

Approval Standard

Class 1 Fire Rating of
Insulated Wall or
Wall and Roof/Ceiling Panels,
Interior Finish Materials or
Coatings, and Exterior Wall
Systems

Class Number 4880
May 2010



Approval Standard for Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems

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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 insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems for use where a Class 1 fire rating is needed in wall or wall and roof/ceiling constructions.
- 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 the fire performance requirements for Class 1 fire rated insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems in wall or wall and roof/ceiling constructions installed to maximum heights of 30 or 50 ft (9.1 or 15.2 m) or without height restriction when exposed to an ignition source simulating a building fire. If building use, occupancy or furnishings are combustible and can be expected to sustain a fire, installation of an automatic sprinkler system is recommended.
- 1.2.2 The performance of insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems depends in part on the fasteners, adhesives or other accessories used in their installation and the substrate over which they are installed. It is therefore necessary to evaluate all of the components of the construction and include them in the constructions tested.
- 1.2.3 This standard evaluates insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems for their performance in regard to fire. Roof panels and other roofing materials covered by this standard shall also meet the combustibility from above the roof assembly and wind uplift, foot traffic, hail and water leakage resistance requirements of FM Approvals Standard 4470 — Class 1 Roof Covers or FM Approvals Standard 4471 — Class 1 Metal Panel Roofs. Exterior wall panels and exterior wall systems covered by this standard shall also meet the windload and impact resistance requirements of FM Approvals Standard 4881 - Class 1 Exterior Wall Systems. Interior wall and ceiling materials or systems covered by this standard used in smoke sensitive occupancies shall also meet the requirements of FM Approvals Standard 4882 — Class 1 Interior Wall and Ceiling Materials or Systems for Smoke Sensitive Occupancies. Insulated walls shall have the option to be evaluated using FM Approvals Standard 4411 — Insulated Wall Constructions.
- 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 a 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 conditions. Actual fire conditions vary widely.
- 1.2.6 This standard shall not qualify exterior insulated finish systems (EIFS) or other exterior wall coating systems.

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 national and international organizations. The advice of manufacturers, users, trade associations and loss control specialists was also considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems for the purpose of becoming FM Approved. These requirements are intended primarily as guides, and strict conformity is not always mandatory. Insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems 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, insulated wall or wall and roof/ceiling panels, interior finish materials or coatings and exterior wall systems which do meet all 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 and the manufacturer in the following major areas:

1.4.1 Examination and tests on production samples are performed to evaluate

- the suitability of the product for its intended end use;
- the performance of the product as 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 produce the product which is examined and tested, and the marking procedures used to identify the product. These examinations are repeated as part of FM Approvals' Facilities and Procedures Audit 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 Agreements of FM Approvals; and
- re-examination of production samples for continued conformity to requirements.
- 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 or service without prior authorization by FM Approvals.

1.6 Effective Date

- 1.6.1 The effective date of an Approval Standard requires that all products tested for Approval after the

effective date satisfy the requirements of that standard. Products Approved under a previous edition must comply with the new version by the effective date or forfeit Approval. The effective date applies to the entire Approval Standard, or, where so indicated, only to specific paragraphs of the standard.

1.6.2 The effective date of this standard is June 1, 2010

1.7 System of Units

Units of measurement are U.S. customary units. These are followed by their arithmetic equivalents in International System of Units (SI) units, enclosed in parentheses. Appendix A lists the selected units for quantities dealt with in testing these products; conversions to SI units are included. Conversion of U.S. customary units is in accordance with SI10-02 IEEE/ASTM SI 10 American National Standard for Use of the International System of Units (SI): The Modern Metric System.

1.8 Applicable Documents

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

1.8.1 *FM Approvals, 1151 Boston-Providence Turnpike, Norwood Massachusetts 02062*

FM Approvals Standard 4470 — Class 1 Roof Covers

FM Approvals Standard 4471 — Class 1 Metal Panel Roofs

FM Approvals Standard 4411 — Insulated Wall Constructions

FM Approvals Standard 4881 — Class 1 Exterior Wall Systems

FM Approvals Standard 4882 — Class 1 Interior Wall and Ceiling Materials or Systems for Smoke Sensitive Occupancies

Test Procedure Class Number 4880: FM Approvals 25 Ft (7.6 M) High Corner Test.

Test Procedure Class Number 4880: FM Approvals 50 Ft (15.2 M) High Corner Test.

Test Procedure Class Numbers 4880 and 4882: FM Approvals 16 Ft (4.9m) High Parallel Panel Test.

Test Procedure Uniform Building Code Standard 26-3 Room Fire Test Standard For Interior Of Foam Plastic Systems

FM Global Research, 1151 Boston-Providence Turnpike, Norwood Massachusetts 02062

Newman, J. S. and Steciak, J., “Characterization of Particulates from Diffusion Flames”, *Combustion and Flame*, 67, 55-64, 1987.

Newman, J. S. and Steciak, J., “Particulate Generation from Diffusion Flames”, *Proceedings of the 1987 ASME/JSME Thermal Engineering Joint Conference*, March 22-27, 1987. The American Society of Mechanical Engineers, NY.

Newman, J. S., “Analysis of the FM Approvals Building Corner Fire Test,” *FM Approvals*, J.I. 0Q5E5.RC, April 1989.