



Designation: D2868 – 24

Standard Test Method for Nitrogen Content (Kjeldahl) and Hide Substance Content of Leather, Wet Blue and Wet White¹

This standard is issued under the fixed designation D2868; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of the nitrogen content of all types of leather, wet blue and wet white. The nitrogen content is used to calculate the hide substance (protein fiber) content of leather, wet blue and wet white.

NOTE 1—The original test method for leather was essentially a composite of Method 6441 of Federal Test Method Standard No. 311 and Method B5 of the American Leather Chemists Association.

NOTE 2—Melamine, if present in bonded leather, could give an artificially high value for the calculation of protein fiber.

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

D2813 Practice for Sampling Leather for Physical and Chemical Tests

D6659 Practice for Sampling and Preparation of Wet Blue

and Wet White for Physical and Chemical Tests

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Summary of Test Method

3.1 The specimen prepared according to an accepted procedure (see Note 3) is digested with acid in the presence of a catalyst to convert the nitrogen to ammonium ion. The ammonium ion formed is nonvolatile under these highly acid conditions.

NOTE 3—For leather use specimen prepared per Practice D2813. For wet blue and wet white, use specimen prepared per Practice D6659.

3.2 The acid mixture is then made alkaline and the ammonia liberated is distilled into either a boric acid solution which absorbs the ammonia, or a sulfuric acid solution which absorbs the ammonia.

3.3 When the boric acid solution is used, the amount of ammonia in the boric acid is then determined by back titration with standardized acid using a sharp color change indicator (green to purple) to determine the end point. When the sulfuric acid solution is used, the amount of ammonia in the sulfuric acid solution is then determined by back titration with standardized base using a sharp color change indicator (purple to green-blue) to determine the end point.

4. Significance and Use

4.1 The nitrogen content as determined by this test method is normally considered to be related to the amount of hide substance (protein fiber) present in the leather sample. A factor of 5.62 is normally used to calculate the hide substance from the nitrogen content.

4.1.1 The 5.62 factor represents the average result of many analyses of animal hides, but it cannot be considered to be accurate since it varies somewhat from hide to hide of the same type, from type of hide to type of hide, and also with the thickness of hide retained in the final leather (split thickness as compared to original hide thickness). As a result of these

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. This test method was developed in cooperation with the American Leather Chemists Assn. (Standard Method B5 – 1954).

Current edition approved Dec. 1, 2024. Published December 2024. Originally approved in 1970. Last previous edition approved in 2017 as D2868 – 17. DOI: 10.1520/D2868-24.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.