tanning salts found in leather.

### 4. Apparatus

4.1 *Platinum Crucible.*

4.2 *Filtering Crucible.*

4.3 *Suction Flask.*

4.4 *Muffle Furnace.*

### 5. Reagents

5.1 *Hydrochloric Acid*, specific gravity 1.19.

5.2 *Nitric Acid*, specific gravity 1.42.

5.3 *Ammonium Chloride.*

5.4 *Ammonium Hydroxide*, 1 to 1 and 1 to 9 parts by volume with distilled water.

5.5 *Ammonium Nitrate Solution*, 10 g dissolved in distilled water and made up to 100 mL.

5.6 *Ammonium Oxalate*, saturated solution.

5.7 *Ferric Chloride Solution*, 10 g dissolved in distilled water and made up to 100 mL.

5.8 *Methyl Orange Indicator*, 0.05 %.

5.9 *Sodium Ammonium Hydrogen Phosphate*, saturated solution.

### 6. Procedure

6.1 Unless otherwise specified in the material specification, determine the moisture content of the composite sample from which the test specimen is drawn, in accordance with Test Method D3790. Determine the weight of the composite specimens for moisture content at the same time and under the same ambient conditions as the specimens weighed for chemical tests.

6.2 Place the specimen in a tared porcelain crucible, 5 g weighed to the nearest 0.001 g, and record the value as  $W_2$ .