



Designation: D6409 – 99 (Reapproved 2020)

## Standard Practice for Color Tests with Sheepskin Skiver<sup>1</sup>

This standard is issued under the fixed designation D6409; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice covers making color tests of all types of vegetable tanning extracts and of vegetable tanning materials to determine the color imparted to tanned skins.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered 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:*<sup>2</sup>

[D1517 Terminology Relating to Leather](#)

[D4901 Practice for Preparation of Solution of Liquid Vegetable Tannin Extracts](#)

[D4905 Practice for Preparation of Solution of Solid, Pasty and Powdered Vegetable Tannin Extracts](#)

[D6405 Practice for Extraction of Tannins from Raw and Spent Materials](#)

2.2 *ALCA Methods:*

[A40 Color Tests with Sheepskin Skiver](#)<sup>3</sup>

<sup>1</sup> 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 test method has been adapted from and is a replacement for Method A40 of the Official Methods of the American Leather Chemists Association.

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

<sup>3</sup> Official Methods of the American Leather Chemists Association. Available from the American Leather Chemists Association, University of Cincinnati, P.O. Box 210014, Cincinnati, OH 45221-0014.

### 3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of general leather and tanning terms used in this practice refer to Terminology [D1517](#).

3.1.2 *pickled skiver*—a sheepskin skiver that has been pickled in a solution of salt and sulfuric acid.

3.1.3 *sheepskin skiver*—the grain split of a de-wooled sheepskin. A pickled skiver is used for this test.

3.1.4 *tannin*—an astringent substance found in the various parts of plants such as bark, wood, leaves, nuts, fruits, roots, etc.

3.1.5 *vegetable tannins*—mixtures of substances (natural products) obtained from plant tissues by water extraction which have the chemical and physical properties necessary to convert animal hides and skins into leather.

### 4. Summary of Practice

4.1 A specimen of pickled skiver is tanned with a sample of vegetable tanning liquor in order to determine the color which will be imparted to a clear, clean hide or skin that is tanned with this tanning liquor.

### 5. Significance and Use

5.1 This practice provides a standard procedure for comparing the color of leather tanned with different tanning extracts or mixtures of extracts or for monitoring the color consistency of tannery liquors.

### 6. Apparatus and Reagents

6.1 *Pickled Sheepskin Skiver*, specially and consistently selected for the color test.

6.2 *Borax*, commercial grade such as may be used in a tannery.

6.3 *Containers*, 10 and 3 L capacity and made of suitable material to be resistant to the chemicals and materials used in the tanning procedure employed by this practice.

6.4 *Acetic Acid*, glacial, commercial grade.

6.5 *Sodium Acetate*, crystal, commercial grade.

6.6 *Sodium Chloride*, crystal, commercial grade.

6.7 *Shake Bottles*, 0.95 L (32 oz), with rubber stoppers. The bottles shall be approximately 21.6 cm (8.5 in.) overall height

and 8.9 cm (3.5 in.) diameter. One quart canning jars (Mason-type) with plastic screw-on lids work well.

6.8 *Shaking Machine*, rotating type, equipped to hold 0.95 L (32 oz) bottles for end-over-end agitation of hide powder and analytical solution. The speed of rotation shall be  $60 \pm 2$  rpm, and the machine shall be so constructed that the side of the shake bottle adjacent to the rotating shaft shall be not less than 5.1 cm (2 in.) nor more than 7.6 cm (3 in.) from the center of the shaft.

6.9 *Flat Dish*, 250 to 300 mL capacity; a photographic tray works well.

6.10 *Rubber Roller*, photographic print roller works well.

## 7. Test Specimen

7.1 The specimen shall consist of a liquor of four times analytical strength, prepared in a manner similar to the preparation of solutions for analysis (Practices [D6405](#), [D4901](#), or [D4905](#)). The volume shall be 400 mL for Method I ([9.2](#)) or 250 mL for Method II ([9.3](#)).

## 8. Preparation of Skiver

8.1 The neck and flank portions of the skiver shall be trimmed off, leaving a skin of uniform grain. The skiver may now be cut into pieces approximately 10 by 15 cm (4 by 6 in.) or may be left whole. The skiver shall be placed in a solution of 50 g of borax dissolved in 8 L of distilled water and at a temperature of 23 to 25 °C. It shall be stirred, or agitated, frequently and, at the end of 4 h, be transferred to a fresh borax solution, made up as before, be stirred several times and then allowed to remain overnight therein at not less than 23 °C nor more than 28 °C. Next morning, the skiver shall be transferred to 8 L of a 0.1 % solution of acetic acid, at 23 to 25 °C, be stirred, or agitated, frequently and, at the end of 3 h, be placed in a fresh solution of acetic acid of the same volume, strength, and temperature, and be stirred, or agitated, frequently. At the end of 3 h, the skiver shall be placed in 2 L of an acetic acid/sodium acetate buffer solution, at 23 to 25 °C, containing 2.0 g glacial acetic acid and 10 g of sodium acetate crystals per litre, and having a pH of 4.8 to 5.0. The skiver shall be stirred in this solution several times and then allowed to remain therein overnight. Next morning, the skiver shall be transferred to a saturated solution of sodium chloride containing a large excess of the salt.

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## 9. Procedure for Making Color Tests

9.1 Remove the salt from the skiver sample 10 by 15 cm (4 by 6 in.) by shaking with four changes of distilled water, of 500 mL each and at 23 to 25 °C, in a shake bottle for 15 min each.

### 9.2 Tanning Method I (Shake Method):

9.2.1 Add the washed skiver to the 400 mL liquor sample ([7.1](#)) at 23 to 25 °C, contained in a shake bottle. Immediately, stopper the bottle and shake for 1 h in the shake machine. Allow the skiver to stand in the solution overnight at 23 to 25 °C and then shake for one-half hour next morning. Then treat the skiver as described in [9.4](#).

### 9.3 Tanning Method II (Layaway Method):

9.3.1 Take a 50.0 mL portion from the 250 mL sample ([7.1](#)), dilute to 200 mL with distilled water at 23 to 25 °C, and pour into a flat dish or tray ([6.9](#)). Completely immerse the washed skiver sample in this solution, grain side up, and rock occasionally over a period of 1 h, or until the skiver is evenly colored. Then discard the weak solution. Immediately pour the remaining 200 mL of the liquor sample into the dish and completely immerse the skiver. Rock it occasionally, cover it to prevent dust or dirt from falling onto the skiver, and allow to stand overnight at 23 to 25 °C. Then treat the skiver as described in [9.4](#).

### 9.4 Post-Tanning Treatment:

9.4.1 Wash the skiver, tanned as described in [9.2](#) or [9.3](#), by shaking with two changes of distilled water, of 800 mL each and at 30 to 35 °C, for 10 min each, and rinse with distilled water, and squeeze out a number of times before, between, and after the changes of water. Then spread it out on a glass surface and slick out lightly, using a rubber roller ([6.10](#)) with just enough pressure to remove the excess water. Then tack out the skiver, grain side down, on a board covered with filter paper, and put into a dark place to dry.

9.4.2 After drying, the skiver is ready for color comparison and evaluation by the standard procedure used at a particular tannery.

## 10. Keywords

10.1 color test; sheepskin skiver test; tanning color test; vegetable tannin analysis