Designation: D3790 – 79 (Reapproved 2012)

Standard Test Method for Volatile Matter (Moisture) of Leather by Oven Drying[1]

This standard is issued under the fixed designation D3790; 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.

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

1. Scope

1.1 This test method covers the determination of volatile matter (moisture) in all types of 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D2813 Practice for Sampling Leather for Physical and Chemical Tests

E180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial and Specialty Chemicals[3]

3. Summary of Test Method

3.1 The ground leather specimen is heated in a mechanical-convection oven for 16 h at 100°C, placed in a desiccator, cooled, and reweighed. The loss in weight represents the volatile matter.

4. Significance and Use

4.1 The result obtained by this test is normally considered to be the moisture content of the leather sample. This result is used to correct all other chemical tests to a moisture-free basis.

4.2 Materials that are volatile under these conditions, other than water, may be present in the leather, although their amount in any normal leather would be expected to be a very small percentage of the total volatile matter.

4.3 Under the conditions of this test, certain materials in leather, such as protein fiber and chromium tanning salts, may retain moisture. Other materials, such as tannins and oils, may be oxidized. Both of these effects produce negative errors in the moisture determination.

4.4 The amount of volatile matter (moisture) released by a given leather varies with (*a*) degree of grinding of the sample, (*b*) weight of sample taken, (*c*) temperature and time of the oven drying, (*d*) shape of the weighing container, and (*e*) type of oven (gravity versus mechanical convection) used.

4.5 Because of the above unknown errors, the result of this test is a purely arbitrary value for the moisture content of the sample. It is, therefore, essential that the method be followed exactly in order to obtain reproducible results among laboratories. This is particularly true if other chemical analytical tests being performed on the same sample are reported on the moisture-free basis.

5. Apparatus

5.1 *Weighing Bottle*[4], glass, low-form, cylindrical with a ground-glass stopper of standard taper. The bottle shall have 70 ± 5 mm inside diameter, and 33 ± 3 mm overall height.

5.2 *Oven*, mechanical-convection draft capable of setting at 100°C, with a thermoregulator system capable of holding oven temperature within ± 2°C of set point. A thermometer accurate to ±0.2°C should be used to check and monitor the oven set point.

5.3 *Balance*, capable of weighing up to 100 g with an accuracy of ±0.001 g.

5.4 *Desiccator*, any convenient form or size, using any normal desiccating agent such as calcium sulfate, calcium chloride, or silica gel.

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[1] 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.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.

[4] Weighing bottles that have been found to be satisfactory are the Kimble Glass Co. No. 15166 and 15165 with 71/15 standard-taper caps and are available from most laboratory supply houses.