



Standard Practice for Conducting Mixed Flowing Gas (MFG) Environmental Tests¹

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1. Scope

1.1 This practice provides procedures for conducting environmental tests involving exposures to controlled quantities of corrosive gas mixtures.

1.2 This practice provides for the required equipment and methods for gas, temperature, and humidity control which enable tests to be conducted in a reproducible manner. Reproducibility is measured through the use of control coupons whose corrosion films are evaluated by mass gain, coulometry, or by various electron and X-ray beam analysis techniques. Reproducibility can also be measured by in situ corrosion rate monitors using electrical resistance or mass/frequency change methods.

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

1.4 *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 become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use. See 5.1.2.4.*

2. Referenced Documents

2.1 ASTM Standards:

- B 542 Terminology Relating to Electrical Contacts and Their Use²
- B 765 Guide for Selection of Porosity Tests for Electrodeposits and Related Metallic Coatings³
- B 808 Test Method for Monitoring of Atmospheric Corrosion Chambers by Quartz Crystal Microbalances²
- B 810 Test Method for Calibration of Atmospheric Corrosion Test Chambers by Change in Mass of Copper Coupons²

- B 825 Test Method for Coulometric Reduction of Surface Films on Metallic Test Samples²
- B 826 Test Method for Monitoring Atmospheric Corrosion Tests by Electrical Resistance Probes²
- B 845 Guide for Mixed Flowing Gas (MFG) Tests for Electrical Contacts²
- D 1193 Specification for Reagent Water⁴
- D 1607 Test Method for Nitrogen Dioxide Content of the Atmosphere (Griess-Saltzman Reaction)⁵
- D 2912 Test Method for Oxidant Content of the Atmosphere (Neutral KI)⁶
- D 2914 Test Methods for Sulfur Dioxide Content of the Atmosphere (West-Gaeke Method)⁵
- D 3449 Test Method for Sulfur Dioxide in Workplace Atmospheres (Barium Perchlorate Method)⁶
- D 3464 Test Method for Average Velocity in a Duct Using a Thermal Anemometer⁵
- D 3609 Practice for Calibration Techniques Using Permeation Tubes⁵
- D 3824 Test Methods for Continuous Measurement of Oxides of Nitrogen in the Ambient or Workplace Atmosphere by the Chemiluminescent Method⁵
- D 4230 Test Method of Measuring Humidity With Cooled-Surface Condensation (Dew-Point) Hygrometer⁵
- E 902 Practice for Checking the Operating Characteristics of X-Ray Photoelectron Spectrometers⁷
- G 91 Practice for Monitoring Atmospheric SO₂ Using Sulfation Plate Technique⁸

3. Terminology

3.1 Definitions relating to electrical contacts are in accordance with Terminology B 542.

4. Significance and Use

4.1 Mixed flowing gas (MFG) tests are used to simulate or amplify exposure to environmental conditions which electrical

¹ This practice is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.11 on Electrical Contact Test Methods.

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² Annual Book of ASTM Standards, Vol 02.04.

³ Annual Book of ASTM Standards, Vol 02.05.

⁴ Annual Book of ASTM Standards, Vol 11.01.

⁵ Annual Book of ASTM Standards, Vol 11.03.

⁶ Discontinued; see 1990 Annual Book of ASTM Standards, Vol 11.03.

⁷ Annual Book of ASTM Standards, Vol 03.06.

⁸ Annual Book of ASTM Standards, Vol 03.02.

