



Member of the FM Global Group

Approval Standard for Electric Heaters for Use in Class I, II and III, Division 1, Hazardous (Classified) Locations

Class Number 7320

January 2013

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Foreword

The FM Approvals certification mark is intended to verify that the products and services described will meet FM Approvals' stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of 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 certification by FM Approvals shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product. Approval Standards strive to be performance-oriented. They are intended to facilitate technological development.

For examining equipment, materials and services, 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.

FM Approvals LLC reserves the right in its sole judgment to change or revise its standards, criteria, methods, or procedures.

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states Approval requirements for electric heaters for hazardous (classified) locations; herein referred to as heaters.
- 1.1.2 Approval criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a follow-up program.

1.2 Scope

- 1.2.1 This standard sets performance requirements for electric heaters, electric air heater, immersion (paint, fluids, etc.) heaters and heating elements rated 600 volts or less. This standard does not apply to electric trace heating.
- 1.2.2 The standard is intended to be used in conjunction with FM Approval Standard 3600 which includes the general requirements that apply to all types of classified location protection methods.

1.3 Basis for Requirements

For general basis of requirements, see Approval Standard 3600, Paragraph 1.5.

1.4 Basis for Approval

See Approval Standard 3600, Paragraph 1.3.

1.5 Basis for Continued Approval

See Approval Standard 3600, Paragraph 1.4.

1.6 Effective Date

The effective date of an Approval standard mandates that all products tested for Approval after the effective date shall satisfy the requirements of that standard. Products FM Approved under a previous edition shall comply with the new version by the effective date or else forfeit Approval.

The effective date of this standard is January 1, 2015 for compliance with all requirements.

1.7 System of Units

Units of measurement used in this Standard are United States (U.S.) customary units. These are followed by their arithmetic equivalents in International System (SI) units, enclosed in parentheses. The first value stated shall be regarded as the requirement. The converted equivalent value may be approximate. Appendix A lists the selected units and conversions to SI units for measures appearing in this standard. Conversion of U.S. customary units is in accordance with the American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)/American Society for Testing Materials (ASTM) SI 10-97, "Standard for Use of the International System of Units (SI): The Modern Metric System."

1.8 Definitions

For purposes of this standard, the following terms apply, as well as joint construction definitions given in FM Approvals Class 3615 standard:

DIELECTRIC VOLTAGE WITHSTAND – The ability of the heating element to withstand certain voltages applied between current-carrying parts and dead-metal parts for a specified period of time without flashover or puncture.

LEAKAGE CURRENT – A current, including a capacitively coupled current, that may be conveyed between exposed conductive surfaces or a heating element and ground.

SHEATHED HEATING ELEMENT – Typically, a resistance element that is encased in magnesium oxide or a similar insulating material that is, in turn, surrounded by a metal sheath.

1.9 References

ANSI/UL 823 – Electric Heaters For Use In Hazardous (Classified) Locations

ANSI/UL 1030 – Sheathed Heating Elements

FM Approvals Standard 3600 – General Requirements for Electrical Equipment

FM Approvals Standard 3615 - Explosionproof Electrical Equipment, General Requirements

FM Approvals Standard 3616 - Dust-Ignitionproof Electrical Equipment, General Requirements

2 GENERAL INFORMATION

2.1 Approval Application Requirements

To apply for an Approval examination the manufacturer, or its authorized representative, should submit a request to:

Electrical - Director
FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062
U.S.A.

The manufacturer shall provide the following preliminary information with any request for Approval consideration:

- A complete list of all models, types, and options for the products or services being submitted for Approval consideration;
- General assembly drawings, complete set of manufacturing drawings, materials list, anticipated marking format, electrical schematics, nameplate format, brochures, sales literature, spec. sheets, installation, operation and maintenance procedures, and
- The number and location of manufacturing facilities.
- All documents shall identify the manufacturer's name, document number or other form of reference, title, date of last revision, and revision level. All documents shall be provided with English translation.

2.2 Requirements for Samples for Examination

- 2.2.1 Following authorization of an Approval examination, the manufacturer shall submit samples for examination and testing based on the review of the preliminary information.
- 2.2.2 The test samples shall be a complete assembly with all components mounted in a manner consistent with the manufacturer's instructions and intended application.
- 2.2.3 Requirements for samples may vary depending on design features, results of prior or similar testing, and results of any foregoing tests.
- 2.2.4 The manufacturer shall submit samples representative of production. Any decision to use data generated using prototypes is at the discretion of FM Approvals.