



Designation: D7967 – 21

Standard Test Method for Analysis of Chrome Content (as Cr_2O_3) in Wet Blue using Atomic Absorption or ICP¹

This standard is issued under the fixed designation D7967; 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.

1. Scope

1.1 This test method covers the Atomic Absorption procedure, using nitrous oxide-acetylene flame, air-acetylene flame or ICP (Inductively coupled plasma) to analyze the chrome content of Wet Blue (and leather) on a moisture-free basis.

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.* Some specific hazards statements are given in Section 9 on Hazards and in 12.5 and 12.20.

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

D1517 Terminology Relating to Leather

D2813 Practice for Sampling Leather for Physical and Chemical Tests

D6656 Test Method for Determination of Chromic Oxide in Wet Blue (Perchloric Acid Oxidation)

D6659 Practice for Sampling and Preparation of Wet Blue and Wet White for Physical and Chemical Tests

D6658 Test Method for Volatile Matter (Moisture) of Wet Blue by Oven Drying

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. Terminology

3.1 *Definitions*—For definitions of general leather and tanning terms used in this test method refer to Terminology D1517.

4. Summary of Test Method

4.1 The chromium content measured as Cr_2O_3 is determined in Wet Blue using Atomic Absorption (AA) or ICP. The Wet Blue is digested using oxalic acid, hydrochloric acid, and potassium chloride (Option A); or digested using nitric acid and sulfuric acid (Option B). The chromium content in Wet Blue is measured at a wavelength of 429 nanometers with a 0.7 slit using Atomic Absorption with a nitrous oxide/acetylene flame; or at a wavelength of 357.9 nm with a 0.7 slit for the air-acetylene flame; or standard operating settings for the ICP. After the AA reading the chromium content is determined on a moisture-free basis.

5. Significance and Use

5.1 The procedure described is for chromium in Wet Blue using Atomic Absorption or ICP. This method may be used to determine the chromium content in Wet Blue as an alternate to Test Method D6656.

5.2 The chromium content of Wet Blue is related to the degree of tannage obtained, and hence may be a matter for specification in the purchase of Wet Blue. The procedure described provides adequate accuracy for this purpose.

6. Interferences

6.1 The nitrous oxide/acetylene flame reduces or eliminates many chemical or compound interferences that can occur if just an air/acetylene flame is used, however, sensitivity may be reduced. Use of the ionization suppressant solution is recommended when the iron content of the sample is expected to be high.

¹ This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.02 on Wet Blue.

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