



Examination Standard for Heat and Smoke Vents

Class Number 4430

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Foreword

This standard is 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 this standard is to present the criteria for examination of various types of products and services.

Examination in accordance with this standard shall demonstrate compliance and verify that quality control in manufacturing shall ensure a consistent and reliable product.

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states testing and certification requirements for heat and smoke vents.
- 1.1.2 Testing and certification criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a surveillance program.

1.2 Scope

- 1.2.1 This standard sets the performance requirements for heat and smoke vents under simulated laboratory conditions. This standard sets their performance requirements when exposed to various natural hazards such as simulated wind loading, the impact of simulated hail and the possible degradation effects of sunlight. The standard also examines their ability to withstand the impact effects of temporary live loads as well as to be able to operate under anticipated roof live (snow) loads. Finally, the standard validates the temperature the heat and smoke vent will operate as reported by the manufacturer.
- 1.2.2 This standard is not intended to be used to determine when or where heat and smoke vents are to be used or how to determine the amount of vented area needed.
- 1.2.3 This standard is not intended to qualify skylights.
- 1.2.4 This standard is intended to evaluate only those hazards investigated and is not intended to determine suitability for the end use of the product.
- 1.2.5 The results of tests conducted under the controlled conditions required by this standard shall not be used to describe or appraise performance under actual fire or natural hazard conditions as actual fire and natural hazard conditions vary widely.
- 1.2.6 This standard does not examine the product's solar optical values such as transmittance, reflectance or absorbance or other properties such as air leakage, water leakage, solar radiation, insulating properties or other properties related to the resistance of heat flow through the product due to indoor and outdoor temperature differentials.

1.3 Basis for Requirements

- 1.3.1 The requirements of this standard are based on experience, research and testing, and/or the standards of other organizations. The advice of manufacturers, users, trade associations, jurisdictions and/or loss control specialists was also considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of heat and smoke vents for the purpose of obtaining certification. Heat and smoke vents having characteristics not anticipated by this standard may be certified if performance equal, or superior, to that required by this standard is demonstrated.

1.4 Basis for Certification

Certification is based upon satisfactory evaluation of the product and the manufacturer in the following major areas:

1.4.1 Examination and tests on production samples shall be performed to evaluate

- the suitability of the product;
- the performance of the product as specified by the manufacturer and required for certification; 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 may be made to evaluate the manufacturer's ability to consistently produce the product which is examined and tested, and the marking procedures used to identify the product. Subsequent surveillance may be required by the certification agency in accordance with the certification scheme to ensure ongoing compliance

1.5 Basis for Continued Certification

The basis for continual certification may include, but is not limited to, the following based upon the certification scheme and requirements of the certification agency:

- production or availability of the product as currently certified;
- the continued use of acceptable quality assurance procedures;
- satisfactory field experience;
- compliance with the terms stipulated by the certification;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory surveillance audits conducted as part of the certification agencies product surveillance program.

1.6 Effective Date

The effective date of this certification standard mandates that all products tested for certification after the effective date shall satisfy the requirements of this standard.

The effective date of this standard is eighteen (18) months after the publication date of the standard 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. Conversion of U.S. customary units is in accordance with ANSI/IEEE/ASTM SI 10.

1.8 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the cited edition applies.

American National Standard Institute (ANSI)

- ANSI/IEEE/ASTM SI 10, *American National Standard for Metric Practice*
- ANSI/FM 4473, *Impact Resistance Testing of Rigid Roofing Materials by Impacting with*

Freezer Ice Balls

- ANSI/FM 4474, *Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures*

American Society for Testing and Materials (ASTM International)

- ASTM E108, *Standard Test Method for Fire Tests of Roof Coverings*

European Committee for Standardization (CEN)

- EN 12101-2, *Standard Practice for Smoke and Heat Control Systems – Part 2: Natural Smoke and Heat Exhaust Ventilators*

Occupational Safety and Health Administration (OSHA)

- OSHA Regulation 29 CFR 1910.23(e)(8) and 1926.501

FM Approvals LLC (FM)

- FM 4350, *Examination Standard for Windstorm Resistant Fenestrations*

1.9 Terms and Definitions

For purposes of this standard, the following terms apply:

Cracking – to break in such a way that a fine split or splits appear but the section does not come apart.

Heat & Smoke Vent – an operable opening in a roof designed to operate either automatically or manually in the event of a fire to allow heat and smoke to escape the building.

Skylight – an opening in a roof that is permanently covered with a translucent or transparent material. Skylights are generally inoperable and are provided mainly as a means of admitting light while maintaining the building envelope.

Thin Break – a flaw that is visible as a thin line or a network of fine cracks.

Deck - The structural component of the roof assembly to which the roof system is secured.