



Standard Test Method for Insoluble Ash of Vegetable-Tanned Leather¹

This standard is issued under the fixed designation D 2875; 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 the insoluble ash in all types of vegetable-tanned leathers. This test method does not apply to wet blue.

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.*

2. Referenced Documents

2.1 ASTM Standards:

D 2617 Test Method for Total Ash in Leather²

D 2876 Test Method for Water-Soluble Matter of Vegetable-Tanned Leather²

3. Summary of Test Method

3.1 The specimen from which the water-soluble matter has been removed is heated at $600 \pm 25^\circ\text{C}$ until carbon is removed and constant weight is attained. The weighed residual matter is termed “insoluble ash” and is calculated as percentage of the original sample.

4. Significance and Use

4.1 This test method gives the amount of ash remaining in the specimen after water extraction to remove water solubles from the leather in accordance with Test Method D 2876. The insoluble ash is used in calculating the combined tannin because it is part of the tanned fiber structure that does not leach from the leather during water extraction.

5. Apparatus

5.1 *Crucible*, porcelain or platinum, large enough to hold the leather specimen.

5.2 *Electric Muffle Furnace*, with temperature controller and pyrometer, capable of maintaining a temperature of $600 \pm 25^\circ\text{C}$.

6. Test Specimen

6.1 The specimen shall consist of the 5-g leather sample remaining after water extraction as directed in Test Method D 2876. Any deviation from this sample size should be included with the analytical results.

7. Procedure

7.1 Remove the specimen quantitatively from the extraction tube, dry at room temperature, transfer to the crucible, place in a cold muffle furnace, and ash at $600 \pm 25^\circ\text{C}$ until the crucible and contents have reached constant weight as directed in Test Method D 2617. Remove the crucible to a desiccator, cool, and weigh.

8. Calculation

8.1 Calculate the percentage of insoluble ash in the leather as follows:

$$\text{Insoluble ash, \%} = [(W_3 - W_2)/W_1] \times 100 \quad (1)$$

where:

W_1 = weight of specimen (15 g),

W_2 = weight of the crucible, and

W_3 = weight of the crucible plus ash.

9. Precision and Bias ³

9.1 The precision of this test method is limited by the lack of homogeneity of the sample in a complex material such as leather. It will also vary with the insoluble ash content.

9.1.1 At the 95 % confidence level, duplicate determinations by the same operator should not differ by more than 0.1 % insoluble ash.

9.1.2 At the 95 % confidence level, the average of duplicate determinations in each of two laboratories by different operators should not differ by more than 0.1 % insoluble ash.

9.2 Inasmuch as all leathers contain an unknown amount of natural or inherent ash, no meaningful statement can be made with respect to bias.

10. Keywords

10.1 ash content; insoluble ash; leather; vegetable tanned leather

¹ This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.01 on Vegetable Leather. This test method was developed in cooperation with the American Leather Chemists Assn.

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² *Annual Book of ASTM Standards*, Vol 15.04.

³ The precision and bias statements are based on data filed at the ASTM Headquarters as RR: D31-1000.