



Member of the FM Global Group

Examination Standard for Lightweight Insulating Concrete for Use in Class 1 and Noncombustible Roof Constructions

Class Number 4454

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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 classification of lightweight insulating concrete when used in roof deck constructions. certified lightweight insulating concretes are those that meet the criteria of this standard for combustibility and wind resistance.
- 1.1.2 Testing and certification criteria may include 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 performance requirements for lightweight insulating concrete when used in roof deck constructions. This standard examines the ability of lightweight insulating concrete to limit fire spread and resist wind forces.
- 1.2.2 In addition to the requirements specified in this standard, the components above the lightweight insulating concrete (e.g. roof covers, base sheets, fasteners) shall meet the requirements of the Examination Standard 4470—Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Systems for use in Class 1 and Noncombustible Roof Deck Construction.
- 1.2.3 This standard is intended to verify that the product as described will meet the stated conditions of performance and quality, useful to determine the suitability for end-use conditions of these products.
- 1.2.4 The requirements of this standard shall be used to measure and describe the performance of lightweight insulating concrete in response to exposure from fire and wind, under controlled laboratory conditions. The results of these controlled exposures shall not be used to describe or appraise actual exposure conditions, since such conditions vary widely.
- 1.2.5 The certification program includes fire, wind uplift, corrosion, and other tests as noted. A complete review of construction and application specifications shall be conducted to assure, as far as possible, a practical and reliable installation. Inspection of the product manufacturing facility and of at least one field installation, at the discretion of the certification agency, shall be conducted to assure conformance with the required tests and specifications.

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 loss control specialists was also considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of lightweight insulating concrete for the purpose of obtaining certification.

1.4 Basis for Certification

- 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;
 - the durability and reliability of the product.
- 1.4.2 An examination of the manufacturing facilities and audit of quality control procedures is made to evaluate the manufacturer's ability to consistently produce the components of 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.

- 1.4.3 An examination of the procedures employed in supplying the material components and sufficient mixing and installation instructions to the field site, where the actual certified product is fabricated, to ensure the finished product meets the requirements for certification.

1.5 Basis for Continued Certification

The basis for continual certification may include 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;
- 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 agency's 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.

ANSI/IEEE/ASTM SI 10, American National Standard for Metric Practice.

ANSI/FM 4474 – American National Standard for Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies using Static Positive and/or Negative Differential Pressures.

AWS D1.3 - Structural Welding Code – Sheet Steel

FM 4470, Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction