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

Class Number 4454

July 2010

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.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Purpose

1.1.1 This standard states Approval requirements for classification of lightweight insulating concrete when used in roof deck constructions. FM Approved lightweight insulating concretes are those that meet the criteria of this standard for combustibility and wind resistance.

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 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 Approval 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 Approval 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 FM Approvals, 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 FM Approvals and other organizations. The advice of manufacturers, users, trade associations, jurisdictions and loss control specialists was also considered.

1.3.2 Meeting these requirements qualifies a product as an Approved lightweight insulating concrete. Requirements prohibit component substitution or modification without prior authorization by FM Approvals.

1.3.3 The requirements of this standard reflect tests and practices used to examine characteristics of lightweight insulating concrete for the purpose of obtaining Approval. Lightweight insulating concrete 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, lightweight insulating concrete which meets all of the requirements

identified in this Standard may not be FM Approved if other conditions which adversely affect performance exist or if the intent of this standard is not met.

1.4 Basis for Approval

Approval is based upon satisfactory evaluation of the product when used in roof deck construction 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 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 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. These examinations may be repeated as part of FM Approvals' product follow-up program.

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 Approved product is fabricated, to ensure the finished product meets the requirements for Approval.

1.5 Basis for Continued Approval

Continued Approval is based upon:

- production or availability of the product as currently FM Approved;
- the continued use of acceptable quality assurance procedures;
- satisfactory field experience;
- compliance with the terms stipulated in the Approval report;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory Facilities and Procedures Audits (F&PAs) conducted as part of FM Approvals' product follow-up program.

Also, as a condition of retaining Approval, manufacturers may not change a product, component or service without prior authorization by FM Approvals.

1.6 Effective Date

1.6.1 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.

1.6.2 The standard will be effective immediately upon publication.

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 BSR/IEEE/ASTM SI 10, *Standard for Use of the International System of Units (SI): The Modern Metric System.*

1.8 Applicable Documents

The following standards, test methods, and practices are referenced in this standard:

BSR/IEEE/ASTM SI 10, Standard for Use of the International System of Units (SI): The Modern Metric System.

DIN Deutsches Institut für Normung e.V., DIN 50018, Testing in a Structural Atmosphere in the Presence of Sulphur Dioxide

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

American Society of Civil Engineers (ASCE), ASCE 7- Minimum Design Loads for Buildings and Other Structures.

American Welding Society (AWS), AWS D1.3 -Structural Welding Code – Sheet Steel

ASTM A 653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM G 87, Standard Practice for Conducting Moist SO2 Tests

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

FM Global Property Loss Prevention Data Sheet 1-29, *Roof Deck Securement and Above-Deck Roof Components*

Test Procedure, 12 x 24 ft Wind Uplift Tests for Single Ply and Multi Ply Roof Coverings in accordance with ANSI/FM 4474.

Test Procedure, 5 x 9 ft Wind Uplift Tests for Single Ply and Multi Ply Roof Coverings in accordance with ANSI/FM 4474.

Test Procedure, 2 x 2 ft Wind Uplift Pull Test for Fully Adhered Roof Coverings in accordance with ANSI/FM 4474.

Test Procedure, FM Approvals Construction Materials Calorimeter, FM Approvals, LLC

Test Procedure, Corrosion Resistant Testing For Stress Plates, Batten Bars, and Fasteners Used to Secure Membranes and Insulations in Roof Constructions, FM Approvals, LLC

1.9 Definitions

For purposes of this standard, the following terms apply:

Cementitious Wood Fiber –A factory fabricated roof deck consisting of wood fibers and cementitious binder. It is supplied in 2 in. (50 mm) minimum thickness with tongue and groove sides and end joints.

Fastener- A mechanical securement device used alone or in conjunction with a stress distributor to secure various components of a roof assembly.

Lightweight Insulating Concrete -A type of insulation comprised of portland cement, lightweight aggregate or preformed foam or hybrid combination of these. It may be applied with or without the use of expanded polystyrene (EPS) board encapsulated within the lightweight insulating concrete.

Mechanically Fastened – Describes roof covers or base sheets that have been attached to the substrate at defined intervals using fasteners with or without stress distributors.

Roof Assembly — An assembly (including the structural deck) of interacting roof components designed to weatherproof and, normally, to insulate a building's top surface.

Roof System —A system of interacting roof components designed to weatherproof and, normally, to insulate a building's top surface. The roof system does not include the structural deck.

Steel Roof Deck – Corrugated metal with a thickness greater or equal to 22 gauge (0.7595 mm) used as a structural component to support a roof system

Steel Form Deck – Corrugated metal with a thickness less than 22 gauge (0.7595 mm) used as a structural component to support a roof system

Structural Concrete Roof Deck – Structural concrete decks are generally monolithic, cast in place decks or precast concrete plank. These decks have a minimum compressive strength of 2500 psi (17.2 mPa) and a density of approximately 150 lb/ft^3 (2400 kg/m^3). Roof assemblies on structural concrete are considered noncombustible.

Structure - The building framework to which the roof deck is fastened.

Weld - A type of securement whereby metal or plastic products are joined together through heat or solvent fusion.

Wind Uplift—Wind-induced forces on a roof assembly or components in a roof assembly. Wind uplift generally includes a negative pressure component caused by wind being deflected around and across the surfaces of a building and a positive pressure component from air flow beneath the roof deck.

2 GENERAL INFORMATION

2.1 Product Information

Lightweight insulating concrete is utilized to support finished roofing materials and other roof loads experienced throughout the life of the structure. The roof system is utilized to provide weatherproofing to the structure and contents. Lightweight insulating concrete is placed above steel roof deck, steel form deck,

structural concrete, existing roofs in recover construction or cementitious wood fiber panels. The lightweight insulating concrete must demonstrate the ability to limit fire spread along the underside of the deck and resist anticipated wind forces. Modes of failures observed in testing and in field applications include adhesive failure between the various components within the roof assembly, cohesive failure of an individual component, separation of the steel roof deck or steel form deck from the structural framework, and separation of the roof system from the lightweight insulating concrete.

2.2 Approval Application Requirements

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

Materials 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, sizes, 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, nameplate format, brochures, sales literature, specification sheets, installation, operation and maintenance procedures;
- 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.
- The mix design, including minimum compressive strength and finished product density, for the lightweight insulating concrete and the formulation and specifications for each component of the lightweight insulating concrete shall be submitted to FM Approvals for review and be kept on file at FM Approvals on a confidential basis. The manufacturer shall also provide any mix design or chemicals necessary to compensate for weather extremes (hot and/or cold weather adjustments).

2.3 Requirements for Samples for Examination

2.3.1 Following authorization of an Approval examination, the manufacturer may be required to submit samples for examination and testing based on the Approvals requested. Sample requirements will be determined by FM Approvals following review of the preliminary information.

2.3.2 Requirements for samples may vary depending on design features, results of prior or similar testing, and results of any foregoing tests.

2.3.3 The manufacturer shall submit samples representative of production. Any decision to use data generated using prototypes is at the discretion of FM Approvals.

2.3.4 It is the manufacturer's responsibility to provide any necessary test fixtures, such as those which may be required to evaluate the products for Approval.

3 GENERAL REQUIREMENTS

3.1 Review of Documentation

3.1.1 During the initial investigation and prior to physical testing, the manufacturer's specifications and details shall be reviewed to assess the ease and practicality of installation and use. The Approval investigation shall determine the limits of the Approval.

3.2 Markings

3.2.1 Marking on the product or, if not possible due to size, on its packaging or label accompanying the product, shall include the following information:

- name and address of the manufacturer or marking traceable to the manufacturer;
- date of manufacture or code traceable to date of manufacture or lot identification;

When hazard warnings are needed, the markings should be universally recognizable.

3.2.2 The type identification shall correspond with the manufacturer's catalog designation and shall uniquely identify the product as FM Approved. The manufacturer shall not place this identification on any other product unless covered by a separate agreement.

3.2.3 The Approval Mark (see Appendix B) shall be displayed visibly and permanently on the product and/or packaging as appropriate. The manufacturer shall not use this Mark on any other product unless such product is covered by a separate report.

3.2.4 All markings shall be legible and durable.

3.3 Manufacturer's Installation and Operation Instructions

The manufacturer shall provide the user with

- instructions for the installation and maintenance of the product;
- services to ensure proper installation, inspection, or maintenance for products of such nature that it would not be reasonable to expect the average user to be able to provide such installation, inspection, or maintenance.

3.4 Calibration

All examinations and tests performed in evaluation to this standard shall use calibrated measuring instruments traceable and certified to acceptable national standards.

3.5 Observation of Test Sample Production

At the discretion of FM Approvals, a representative of FM Approvals shall witness production of and place their mark on components of and/or ingredients for the lightweight insulating concrete roof deck components to be evaluated.

3.6 Welding

Welding of the steel roof deck or steel form deck to the supporting members, if used, shall be by puddle welds (arc spot welds) in accordance with AWS D1.3. Qualified welders shall follow a qualified welding procedure. Welders and the welding procedure shall be qualified in accordance with AWS D1.3. Weld washers are required for steel form deck.

3.7 Roof Deck Spans

The roof deck spans shall be limited to a maximum of that meeting the wind uplift test requirements.

3.8 Other Requirements

Wind forces in the building perimeter and corners are up to 1.7 and 2.6 times greater, respectively, than wind forces in the field of the roof. When a steel roof deck or steel form deck is utilized, the securement of the deck to the supporting structure in these areas shall be enhanced by increasing the number of fasteners/welds as listed in the FM-Approved roof field spacing per FM Global Property Loss Prevention Data Sheet 1-29. When a mechanically fastened base sheet is utilized, the securement of the base sheet to the lightweight insulating concrete in these areas shall be enhanced per FM Global Property Loss Prevention Data Sheet 1-29.

4 PERFORMANCE REQUIREMENTS

In order to meet Approval, each lightweight insulating concrete shall satisfy the following performance criteria necessary to reduce the potential for fire spread, corrosion resistance and to obtain satisfactory wind uplift performance.

4.1 Combustibility – From Below Roof Assembly

4.1.1 Requirement

The lightweight insulating concrete when subjected to fire exposure from below shall not exhibit fuel contribution rates in excess of the values in Table 1.

Additionally, there shall be no dropping of flaming particles into the furnace or uncontrolled flaming on the exterior surface of the sample.

Table 1:

Time Interval min	***Max Fuel Contribution Rate***	
	Btu/ft^2/Min	***(kW/m^2)***
3	410	(77.6)
5	390	(73.8)
10	360	(68.1)
Avg. (30 min)	285	(54.0)

4.1.2 Test/Verification

The test shall be conducted in accordance with Test Procedure, FM Approvals Construction Materials Calorimeter, FM Approvals, LLC

FM Approvals Construction Materials Calorimeter testing is waived if the lightweight insulating concrete is applied directly over structural concrete.

4.2 Wind Resistance – Field of Roof

4.2.1 Requirement

The lightweight insulating concrete shall demonstrate its ability to withstand wind uplift forces. The roof assembly shall withstand the appropriate minimum uplift pressure shown in Table 2 for a minimum of 60 seconds without disengagement, separation, or failure of any component**.**

Table 2

Windstorm Classification	***Minimum Uplift Pressure Psf (kPa)***
Class 1-60	60 (2.9)
Class 1-75	75 (3.6)
Class 1-90	90 (4.3)
Class 1-105	105 (5.0)
Class 1-120	120 (5.7)
Class 1-135	135 (6.5)
Class 1-150	150 (7.2)
Class 1-165	165 (7.9)
Class 1-180	180 (8.6)
Etc.	

4.2.2 Tests/Verification

The test shall be conducted in accordance with ANSI/FM 4474 Approvals test procedures using alternate test methods 1 or 2: 12 x 24 ft Wind Uplift Tests for Single Ply and Multi Ply Roof Coverings, or 2 x 2 ft Wind Uplift Pull Test for Adhered Multi Ply Roof Coverings or Fully Adhered Single Ply Roof Coverings over structural concrete deck.

4.3 Wind Uplift Resistance – Component Substitutions or Modifications

4.3.1 Requirement

The roof assembly utilizing lightweight insulating concrete shall be tested to establish a base line performance for future modifications or component substitutions. When a modification or component substitution to the Approved assembly is desired the wind uplift performance of the modified assembly shall be equal to or better than the Approved assembly.

4.3.2 Tests/Verification

The test shall be conducted in accordance with the following ANSI/FM 4474 Approvals test procedures: 12 x 24 ft Wind Uplift Tests for Single Ply and Multi Ply Roof Coverings, 2 x 2 ft

Wind Uplift Pull Test for Fully Adhered Roof Coverings, or 5 x 9 ft Wind Uplift Tests for Single Ply and Multi Ply Roof Coverings.

4.4 Corrosion Resistance

4.4.1 Requirement

Lightweight insulating concrete -base sheet fasteners shall be tested in accordance with FM 4470 to determine the potential effects of corrosion. After exposure to a corrosive environment the extent of corrosion over the surfaces of the base sheet fasteners shall be no more than 15% by area and there shall be no evidence of chipping, cracking, blistering, or peeling of the coating, if any.

Exception: For fasteners which are embedded in the LWIC layer, the portion of the fastener embedded in the LWIC is exempt from this requirement.

4.4.2 Tests/Verification

The test shall be conducted in accordance with FM Corrosion Resistant Testing For Stress Plates, Batten Bars, and Fasteners Used to Secure Membranes and Insulations in Roof Constructions.

4.5 Additional Tests

Additional tests may be required, at the discretion of FM Approvals, depending on design features and results of any foregoing tests.

Any test following a failure shall be acceptable only at the discretion of FM Approvals and with a technical justification of the conditions or reasons for failure.

5 OPERATIONS REQUIREMENTS

A quality assurance program is required to assure that each component and the finished roof deck assembly of the Approved lightweight insulating concrete produced by the manufacturer shall present the same quality and reliability as the specific lightweight insulating concrete (s) examined. Design quality, conformance to design, and performance are the areas of primary concern.

Design quality is determined during the examination and tests, and is documented in the Approval Report.

Continued conformance to this standard is verified by the Facilities and Procedures Audit (F&PA).

Quality of performance is determined by field performance and by periodic re-examination and testing.

5.1 Demonstrated Quality Control Program

5.1.1 The manufacturer shall demonstrate a quality assurance program which specifies controls for at least the following areas:

- existence of corporate quality assurance guidelines;
- incoming quality assurance, including testing;
- in-process quality assurance, including testing;
- final inspection and tests;
- equipment calibration;
- drawing and change control;
- packaging and shipping; and
- handling and disposition of non-conforming materials.
- on-site handling and installation procedures
- density of installed material
- compressive strength of installed material

5.1.2 Documentation/Manual

There should be an authoritative collection of procedures/policies. It should provide an accurate description of the quality management system while serving as a permanent reference for implementation and maintenance of that system. The system should require that sufficient records are maintained to demonstrate achievement of the required quality and verify operation of the quality system.

5.1.3 Records

To assure adequate traceability of materials and products, the manufacturer shall maintain a record of all quality assurance tests performed, for a minimum period of two years from the date of manufacture/installation

5.1.4 Drawing and Change Control

- The manufacturer shall establish a system of product configuration control that shall allow no unauthorized changes to the product. Changes to critical documents, identified in the Approval Report, must be reported to, and authorized by, FM Approvals prior to implementation for production.
- The manufacturer shall assign an appropriate person or group to be responsible for, and require that, proposed changes to FM Approved or Listed products be reported to FM Approvals before implementation. The manufacturer shall notify FM Approvals of changes in the product or of persons responsible for keeping FM Approvals advised by means of FM Approvals' Form 797, FM Approved Product/Specification-Tested Revision Report or Address/Main Contact Change Report.
- Records of all revisions to all FM Approved products shall be maintained.

5.2 Facilities and Procedures Audit (F&PA)

5.2.1 An audit of the manufacturing facility is part of the Approval investigation to verify implementation of the quality assurance program. Its purpose is to determine that the manufacturer's equipment, procedures, and quality program are maintained to insure a uniform product consistent with that which was tested and FM Approved.

5.2.2 These audits shall be conducted periodically but at least annually by FM Approvals or its representatives.

5.2.3 FM Approved products or services shall be produced or provided at or from the location(s) audited by FM Approvals and as specified in the Approval Report. Manufacture of products bearing the Approval Mark is not permitted at any other location without prior written authorization by FM Approvals.

5.3 Installation Inspections

Field inspections may be conducted to review an installation. The inspections are conducted to assess ease of application, and conformance to written specifications. When more than one application technique is used, one or all may be inspected at the discretion of FM Approvals.

5.4 Manufacturer's Responsibilities

The manufacturer shall notify FM Approvals of changes in product construction, components, raw materials, physical characteristics, coatings, component formulation or quality assurance procedures prior to implementation.

APPENDIX A: UNITS OF MEASUREMENT

LENGTH:	in. - "inches"; (mm - "millimeters") mm = in. x 25.4 ft - "feet"; (m - "meters") m = ft x 0.3048
AREA:	in^2 - "square inches"; (mm^2 - "square millimeters") $mm^2 = in^2$ x 6.4516 x 102 ft^2 - "square feet"; (m^2 - "square meters") $m^2 = ft^2$ x 0.0929
MASS:	lb - "pounds"; (kg - "kilograms") kg = lb x 0.454
PRESSURE:	psi - "pounds per square inch"; (bar - "bar") kPa = psi x 6.895 bar - "bar"; (kPa - "kilopascals") bar = kPa x 0.01 bar = psi x 0.06895
HEAT:	Btu - "British thermal units"; (J - "joules") J = Btu x 1.0551 x 103
HEAT RELEASE RATE:	Btu/min -"British thermal units per minute"; (kW - "kilowatts") kW = Btu/min x 0.0176
TEMPERATURE:	°F - "degrees Fahrenheit"; (°C - "degrees Celsius") °C = (°F - 32) x 0.556
LIQUID:	gal - "gallons"; (L - "liter") L = gal x 3.785 L - "liter"; (dm^3 - "cubic decimeters") L = dm^3
FLOW RATE:	gal/min - "gallon per minute"; (L/min - "liters per minute") L/min = gal/min x 3.785

APPENDIX B: FM APPROVALS CERTIFICATION MARKS

FM Approvals certifications marks are to be used only in conjunction with products or services that have been Approved by FM Approvals and in adherence with usage guidelines.

FM APPROVED mark:
Authorized by FM Approvals as a certification mark for any product that has been FM Approved. There is no minimum size requirement for the mark, but it must be large enough to be readily identifiable. The mark should be produced in black on a light background, or in reverse on a dark background.

Cast-On FM Approvals marks:
Where reproduction of the FM Approved mark described above is impossible because of production restrictions, use these modified versions of the FM Approved mark. There is no minimum size requirement for the mark, but it must be large enough to be readily identifiable.

FM Approved Mark with ‘‘C’’ only:
Authorized by FM Approvals as a certification mark for any product that has been evaluated by FM Approvals in accordance with Canadian codes and standards. There is no minimum size requirement for the mark, but it must be large enough to be readily identifiable. The mark should be produced in black on a light background, or in reverse on a dark background.

FM Approved mark with ‘‘C’’ and ‘‘US’’:
Authorized by FM Approvals as a certification mark for any product that has been evaluated by FM Approvals in accordance with US and Canadian codes and standards. There is no minimum size requirement for the mark, but it must be large enough to be readily identifiable. The mark should be produced in black on a light background, or in reverse on a dark background.

FM Approvals Certification Marks

USAGE GUIDELINES

All FM Approvals certification marks are the sole property of FM Approvals LLC ("FM Approvals") and are registered or the subject of applications for registration in the United States and many other countries. They are for use only according to these guidelines.

FM Approvals certification marks may be used only on FM Approved products and related product packaging, in advertising material, catalogs and news releases. Use of FM Approvals certification marks on such material is not a substitute for use of the complete FM Approvals certification mark on FM Approved products and/or product packaging.

No FM Approvals certification mark or aspect thereof may be incorporated as part of a business name, Internet domain name, or brand name/trademark for products/ product lines. This includes both design aspects (the FM Approvals "diamond," etc.) and word aspects ("FM," "Approved," etc.). The use of any FM Approvals certification mark as a trademark is strictly prohibited.

The Approval Standard number or class number may not be incorporated as part of a business name, Internet domain name, or brand name/trademark for products/ product lines. For example, a company may not say "ABC Company's 4100 Fire Door is FM Approved"; the proper terminology is, "ABC Company's Fire Door is FM Approved per Approval Standard 4100."

FM Approvals certification marks, except for the FM Approvals Quality System Registration mark, may not be used on business stationery/cards/signage because this could mischaracterize the relationship with FM Approvals. Additionally, these items should not reference any FM Approvals certification mark.

Products or services may not be marketed under any mark or name similar to "FM Global," "FM Approvals" or any of the FM Approvals certification marks. Further, products or services may not be marketed to imply a relationship beyond the scope of any Approval made by FM Approvals.

When an FM Approvals certification mark is used in advertising material or on product packaging, all material must reflect the specific circumstances under which the product was FM Approved. The material must clearly differentiate between products that are FM Approved and those that are not, and may not, in any way, imply a more substantial relationship with FM Approvals.

A company may not reference the intent to submit a product for Approval or the expectation that a company will have a certain product FM Approved in the future. For example, a company may not state, "Approval by FM Approvals pending" or "Approval by FM Approvals applied for."

FM Approvals certification marks should not be preceded or followed by a qualifier that indicates a degree of certification or acceptability. For example, "exceeds," "first" or "only" may not be used to qualify any FM Approvals certification mark.

Only original artwork issued by FM Approvals should be used. The FM Approvals certification marks should not be altered in any way other than to resize the artwork proportionately. Unacceptable uses of the marks include, but are not limited to, adding/deleting wording or artwork, reducing the artwork to an illegible size, animation or distortion.

The text of the FM Approvals certification marks may not be translated into any language other than English.

FM Approvals certification marks must appear in a size and location that is readily identifiable, but less prominent than the name of the owner of the certification or the manufacturer/seller/distributor of the certified products.