



Standard Practice for Conducting Moist SO₂ Tests¹

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1. Scope

1.1 This practice describes the apparatus and procedure to be used in conducting qualitative assessment tests in accordance with the requirements of material or product specifications by means of specimen exposure to condensed moisture containing sulfur dioxide.

1.2 The exposure conditions may be varied to suit particular requirements and this practice includes provisions for use of different concentrations of sulfur dioxide and for tests either running continuously or in cycles of alternate exposure to the sulfur dioxide containing atmosphere and to the ambient atmosphere.

1.3 The variant of the test to be used, the exposure period required, the type of test specimen, and the criteria of failure are not prescribed by this practice. Such details are provided in appropriate material and product purchase specifications.

1.4 The values stated in SI units are to be regarded as standard. The inch-pound values in parentheses may be approximate.

1.5 *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.* For specific hazard statements see 4.3.

2. Referenced Documents

2.1 ASTM Standards:

D 714 Test Method for Evaluating Degree of Blistering of Paints²

D 1193 Specification for Reagent Water³

D 1654 Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments²

¹ This practice is under the jurisdiction of ASTM Committee G01 on Corrosion of Metals and is the direct responsibility of Subcommittee G01.05 on Laboratory Corrosion Tests.

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² Annual Book of ASTM Standards, Vol 06.01.

³ Annual Book of ASTM Standards, Vol 11.01.

G 1 Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens⁴

G 46 Guide for Examination and Evaluation of Pitting Corrosion⁴

3. Significance and Use

3.1 Moist air containing sulfur dioxide quickly produces easily visible corrosion on many metals in a form resembling that occurring in industrial environments. It is therefore a test medium well suited to detect pores or other sources of weakness in protective coatings and deficiencies in corrosion resistance associated with unsuitable alloy composition or treatments.

3.2 The results obtained in the test should not be regarded as a general guide to the corrosion resistance of the tested materials in all environments where these materials may be used. Performance of different materials in the test should only be taken as a general guide to the relative corrosion resistance of these materials in moist SO₂ service.

4. Apparatus

4.1 The apparatus required for moist SO₂ testing consists of a test chamber having an internal capacity of 300 L (10.6 ft³), a supply of sulfur dioxide with metering device, specimen supports, provisions for heating the chamber, and necessary means of control. The size and detailed construction of the apparatus are optional, provided the conditions obtained meet the requirements of this method. Suitable apparatus which may be used to obtain these conditions is described in Appendix X1.

4.2 Drops of condensing moisture which accumulate on the ceiling of the chamber shall not be permitted to fall on the specimens being tested.

4.3 **Warning**—Suck-back into cylinder may cause explosion. Always use a check valve, vacuum break, or other protective apparatus in any line or piping from cylinder to test chamber to prevent suck-back. Installation of the chamber under a fume hood is recommended.

⁴ Annual Book of ASTM Standards, Vol 03.02.