



Designation: D 2251 – 96 (Reapproved 2000)

Standard Test Method for Metal Corrosion by Halogenated Organic Solvents and Their Admixtures¹

This standard is issued under the fixed designation D 2251; 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 evaluation of the corrosiveness to metals by halogenated organic solvents and their admixtures for cold cleaning applications.

NOTE 1—The test method described herein is an adaptation of Test Method D 130.

1.2 *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:

- D 130 Test Method for Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test²
- D 235 Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)³
- E 1 Specification for ASTM Thermometers⁴

3. Summary of Test Method

3.1 Polished metal strips are immersed in a given quantity of sample and heated at reflux temperature for 60 min. At the end of this period, the metal strips are removed and examined for evidence of corrosion. Similar metal strips are immersed in a given quantity of sample in closed containers and held at room temperature for 10 days. At the end of this period, the strips are removed and examined.

4. Significance and Use

4.1 These tests are to be used as a guide in selecting or eliminating certain solvents or grades of solvents used for cleaning or degreasing metal parts.

5. Apparatus

5.1 *Flask*—Erlenmeyer flask, borosilicate glass, 125-mL capacity, with a 24/40 standard-taper joint.

5.2 *Reflux Condenser*—Condenser with a 24/40 standard-taper joint, 650 mm in length.

5.3 *Bath*—Oil or water bath, for maintaining a temperature slightly higher than the initial boiling point of the sample. A support shall be provided to hold the flask upright.

5.4 *Thermometer*—An ASTM High Distillation Thermometer having a range from 30 to 760°F and conforming to the requirements for Thermometer 8F or a range from –2 to 400°C conforming to the requirements for Thermometer 8C as prescribed in Specification E 1 or other thermometer of suitable design and range.

5.5 *Test Tubes*, 150 mm in length, 19 mm in diameter, with standard-taper, ground-glass stopped.

6. Materials

6.1 *Metal Strips*—Strips of various metals about ½ in. (12 mm) in width and about 3 in. (76 mm) in length. A suggested selection of metals includes copper, brass, aluminum, steel, and galvanized iron. Other metals likely to be encountered may also be used for this test.

6.2 *Polishing Materials*—Silicon carbide or alumina-grit paper of varying degrees of fineness including 240-grit silicon carbide paper or cloth; also a supply of 150-mesh silicon carbide grain and pharmaceutical-grade absorbent cotton.

6.3 *Cleaning Solvent*—Noncorrosive mineral spirits, such as Specification D 235 on hydrocarbon dry cleaning solvent.

7. Preparation of Test Strips

7.1 *Surface Preparation*—Remove all surface blemishes from both sides of the strip with silicon carbide or alumina-grit paper of such degree of fineness as needed to accomplish the desired results efficiently. Finish with 240-grit silicon carbide paper, removing all marks that may have been made by other grades of paper used previously. Immerse the strip in noncorrosive mineral spirits, from which it may be withdrawn immediately for final polishing, or in which it may be stored for future use.

¹ This test method is under the jurisdiction of ASTM Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.04 on Test Methods.

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² *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 06.04.

⁴ *Annual Book of ASTM Standards*, Vol 14.03.