



## Standard Guide for Mixed Flowing Gas (MFG) Tests for Electrical Contacts<sup>1</sup>

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<sup>ε1</sup> NOTE—Footnote 3 was corrected editorially in October 2014.

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### 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 environment of the device under test. An extended bibliography 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 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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 become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet (MSDS) 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.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

**B542 Terminology Relating to Electrical Contacts and Their Use**

**B808 Test Method for Monitoring of Atmospheric Corrosion Chambers by Quartz Crystal Microbalances**

**B810 Test Method for Calibration of Atmospheric Corrosion Test Chambers by Change in Mass of Copper Coupons**

**B825 Test Method for Coulometric Reduction of Surface Films on Metallic Test Samples**

**B826 Test Method for Monitoring Atmospheric Corrosion Tests by Electrical Resistance Probes**

**B827 Practice for Conducting Mixed Flowing Gas (MFG) Environmental Tests**

#### 2.2 Other Documents:

**EIA-364B-TP65 Mixed Industrial Gas Test Procedure<sup>3</sup>**

**IEC Standard 68-2-42 Basic Environmental Testing Procedures, Test K<sub>c</sub> Sulphur Dioxide Test for Contacts and Connections<sup>4</sup>**

**IEC Standard 68-2-43 Basic Environmental Testing Procedures, Test K<sub>d</sub> Hydrogen Sulfide Test for Contacts and Connections<sup>4</sup>**

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<sup>1</sup> This guide 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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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from IHS, 15 Inverness Way East, Englewood, CO 80112, <http://www.global.ihs.com>.

<sup>4</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.