



Designation: D1838 – 21

Standard Test Method for Copper Strip Corrosion by Liquefied Petroleum (LP) Gases¹

This standard is issued under the fixed designation D1838; 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 detection of the presence of components in liquefied petroleum gases which can be corrosive to copper.

NOTE 1—For an equivalent copper strip test applicable to less volatile petroleum products, see Test Method [D130](#).

1.2 The values stated in SI units are to be regarded as standard.

1.2.1 *Exception*—The values given in parentheses are for information only.

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.* For specific warning statements, see [7.1](#), [10.3.1](#), and [Annex A1](#).

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

[D130](#) Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test

[D1265](#) Practice for Sampling Liquefied Petroleum (LP) Gases, Manual Method

[D1835](#) Specification for Liquefied Petroleum (LP) Gases

[D3700](#) Practice for Obtaining LPG Samples Using a Floating Piston Cylinder

¹ This test method is under the jurisdiction of ASTM Committee [D02](#) on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee [D02.H0](#) on Liquefied Petroleum Gas.

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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.

2.2 ASTM Adjuncts:

ADJD0130, ASTM Copper Strip Corrosion Standard for Petroleum³

3. Terminology

3.1 Abbreviations:

3.1.1 CAMI—Coated Abrasives Manufacturers Institute

3.1.2 FEPA—Federation of European Producers Association

4. Summary of Test Method

4.1 A polished copper strip is immersed in approximately 100 mL of the sample and exposed at a temperature of 37.8 °C (100 °F) for 1 h in a cylinder of suitable working pressure. At the end of this period, the copper strip is removed and rated as one of the four classifications of the ASTM Copper Strip Corrosion Standard (ADJD0130).

5. Significance and Use

5.1 Copper corrosion limits provide assurance that difficulties will not be experienced in deterioration of the copper and copper-alloy fittings and connections that are commonly used in many types of utilization, storage, and transportation equipment.

6. Apparatus

6.1 *Corrosion Test Cylinder*, constructed of stainless steel with an O-ring removable top closure according to the dimensions given in [Fig. 1](#). Provide a flexible inert hose, such as one composed of aluminum or stainless steel, which permits inverting the test cylinder as required in the procedure (see [6.1.1](#)). The whole assembly, including the corrosion test cylinder, shall be constructed to withstand a minimum hydrostatic test pressure of 6900 kPa (1000 psig). No leak shall be discernible when tested at 3450 kPa (500 psig) with gas.

6.1.1 Swivel connections with an adapter to fit a 6.4 mm (¼ in.) pipe may be used.

6.1.2 The assembly shall be tested for compliance with the minimum pressure rating of 6900 kPa (1000 psig) by hydrostatic testing, or alternative testing protocol acceptable to the

³ Available from ASTM International Headquarters. Order Adjunct No. [ADJD0130](#).

*A Summary of Changes section appears at the end of this standard