



Standard Practice for Conditioning Leather and Leather Products for Testing¹

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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 Leather²

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

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

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

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

³ *Annual Book of ASTM Standards*, Vol 11.03.

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°C (32 to 122°F); graduation 0.2°C (0.5°F). They should be matched to within 0.1°C (0.25°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°C (0.2°F) in the wet-bulb depression.

7. Calibration

7.1 *Thermometers*—The thermometers used for the determination of the wet- and dry-bulb temperature shall be calibrated against a certified standard thermometer and any corrections found necessary shall be applied to the readings.

NOTE 3—Test Method E 337 may be used for reference.

7.2 *Relative Humidity*—Use either the sling or the stationary psychrometer to determine the relative humidity of the conditioned atmosphere. In both cases, air circulation rate around the thermometer bulbs should be not less than 10 ft (3 m)/s and the exposure not less than 60 s before readings are taken. When using the sling psychrometer, readings, especially of the wet bulb, shall be taken as quickly as possible after bringing it to rest.

7.2.1 Using the wet- and dry-bulb readings, determine the relative humidity from psychrometric tables.⁴

NOTE 4—The wet-bulb temperature, T_w , in degrees Celsius corresponding to a relative humidity of 50 % at a given air temperature, t , in degrees Celsius (dry-bulb) and a given barometric pressure, B , in centimetres of mercury, may be calculated as follows:

⁴ Some reference sources in which psychrometric tables may be consulted are: *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.