



Standard Practice for Calculation of (Non-Mineral) Combined Tanning Agents and Degree of Tannage¹

This standard is issued under the fixed designation D6020; 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 practice covers the determination of the combined tannin and nonextractable organic resins and the degree of tannage of all types of vegetable-tanned leather and leather with organic retannages. This practice does not apply to wet blue.

2. Referenced Documents

2.1 *ASTM Standards*:²

D2868 Test Method for Nitrogen Content (Kjeldahl) and Hide Substance Content of Leather

D2875 Test Method for Insoluble Ash of Vegetable-Tanned Leather

D2876 Test Method for Water-Soluble Matter of Vegetable-Tanned Leather

D3495 Test Method for Hexane Extraction of Leather

3. Significance and Use

3.1 This practice may be used to determine non-protein or non-nitrogen containing organic matter in leather which is not extractable with water or hexane. Examples would be vegetable tannins and acrylic lubricants.

4. Procedure

4.1 The chloroform and water extractable materials and insoluble ash in the specimen for test shall be determined in accordance with Test Methods **D2875**, **D2876**, and **D3495**.

4.2 The hide substance in the specimen for test shall be determined in accordance with Test Method **D2868**.

¹ This practice is under the jurisdiction of ASTM Committee **D31** on Leather and is the direct responsibility of Subcommittee **D31.01** on Vegetable Leather.

Current edition approved April 1, 2010. Published May 2010. Originally approved in 1996. Last previous edition approved in 2005 as D6020 - 00 (2005). DOI: 10.1520/D6020-00R10.

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.

5. Calculation of Results

5.1 The percentage of combined tannin in the specimen shall be calculated as follows:

$$\text{Combined tannin, percent} = 100 - (A + B + C + D) \quad (1)$$

where:

A = percent of chloroform-soluble material (mfb),

B = percent of water-soluble material (mfb),

C = percent of insoluble ash (mfb), and

D = percent of hide substance (mfb).

(mfb) = moisture free basis.

5.2 The degree of tannage shall be calculated as follows:

$$\text{Degree of tannage} = \frac{T}{D} \times 100 \quad (2)$$

where:

T = percent of combined tannin, and

D = percent of hide substance.

6. Report

6.1 The combined tannin in the specimen shall be reported to the nearest 0.1 %.

6.2 The degree of tannage in the specimen shall be reported to the nearest 0.5°.

7. Precision and Bias

7.1 This practice is adopted from Federal Test Standard No. 311 Method 6631 where it has long been in use and was approved for publication before the inclusion of precision and bias statements was mandated. The user is cautioned to verify by the use of reference materials, if available, that the precision and bias (or reproducibility) of this practice is adequate for the contemplated use. The user should also consider precision and bias statements from each of the methods used to make this calculation.

8. Keywords

8.1 combined tannins; degree of tannage; leather; tannin analysis; vegetable-tanned leather