

Approval Standard for Electrostatic Finishing Equipment

Class Number 7260

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Foreword

FM Approvals are intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of FM Approval Standards is to present the criteria for FM Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for Approval shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing and/or applications shall ensure a consistently uniform and reliable product or service. FM Approval Standards strive to be performance-oriented and to facilitate technological development.

For examining equipment, materials and services, FM Approval Standards:

- a) must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and
- b) must be readily identifiable.

Continuance of Approval and Listing depends on compliance with the Approval agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials, and services as appropriate, and on periodic follow-up audits of the manufacturing facility or service/application.

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Notice: The Asterisk (*) following the subsection number signifies that explanatory material on that paragraph appears in the Appendix.

INTRODUCTION

1.1 Purpose

This standard serves as the basis for FM Approval of Electrostatic Finishing Equipment.

1.2 Scope

1.2.1* This standard contains the basic requirements for the construction and testing of Electrostatic Finishing Equipment. This standard does not include powder applicators that function using the principles of tribo-electric charging of the powder particles.

1.2.2 The requirements of this standard apply to the following equipment types whereby the spray material originates from applicators of the automatic (reciprocator or robot) and manual (hand-held) type. This equipment is used for the application of solvent paints or dry powders using grounded spray material supply systems, or waterborne systems.

Electrostatic Finishing Equipment for use with waterborne spray materials using ungrounded spray material columns is also addressed by this standard. However, any reference to spark ignition testing is not applicable for these types of systems, as waterborne spray material is not considered to be an ignition hazard. Waterborne systems covered by this standard are examined for affording protection against electric shock, fire and injury where the spraying area is not a hazardous (classified) location. See definitions.

1.2.3 This standard anticipates the submittal of Electrostatic Finishing Equipment for use in an ambient temperature range of 32°F to 104°F (0°C to 40°C). Systems with operating parameters outside this temperature range will be the subject of special investigation.

1.3 Applicability of Other Standards

1.3.1 Except where modified by the requirements of this standard, electrostatic finishing equipment shall comply with the applicable requirements for ordinary locations, in accordance with FM Approvals Standard 3810.

1.3.2 Associated apparatus and circuits shall conform to the requirements for the location in which they are installed.

1.4 Basis for FM Approval

FM Approval is contingent upon satisfactory results of analysis of the product (compliance with this standard) and the manufacture of the product in the following major areas:

1.4.1 Products for which an FM Approval Standard for product performance exists, shall also be examined in accordance with that Approval Standard. These standards typically include requirements for the following:

- the suitability of the product;
- the proper operation and performance of the product as specified by the manufacturer and required by FM Approvals and, as far as practical,
- the durability and reliability of the product.

1.4.2 An examination of the manufacturing facilities and audit of quality control procedures shall be made to evaluate the manufacturer's ability to produce the product which is identical to that which was examined and tested, and the marking procedures used to identify the product. These examinations are repeated as part of FM Approvals' product follow-up program.

1.5 Basis for Continued Approval

Continued Approval is based upon:

- production or availability of the product as currently Approved;
- the continued use of acceptable quality control procedures;
- satisfactory field experience;
- compliance with the terms stipulated in the Approval Agreement; and
- examination of production samples for continued conformity to requirements.

1.6 Basis for Requirements

1.6.1 The requirements of this standard are based on experience, research, testing and the standards of other national and international organizations. The advice of manufacturers, users, trade associations and loss control specialists was also considered.

1.6.2 The requirements of this standard reflect tests and practices used to examine characteristics of electrical equipment for the purpose of obtaining FM Approval. These requirements are intended primarily as guides, and strict conformity is not always mandatory. Electrical equipment having characteristics not anticipated by this standard may be Approved if performance equal or superior to that required by this standard is demonstrated, or if the intent of the standard is met. Alternatively, equipment which does meet all the requirements identified in this standard may not be Approved if other conditions which adversely affect performance exist or if the intent of this standard is not met. See Approval Standard 3600, Paragraph 1.3.

1.6.3 The construction, tests, and markings required by this standard are equivalent and consistent with the intent of ANSI/NFPA 33, 1995, "Spray Application Using Flammable and Combustible Materials."

1.7 Effective Date

The effective date of an Approval standard mandates that all products tested for Approval after the effective date shall satisfy all the requirements of that standard. Products Approved under a previous edition shall comply with the new version by the effective date or else forfeit Approval. The effective date shall apply to the entire Approval standard or, where so indicated, only to specific paragraphs of the standard.

The effective date of this standard is March 1998 for compliance with all requirements.

1.8 System of Units

Units of Measurement are U.S. Customary units. These are followed by their arithmetic equivalents in International System (SI) units, enclosed in parentheses. Conversions are in accordance with ANSI E 380.

2. DEFINITIONS

The following definitions, specific to electrostatic paint and powder spray applicator and associated apparatus, are applicable to this standard:

2.1 *Electrical Equipment* — All items applied as a whole or in part for the utilization of electrical energy. These include, among others, items for the generation, transmission, storage, measurement, regulation, conversion, and consumption of electrical energy and items for telecommunications.

2.2 *Maximum Surface Temperature* — The highest temperature which is attained in service under the most unfavorable conditions (but within tolerances) by any surface of the electrical equipment.

Note: The most unfavorable conditions include recognized overloads and fault conditions specified in the Standard for the type of protection concerned.

2.3 *Rating* — The designed performance of the electrical equipment.

2.4 *Electrostatic Finishing Equipment* — Equipment for producing, charging and depositing suspended particles with the assistance of electric fields. In general the equipment may consist of, but is not restricted to, the following items: spray applicator, the high voltage generator and connecting cable.

2.4.1 *Automatic Spray Applicator:* Spray applicator which is designed to be attached to a mechanical support or manipulator, including robotic devices, and from which the electrostatically charged spray material emerges.

2.4.2 *Handheld Spray Applicator:* spray applicator which is designed to be held and operated by the hand and from which the electrostatically charged spray material emerges.

2.4.3 *High Voltage Electrode:* a part of the spray applicator which is at high voltage for the purpose of charging the spray material.