Designation: D6658 – 08 (Reapproved 2013)

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

This standard is issued under the fixed designation D6658; 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.

1. Scope

1.1 This test method covers the determination of volatile matter (moisture) in all types of wet blue and wet white.

1.2 This test method was originally developed for wet blue, however, this test method can be used to test wet white. For wet white testing, substitute the term wet white for wet blue in the standard.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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]

D6659 Practice for Sampling and Preparation of Wet Blue for Physical and Chemical Tests

3. Summary of Test Method

3.1 The prepared wet blue or wet white specimen is heated in a forced air oven for 8 to 24 h at 100-105 °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 wet blue or wet white 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 wet blue, although their amount in any normal wet blue 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 wet blue, such as protein fiber and chromium tanning salts, may retain moisture. Other materials, such as natural animal fats, 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 sample varies with (*a*) method and time of sample preparation, (*b*) weight of sample taken, (*c*) temperature and time of the oven drying, (*d*) 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 Appropriately sized weighing container with cover suitable for oven use.

5.2 *Oven,* forced air capable of attaining a steady 100-105 °C, with a thermoregulator system. A thermometer accurate to 1 °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.

6. Sampling

6.1 The leather shall be sampled in accordance with Practice D6659.

7. Procedure

7.1 Insert the empty weighing container and cover in the oven at 100-105 °C for 1 h or more to insure dryness.

7.2 Remove the container and cover from the oven and place in a desiccator and cool to ambient temperature.

[1] This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.02 on Wet Blue.

Current edition approved May 1, 2013. Published May 2013. Originally approved in 2001. Last previous edition approved in 2008 as D6658 – 08. DOI: 10.1520/D6658-08R13.

[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.

7.3 Weigh the container and cover and record to the nearest ± 0.001 g.

7.4 Transfer 10-15 g of wet blue prepared as specified in D6659 into the previously weighed container.

7.5 Weigh the covered container to the nearest ± 0.001 g and record.

NOTE 1—It is essential that weighings be made promptly.

NOTE 2—The specimens for all chemical tests to be reported on a moisture-free basis should be weighed out at the same time as the moisture specimens.

7.6 *Oven Drying*—Place the weighing container with the sample and with cover ajar on a shelf in the forced air oven at 100-105 °C for a minimum of 8 ± ½ h or a maximum of 24 ± ½ h.

7.7 After the determined drying time cover the bottle, place in the desiccator, and cool to ambient temperature.

7.8 Weigh the covered container and record to the nearest ± 0.001 g.

8. Calculation

8.1 Calculate the percent volatile matter (moisture) as follows:

$$\textit{Volatile matter (moisture)},\ \% = \left[(S - D)/(S - B)\right] \times 100 \quad (1)$$

where:

S = weight, grams, of original specimen plus covered container,

B = weight, grams, of empty covered container, and

D = weight, grams, of oven-dried sample plus covered container.

9. Report

9.1 Report the percent volatile matter (moisture) for each specimen. If more than one specimen is tested, report the average of the specimens to the nearest 0.01 %.

10. Precision and Bias

10.1 Six different laboratories, each using a single different wet blue sample, dried different wet blue samples at 105 °C for 8 ± ½ h and for 24 ± ½ h. The average difference obtained between the two drying times was: 0.03 %. A *t-test* of the average differences produced a value of t = –0.516. The tabulated value at the 95 % confidence limit for 5 degrees of freedom is 2.571. Therefore since the calculated t is less than the tabulated t, there is no significant difference between the two drying times.

10.2 This method is purely arbitrary and the bias cannot be related to the true moisture content of the sample.

11. Keywords

11.1 blue stock; moisture; volatile matter; wet blue; wet white