



Designation: D 3495 – 00

Standard Test Method for Hexane Extraction of Leather¹

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1. Scope

1.1 This test method covers the quantitative extraction of all types of leather with hexane. This test method 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 2813 Practice for Sampling Leather for Physical and Chemical Tests²

D 3790 Test Method for Volatile Matter (Moisture) of Leather by Oven Drying²

3. Significance and Use

3.1 This test method measures the amount of hexane-soluble lubricant present in all types of leather. Adequate lubrication prevents abrasion of leather fibers during flexing. This lubrication is generally obtained from the fat liquor added at the tannery. Some lubrication is also obtained from natural grease produced during the life of the animal.

4. Apparatus

4.1 *Analytical Balance.*

4.2 *Soxhlet Apparatus*, consisting of a boiling flask, extraction tube, and condenser.

4.3 *Forced Circulating Air Oven*, capable of maintaining the specified temperature.

4.4 *Electric Hot Plate.*

4.5 *Extraction Thimbles*, fat-free, cellulose, Alundum, or fritted.

4.6 *Absorbent Cotton*, fat-free.

4.7 *Steam Bath.*

¹ This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.06 on Chemical Analysis—General.

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

5. Reagent

5.1 *Hexane*, ACS Reagent Grade conforming to the following requirements:

5.1.1 *Color (APHA)*—10 max.

5.1.2 *Density (g/mL)* at 25°C—0.687 max.

5.1.3 *Boiling Range*—1 to 95 mL, not more than 4.0°C.

5.1.4 *Residue After Evaporation*—0.001 % max.

5.1.5 *Acidity* (as CH₃COOH)—To pass test (limit 0.002 %).

5.1.6 *Sulfur Compounds* (as S)—0.005 % max.

5.1.7 *Thiophene*—To pass test.

NOTE 1—This reagent grade hexane is generally a mixture of several isomers of hexane (C₆H₁₄), predominantly *n*-hexane and methylcyclopentane (C₆H₁₂).

6. Test Specimens

6.1 The leather shall be sampled in accordance with Method D 2813. Leather test specimens shall be obtained from the composite sample prepared by random sampling, cutting, and mixing equal portions of leather representing the lot that is being analyzed. The well-mixed leather pieces shall be ground in a mill (Wiley or equal) having a No. 5 (4-mm) sieve. The ground leather that passes through this 4-mm sieve shall be mixed well and used as the composite sample.

7. Procedure

7.1 Determine the moisture content of the composite sample from which the ground leather for hexane extraction is taken in accordance with Test Method D 3790. Determine the weight of the ground leather taken from the composite sample for moisture content at the same time and under the same ambient conditions as the weight of the ground leather taken for hexane extraction.

7.2 Weigh 5 g of ground leather taken from the composite to the nearest 0.001 g and record this value as W_1 . Loosely pack this material in an appropriately sized extraction thimble and cover with a pad of fat-free cotton. Place the loaded thimble in the Soxhlet extraction tube. Dry an extraction flask in an oven for 1 h at $100 \pm 2^\circ\text{C}$, cool in a desiccator, and weigh to the nearest 0.001 g. Record this value as W_2 . Fill the flask approximately two-thirds full with hexane, assemble the apparatus, circulate the water through the condenser, and heat the flask until the extraction of the leather has continued for a minimum of 50 cycles. If the Soxhlet drips continuously