



Designation: B 845 – 97

Standard Guide for Mixed Flowing Gas (MFG) Tests for Electrical Contacts¹

This standard is issued under the fixed designation B 845; 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 The techniques described in this guide pertain to mixed flowing gas (MFG) tests containing species that are applied to evaluate devices containing electrical contacts such as slip rings, separable connectors, electromechanical relays or switch contacts. These techniques may be relevant to other devices, but it is the responsibility of the user to determine suitability prior to testing.

1.2 The MFG tests described in this guide are designed to accelerate corrosive degradation processes. These accelerations are designed such that the degradation occurs in a much shorter time period than that expected for such processes in the intended application environment of the device being tested. Application environments can vary continuously from benign to aggressively corrosive. Connectors and contacts within closed electronic cabinets may be affected by an environment of different severity than the environment on the outside of such cabinets. In general, indoor environments are different than outdoor environments. The MFG tests described herein, being discrete embodiments of specific corrosive conditions, cannot be representative of all possible application environments. It is the responsibility of the test specifier to assure the pertinence of a given test condition to the specifier's application condition.

1.3 The MFG tests described herein are not designed to duplicate the actual intended application environmental of the device under test. An extended bibliography, Section 10, that provides information which is useful to test specifiers to assist them in selecting appropriate test methods is included in this guide. The bibliography covers the scope from application condition characterization, single and multiple gas effects, and material and product effects to key application and test variables as well as discussions of atmospheric corrosion processes.

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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- B 542 Terminology Relating to Electrical Contacts and Their Use²
- 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 827 Practice for Conducting Mixed Flowing Gas (MFG) Environmental Tests²

2.2 Other Documents:

- EIA-364B-TP65 Mixed Industrial Gas Test Procedure³
- IEC Standard 68-2-42 Basic Environmental Testing Procedures, Test K_c Sulphur Dioxide Test for Contacts and Connections⁴
- IEC Standard 68-2-43 Basic Environmental Testing Procedures, Test K_d Hydrogen Sulfide Test for Contacts and Connections⁴
- IEC Technical Trend Document 68-2-60 TTD Environmental Testing, Corrosion Tests in Artificial Atmosphere at Very Low Concentration of Polluting Gas(es)⁴
- IEC 68-2-60 (second edition) Environmental Testing—Part 2: Tests—test Ke: Flowing mixed gas corrosion test, 1995
- IEEE P1156.1 Environmental Specifications for Computer Modules (Draft 4 June 10, 1992—unapproved)⁵

3. Terminology

3.1 Terms relevant to this guide are defined in Terminology B 542 except as noted in the following section.

3.2 Other term:

3.2.1 *mixed flowing gas test*—a laboratory test conducted in air that flows through a test chamber in which the temperature,

² Annual Book of ASTM Standards, Vol 03.04.

³ Available from Electronic Industries Association (EIA), 2001 Pennsylvania Ave. N.W., Washington, DC 20006-1813.

⁴ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

⁵ Available from the Institute of Electrical and Electronic Engineers, Inc., 345 E. 47th St., New York, NY 10017.

¹ This guide is under the jurisdiction of ASTM Committee B-2 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B2.11 on Electrical Contact Test Methods.

Current edition approved May 10, 1997. Published December 1997.