



Standard Test Method for Resistance to Environmental Degradation of Electrical Pressure Connections Involving Aluminum and Intended for Residential Applications¹

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INTRODUCTION

Electrical pressure connection systems involving aluminum are those in which one or more of the components of the system in the direct electrical path or carrying any electrical current is fabricated of aluminum, including aluminum wires, aluminum bus bars, aluminum bolts, aluminum terminations, or any other aluminum current-carrying member. Included are systems which must carry current for safety purposes such as ground shields or straps attached to aluminum framing or other structural members. Pressure connection systems can be evaluated by this test method. Such systems are comprised of the wire or other structure being connected and the means of connection, any element of which is made of aluminum.

Connection systems tested are exposed sequentially to ambients of high relative humidity and temperature cycles of 75°C, such as may be encountered by some connections in actual residential applications. Periodic observation of the potential drop across the connection interfaces while carrying rated current provides a measurement of connection performance.

1. Scope

1.1 This test method covers all residential pressure connection systems. Detailed examples of application to specific types of connection systems, set-screw neutral bus connectors and twist-on wire-splicing connectors, are provided in Appendix X1 and Appendix X2.

1.2 The purpose of this test method is to evaluate the performance of residential electrical pressure connection systems under conditions of cyclic temperature change (within rating) and high humidity.

1.3 The limitations of the test method are as follows:

1.3.1 This test method shall not be considered to confirm a specific lifetime in application environments.

1.3.2 The applicability of this test method is limited to pressure connection systems rated at or below 600 V d-c or a-c RMS.

1.3.3 This test method is limited to temperature and water vapor exposure in addition to electrical current as required to measure connection resistance.

1.3.4 This test method does not evaluate degradation which may occur in residential applications due to exposure of the

electrical connection system to additional environmental constituents such as (but not limited to) the following examples:

1.3.4.1 Household chemicals (liquid or gaseous) such as ammonia, bleach, or other cleaning agents.

1.3.4.2 Chemicals as may occur due to normal hobby or professional activities such as photography, painting, sculpture, or similar activities.

1.3.4.3 Environments encountered during construction or remodeling such as direct exposure to rain, uncured wet concrete, welding or soldering fluxes and other agents.

1.3.5 This test method is limited to evaluation of pressure connection systems.

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.*

1.5 *This standard should be used to measure and describe the properties of materials, products, or assemblies in response to electrical current flow under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual installation conditions or under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.*

¹ This test method is under the jurisdiction of ASTM Committee B-4 on Materials for Thermostats, Electrical Heating and Resistance, Contacts and Connectors and is the direct responsibility of Subcommittee B04.07 on Electrical Contact Test Materials.

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