Designation: D1611 – 00 (Reapproved 2010)

Standard Test Method for Corrosion Produced by Leather in Contact with Metal[1]

This standard is issued under the fixed designation D1611; 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 Department of Defense.

1. Scope

1.1 This test method covers the qualitative and quantitative determination of corrosion produced by leather in contact with metal. This test method does not apply to wet blue.

1.2 The values stated in inch-pound units are to be regarded as the 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]

D91 Test Method for Precipitation Number of Lubricating Oils

2.2 *Military Standard:*[3]

MIL-H-6083 (latest revision) Hydraulic Fluid, Petroleum Base, for Preservation and Operation

3. Terminology

3.1 *Definitions:*

3.1.1 *corrosion*—a modification of the metal surface in contact with a leather specimen, evidenced by visible pitting and erosion of the metal surface or by a change in mass of the metal tested in comparison with a blank determination. Any permanent discoloration in film form on the specimen (metal) that does not readily buff off with a nonabrasive cloth shall be called incipient corrosion, while any visible pitting of the metal surface or formation of a layer of reaction products on the metal surface shall be considered as corrosion. In the latter case and for quantitative purposes, the corrosion level should be assessed by determination of the mass changes which occur in the metal panel.

3.1.2 *staining*—a discoloration of the metal surface after contact with a leather specimen, which discoloration is caused by minor amounts of leather—metal interreaction products formed on the metal surface. Such stains should readily buff off the metal surface without permanent marring of its surface appearance.

4. Summary of Test Method

4.1 A conditioned piece of leather and two plates of the same metal are dipped in a noncorrosive oil and drained to the drip point. They are stacked together under a load of 25 ± 5 lbf (111 ± 22 N) and placed in a desiccator containing a relative humidity of 90 to 95 % at 73.5 ± 2°F (23 ± 1°C) for a period of 14 days. For quantitative purposes, the metal plates are weighed before and after the test.

5. Significance and Use

5.1 The procedure is primarily intended to evaluate chrome leather intended for use in hydraulic systems under circumstances where metal corrosion is a serious factor. A high relative humidity is used for the purpose of accelerating the results.

6. Apparatus

6.1 *Desiccator*, containing a saturated solution of ammonium dihydrogen phosphate.

6.2 *Four Plates of the Metal to Be Tested*[4]—The surface roughness should be 8 to 16 µm (203 to 406 nm) rms finish. They should be approximately 2 by 4 in. (51 by 102 mm) and of uniform thickness.

[1] This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of D31.01 on Vegetable Leather. This test method was developed in cooperation with the American Leather Chemists Assn. (Standard Method E52-1961).

Current edition approved April 1, 2010. Published May 2010. Originally approved in 1958. Last previous edition approved in 2005 as D1611–00 (2005). DOI: 10.1520/D1611-00R10.

[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.

[3] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

[4] The sole source of supply of the steel test panels-Q Panel QD35, 3 by 5 in., surface roughness 203–305 nm, known to the committee at this time is The Q Panel Company, 15610 Industrial Parkway, Cleveland, OH 44135. If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee[1], which you may attend.