



Designation: D3913-93 (Reapproved 1998) Designation: D 3913 - 03 (Reapproved 2009)

Standard Test Method for Acidity in Basic Chromium Tanning Liquors¹

This standard is issued under the fixed designation D 3913; 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 determination of the titratable acidity of chromium tanning liquors. By *titratable acidity* is meant not only free acidity, which is rarely present, but also anions combined with weakly basic cations such as Chromium (III), which can be titrated with base at the phenolphthalein end point.

1.2

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D 3898 [Test Method for Chromic Oxide in Basic Chromium Tanning Liquors](#)

E180 [Practice for Determining the Precision of ASTM Methods for the Analysis and Testing of Industrial Chemicals](#)—Test Method for Chromic Oxide in Basic Chromium Tanning Liquors

3. Summary of Test Method

3.1 A sample of suitable size is taken by diluting and aliquoting, if necessary. The sample is then heated to boiling and titrated hot to the first appearance of a pink color, stable to boiling in the supernatant solution, as determined by viewing the settled solution against the rim of a porcelain dish, or against the light in a tall beaker or Erlenmeyer flask.

4. Significance and Use

4.1 The acidity of a chrome tanning liquor, as determined by this test method, is rarely employed as such. This result is normally combined with the results of a chromium analysis (see Test Method D 3898) to determine a property of the liquor called basicity. This property, equal to the percentage by which anions in a normal chromic salt have been replaced by hydroxyl in the solution being analyzed, is closely related to the tanning behavior of the solution.

5. Interferences

5.1 Although for most purposes, the results of this analysis are intended to give a measure of the acid anions associated with chromium, it should be mentioned that any weak basic cation will behave similarly. Hence, aluminum, zirconium, ferric iron, and weak organic bases will all yield salts with acidity titratable by this test method. A discussion of the effect of these interferences has been published.³

5.2 If there are anions which form very stable complexes with chromium present in the solution, the titration:



¹ This test method is under the jurisdiction of ASTM Committee D-31—D31 on Leather and is the direct responsibility of Subcommittee D31.06 on Chemical Analysis-General Methods. This test method was developed in cooperation with the American Leather Chemists Assoc.

Current edition approved Jan. 15, 1993. Published March 1993. Originally published as D3913-91. Last previous edition D3913-91 on Chemical Analysis This test method was developed in cooperation with the American Leather Chemists Assoc.

Current edition approved April 1, 2009. Published July 2009. Originally approved in 1991. Last previous edition approved in 2003 as D 3913 - 03.

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*, Vol 15.04, volume information, refer to the standard's Document Summary page on the ASTM website.

³ Annual Book of ASTM Standards, Vol 15.05.

³ Hartford, W. H., *JALCA*, Vol 56, 1961, p. 568.