



Designation: ~~D3897~~ – ~~17~~ D3897 – 18

Standard Practice Test Method for Calculation of Basicity of Chrome Tanning Liquors¹

This standard is issued under the fixed designation D3897; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. ~~Scope~~

1.1 This practice is intended to show how the results of the chromium analysis (Test Methods ~~D3898~~ or ~~D6019~~) and the acidity determination (Test Method ~~D3913~~) can be combined to permit calculation of the basicity of a chrome tanning liquor.

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

~~D3898 Test Method for Chromic Oxide in Basic Chromium Tanning Liquors~~

~~D3913 Test Method for Acidity in Basic Chromium Tanning Liquors~~

~~D6019 Test Method for Determination of Chromic Oxide in Basic Chromium Tanning Liquors (Ammonium Persulfate Oxidation)~~

3. ~~Significance and Use~~

3.1 Basicity is a ratio. In any chromic salt solution, the electrovalence of the chromium (+3) is satisfied by the hydroxyl ions and by acid ions. The extent to which this electrovalence is satisfied by the hydroxyl ions, expressed as a percentage, is the basicity. The basicity of a chrome tanning liquid is closely related to the tanning behavior of the solution.

4. ~~Procedure~~

4.1 Determine the chromic oxide as described in Test Method ~~D3898~~ or ~~D6019~~. Determine the acid as described in Test Method ~~D3913~~.

5. ~~Results~~

5.1 The basicity of the liquor shall be expressed according to the Schorlemmer system. In this system, the basicity is the per cent of the total chromic oxide that is combined with hydroxyl and is calculated as follows:

$$\text{Basicity, \%} = \frac{A - B}{A} \times 100 \quad (1)$$

where:

A = the amount of thiosulfate, as mL of 0.1 N solution required to titrate the 25 mL aliquot as the specimen in Test Methods ~~D3898~~ or ~~D6019~~;

B = the amount of sodium hydroxide, as mL of 0.1 N solution required to titrate the 25 mL aliquot of the specimen in Test Method ~~D3913~~.

¹ This practice test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.06 on Chemical Analysis. Current edition approved Sept. 1, 2017/Sept. 1, 2018. Published October 2017/October 2018. Originally approved in 1991. Last previous edition approved in 2012/2017 as ~~D3897-91~~D3897(2012)-17. DOI: 10.1520/D3897-17.10.1520/D3897-18.

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.