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Standard Practice for Analysis of Vegetable Tanning Materials—General¹

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1. Scope

1.1 This practice is intended for use in the chemical analysis of all vegetable tanning materials.

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:²

- D4900 Test Method for Lignosulfonates (Sulfite Cellulose) in Tanning Extracts
- D4901 Practice for Preparation of Solution of Liquid Vegetable Tannin Extracts
- D4902 Test Method for Evaporation and Drying of Analytical Solutions
- D4903 Test Method for Total Solids and Water in Vegetable Tanning Material Extracts
- D4904 Practice for Cooling of Analytical Solutions
- D4905 Practice for Preparation of Solution of Solid, Pasty and Powdered Vegetable Tannin Extracts
- D6401 Test Method for Determining Non-Tannins and Tannin in Extracts of Vegetable Tanning Materials

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. This practice has been adapted from and is a replacement for Method A1 of the Official Methods of the American Leather Chemists Association.

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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.

- D6402 Test Method for Determining Soluble Solids and Insolubles in Extracts of Vegetable Tanning Materials
- D6403 Test Method for Determining Moisture in Raw and Spent Materials
- D6404 Practice for Sampling Vegetable Materials Containing Tannin
- D6405 Practice for Extraction of Tannins from Raw and Spent Materials
- D6406 Test Method for Analysis of Sugar in Vegetable Tanning Materials
- D6407 Test Method for Analysis of Iron and Copper in Vegetable Tanning Materials
- D6408 Test Method for Analysis of Tannery Liquors
- D6409 Practice for Color Tests with Sheepskin Skiver
- D6410 Test Method for Determining Acidity of Vegetable Tanning Liquors

2.2 ALCA Methods:

- A1 Analysis of Vegetable Tanning Materials—General³
- A5 Extraction of Raw and Spent Materials³
- A6 Moisture in Raw and Spent Materials³
- A10 Preparation of Solution of Liquid Extracts³
- A11 Preparation of Solution of Solid, Pasty, and Powdered Extracts³
- A12 Cooling of Analytical Solutions³
- A13 Evaporation and Drying of Analytical Solutions³
- A20 Total Solids and Water³
- A21 Soluble Solids and Insolubles³
- A22 Non-Tannins and Tannin³
- A25 Analysis of Tannery Liquors³
- A30 Sugar in Tanning Materials³
- A31 Copper and Iron in Tanning Materials³
- A40 Color Tests with Sheepskin Skiver³
- A50 Lignosulfates (Sulfite Cellulose)³
- A60 Official Certification³
- J10 Sampling of Vegetable Materials Containing Tannin³

2.3 Federal Specification

- DD-V-582 Volumetric Apparatus, Glass⁴

³ Official Methods of the American Leather Chemists Association. Available from the American Leather Chemists Association (ALCA), University of Cincinnati, P.O. Box 210014, Cincinnati, OH 45221-0014.

⁴ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3. Significance and Use

3.1 Vegetable tanning materials are natural products containing various substances of varying composition, concentration and quality.

3.2 The methods referenced are useful for analyzing and testing vegetable tanning materials for moisture, water-extractable substances, cold-soluble fractions, tannins, non-tannins, acidity, tanning properties, the color of tanned leather, and the presence or absence of certain admixtures.

4. Samples and Specimens

4.1 The preparation of the composite sample of a vegetable tanning material for analysis purposes shall be as described in ALCA Method J10.

5. Apparatus and Reagents

5.1 All volumetric glassware shall comply with Federal Specification DD-V-582.

5.2 Unless otherwise specified, all reagents used in the chemical analyses shall be of certified ACS purity grade and comply with the specifications recommended by the Committee on Analytical Reagents of the American Chemical Society.⁵

5.3 The distilled water used in the chemical analysis shall have a pH of not less than 5.5, nor more than 7.0, and shall give a residue of not more than 0.0005 g when 100 mL is evaporated and dried in a platinum dish.

⁵ American Chemical Society, 1155 16th St. NW, Washington, DC 20036.

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5.4 General laboratory apparatus and reagents shall be available. (Special apparatus and reagents are described in the individual methods.)

6. Procedure

6.1 Cover all funnels, collecting dishes, and other apparatus used during the analysis so as to prevent, or reduce to a minimum, any change in the concentration of solutions by evaporation of water.

6.2 Measure all aliquots of analytical solutions, pipetted for the determination of total solids, soluble solids, non-tannins, or other, at the same temperature within the range 23° to 25°C as specified in ALCA Methods A21 and A22.

7. General Analytical Procedure for the Analysis of Vegetable Tanning Materials

7.1 The following ASTM standards are applicable: Test Methods **D4900**, **D4902**, **D4903**, **D6401**, **D6402**, **D6403**, **D6406**, **D6407**, **D6408**, and **D6410**, and Practices **D4901**, **D4904**, **D4905**, **D6404**, **D6405**, and **D6409**.

7.2 The following ALCA Methods are applicable: A5, A6, A10, A11, A12, A13, A20, A21, A22, A25, A30, A31, A40, A50, A60, J10.

8. Keywords

8.1 tannin; tannin analysis; vegetable tannin analysis; vegetable tannins