



Examination Standard for Cavity Wall Systems

Class Number 4411

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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.

TABLE OF CONTENTS

1 INTRODUCTION.....	1
1.1 Purpose.....	1
1.2 Scope.....	1
1.3 Basis for Requirements	1
1.4 Basis for Certification	2
1.5 Basis for Continued Certification	2
1.6 Effective Date.....	2
1.7 System of Units	2
1.8 Normative References.....	3
1.9 Terms and Definitions.....	4
2 GENERAL INFORMATION	5
2.1 Product Information.....	5
2.2 Certification Application Requirements.....	5
2.3 Requirements for Samples for Examination.....	5
3 GENERAL REQUIREMENTS	6
3.1 Review of Documentation.....	6
3.2 Markings	6
3.3 Manufacturer's Installation Instructions	6
3.4 Fasteners, Clips, and Other Accessories	6
3.5 Calibration.....	7
4 PERFORMANCE REQUIREMENTS.....	8
4.1 Resistance to Interior Fire Spread.....	8
4.2 16 ft. (4.9 m) High Parallel Panel Test.....	9
4.3 Simulated Wind Load Ratings.....	9
4.4 Corrosion Resistance Test.....	10
4.5 Hail Resistance Rating	10
4.6 Determination of pH of Aqueous Insulation Extraction	11
4.7 Noncombustible Rated Insulation (optional).....	11
4.8 Manufacturing Quality Control Tests	11
4.9 Identification Tests - Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis, ASTM E1252	12
4.10 Identification Test – FM Approvals Thermal Desorption Gas Chromatography Mass Spectrometry (TD/GC/MS).....	12
4.11 Additional Tests.....	12
5 OPERATIONS REQUIREMENTS.....	13
5.1 Demonstrated Quality Control Program.....	13
5.2 Surveillance Audit	13
5.3 Installation Inspections.....	14
5.4 Manufacturer's Responsibilities.....	14
6 BIBLIOGRAPHY	14

1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states testing and certification requirements for cavity wall systems. The primary use of cavity walls is to allow moisture that has penetrated the exterior surface to drain down the cavity space to flashing that directs the water to weep holes that allow the water to drain from the cavity.
- 1.1.2 Testing and certification criteria includes, but may not be 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 applies to any component intended for use in a cavity wall system.
- 1.2.2 Cavity wall systems are exterior wall constructions typically consisting of two walls separated by a cavity which contains an air gap. For cavity wall systems, the exterior facade can be made of brick or masonry construction, insulated or non-insulated panels, or ventilated siding. The interior can be made of combustible or noncombustible construction materials. Systems installed with ventilated siding, including metal faced panels (i.e. Aluminum Composite Material (ACM) or Metal Composite Material (MCM)), are often referred to as rainscreen systems. The cavity can contain insulation and other components which can be used to minimize heat loss in colder climates and solar gain in warmer climates. Insulation can be supplied in many forms including, but not limited to, rigid board stock and spray foam. Other components such as air and moisture retarders or weather resistive barriers (WRBs) may also be present.
- 1.2.3 Cavity wall systems that are tested in accordance with this standard must have an air gap. Systems without an air gap shall be tested to FM Approvals Examination Standard 4880, *Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems*, ANSI FM 4880, *American National Standard for Evaluating Insulated Wall or Wall and Roof/Ceiling Assemblies, Plastic Interior Finish Materials, Plastic Exterior Building Panels, Wall/Ceiling Coating Systems, Interior or Exterior Finish Systems*, FM Approval Standard 4881, *Class 1 Exterior Wall Systems*, or ANSI FM 4881, *American National Standard for Evaluating Exterior Wall Systems*, as applicable.
- 1.2.4 Systems that are tested in accordance with this standard must have adequate fire resistance on the interior side. Constructions without adequate fire resistance shall meet the requirements of FM Approvals Examination Standard 4881, *Class 1 Exterior Wall Systems*.
- 1.2.5 This standard does not grant certification for cavity wall systems as hourly rated fire barriers.
- 1.2.6 This standard shall not qualify exterior insulated finish systems (EIFS) or other exterior wall coating systems.
- 1.2.7 This standard is limited to constructions with 1 – 4 in. (25 – 102 mm) wide air gaps.

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 cavity wall systems for the purpose of obtaining certification. Systems 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 products for their intended use as a wall system;
- the performance of the products as specified by the manufacturer and required for certification; and as far as practical,
- the durability and reliability of the products when used as a certified wall system.

1.4.2 An examination of the manufacturing facilities for components and completed assemblies and audit(s) of quality control procedures may be made to evaluate the manufacturer's ability to consistently produce the products which are examined and tested, and the marking procedures used to identify the products. 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 products as currently certified;
- the continued use of acceptable quality control 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 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 the 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.

- 1.8.1 American National Standards Institute, 1899 L Street, NW, Washington, DC 20036

ANSI FM 4880, *American National Standard for Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials*

ANSI FM 4881, *American National Standard for Evaluating Exterior Wall Systems*

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

- 1.8.2 FM Approvals, 1151 Boston-Providence Turnpike, Norwood, Massachusetts 02062

FM 4880, Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems

FM 4881, Class 1 Exterior Wall Systems.

- 1.8.3 ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428

ASTM C167, Standard Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations

ASTM C303, Standard Test Method for Dimensions and Density of Preformed Block or Broad-Type Thermal Insulation

ASTM C871, Standard Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate and Sodium Ions

ASTM D482, Standard Test Method for Ash of Petroleum Products

ASTM D1622, Standard Test Method for Apparent Density of Rigid Cellular Plastics

ASTM D1929, Standard Test Method for Determining Ignition Temperature of Plastics

ASTM D6294, Standard Test Method for Corrosion Resistance of Ferrous Metal Fastener Assemblies Used in Roofing and Waterproofing

ASTM E1252, Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

ASTM E1642, Standard Practice for General Techniques of Gas Chromatography Infrared (GC/IR) Analysis

ASTM E2058, Standard Test Method for Measurement of Material Flammability Using a Fire Propagation Apparatus (FPA)

- 1.8.4 British Standards Institute, 389 Chiswick High Road, London W4 4AL, United Kingdom

BS EN 1670, *Building Hardware – Corrosion Resistance – Requirements and Test Methods*