



Designation: D 1610 – 01

## Standard Practice for Conditioning Leather and Leather Products for Testing<sup>1</sup>

This standard is issued under the fixed designation D 1610; 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 approval. A superscript epsilon ( $\epsilon$ ) 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 conditioning of all units and specimens of leather and leather products prior to testing and the conditions under which they should be tested. This practice 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 1517 Terminology Relating to Leather<sup>2</sup>

E 337 Test Method for Measuring Humidity with a Psychrometer (The Measurement of Wet- and Dry-Bulb Temperatures)<sup>3</sup>

#### 2.2 IU Standards

IUP/3 Conditioning<sup>4</sup>

### 3. Terminology

#### 3.1 Definition:

3.1.1 For definitions of leather terms used in this practice, refer to Terminology D 1517.

3.1.2 *standard atmospheric conditions*—for leather and leather testing, one of two sets of conditions:

(1) a temperature of  $23 \pm 2^\circ\text{C}$  ( $73.4 \pm 3.6^\circ\text{F}$ ) and a relative humidity of  $50 \pm 4\%$

(2) a temperature of  $20 \pm 2^\circ\text{C}$  ( $68.0 \pm 3.6^\circ\text{F}$ ) and a relative humidity of  $65 \pm 4\%$ .

Condition set (1) is used as the standard for leather testing in North America and condition set (2) is used as the standard for leather testing in Europe and Japan.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.07 on Physical Properties—General. This practice was developed in cooperation with the American Leather Chemists Assn.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 15.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 11.03.

<sup>4</sup> *Journal of the Society of Leather Trades' Chemists*, Vol XLII, No. 12, pp 386–387.

### 4. Summary of Test Method

4.1 The conditioning prescribed in this practice is designed to obtain reproducible test results on leather and leather products by the standardization of the relative humidity and temperature conditions to which the leather or leather product is subjected prior to and during testing.

### 5. Significance and Use

5.1 Temperature and relative humidity have an influence on many of the physical properties of leather. Depending on environmental conditions the moisture content in leather may vary significantly. Standardized conditioning in part allows for reliable comparisons to be made among different leather and leather products, and among different laboratories.

### 6. Apparatus

6.1 *Room*, in which the standard atmosphere is automatically maintained.

6.2 *Psychrometer*—Either a sling psychrometer, or a stationary type psychrometer having the air circulated over the thermometer bulbs.

NOTE 1—It is preferable to draw air over the thermometer bulb rather than blow air, from a fan source, over them. Heat from the fan may cause errors in the readings.

6.3 *Thermometers*—The thermometers should conform approximately to the following requirements: range 0 to  $52^\circ\text{C}$  ( $32$  to  $122^\circ\text{F}$ ); graduation  $0.2^\circ\text{C}$  ( $0.5^\circ\text{F}$ ). They should be matched to within  $0.1^\circ\text{C}$  ( $0.25^\circ\text{F}$ ) throughout the range used.

NOTE 2—Under ordinary conditions, an error of 1% in relative humidity corresponds to an error of approximately  $0.1^\circ\text{C}$  ( $0.2^\circ\text{F}$ ) in the wet-bulb depression.

6.4 *Chamber for maintaining 65% relative humidity*—A relative humidity of  $65 \pm 2\%$  at  $20 \pm 2^\circ\text{C}$  can be maintained in a closed space by the use of a saturated solution of certain salts in water (in which the solid phase is present in excess)<sup>5</sup> or a sulfuric acid solution. The solution should be placed in a large shallow dish inside the closed vessel. Continuous circulation of air inside the vessel is essential. Appropriate saturated

<sup>5</sup> *Handbook of Chemistry and Physics*, Chemical Rubber Publishing Co.; Lange, *Handbook of Chemistry*, Handbook Publishers; and Wilson, *Modern Practice in Leather Manufacture*, Reinhold Publishing Co.