



Member of the FM Global Group



American National Standard for Cavity Wall Systems

ANSI/FM Approvals 4411-2020

Approved November 2, 2020

November 2020

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Foreword

This standard is intended to be used to evaluate components and performance of cavity wall systems.

Appendixes A to this American National Standard is informative and is not part of the requirements of the standard. Appendix B and C are test procedures and are informative for the performance of the tests.

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ANSI regulations require that this American National Standard shall be revised, reaffirmed, or withdrawn within five years of the date of publication.

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states test 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.

1.2 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.
- 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 ANSI 4881, Class 1 Exterior Wall Systems.
- 1.2.5 This standard does not qualify 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.

1.4 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.

2 GENERAL INFORMATION

2.1 Product Information

Cavity wall systems are exterior wall constructions typically consisting of two walls separated by a cavity which contains an air gap. For cavity walls, the exterior facade is typically 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, masonry, etc., are often referred to as rainscreen systems. The cavity often contains insulation, weather resistive barriers and other components. The cavity wall systems can be factory made or field assembled.

3 APPLICABLE DOCUMENTS AND GLOSSARY

3.1 Applicable Documents

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. For undated references, the latest edition of the referenced document (including any amendments) applies:

3.1.1 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*

3.1.2 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)

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

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

3.1.4 International Organization for Standardization, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva Switzerland

ISO 1716, Reaction-to-Fire tests for Building Products – Determination of the Heat of Combustion

ISO/IEC 17025, General Requirements for the Competence of Testing and Calibration Laboratories

3.1.5 National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169

NFPA 275 *Standard Method of Fire Tests for the Evaluation of Thermal Barriers*

3.2 Terminology

For purposes of this standard, the following terms apply:

Air Gap

The void between the inner surface of the exterior façade and insulation or sheathing within a cavity wall.

Cavity

The distance between the interior surface of the exterior façade and the interior structure of a cavity wall. The cavity may be partially filled with insulation, air retarders or other cavity wall components.

Cavity Wall System

Exterior wall constructions typically consisting of two layers of wall surfacing or sheathing separated by a cavity which contains an air gap. Rainscreen assemblies are a type of cavity wall system where the exterior facade is ventilated siding (i.e. ACM or MCM panels) that allows for drainage and evaporation inside the cavity. Components that may be present inside the cavity include, but are not limited to, insulation, thermal barriers, weather resistant barriers, and air and moisture retarders.

Factory Assembled

Cavity wall systems that are fabricated in a factory and delivered to their destination as a complete system.

Field Erected

Cavity wall systems in which individual components arrive separately at a site where they are assembled in place.

Insulation

Insulation is any of a variety of materials designed to reduce the flow of heat, either from, or into, a building.

Noncombustible

The property of a material to not ignite or burn. Materials are classified as noncombustible if they meet the optional requirements for noncombustible core rating in ANSI 4880, *Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings, and Exterior Wall Systems*.

Spray Foam Insulation

The field applied spray foam insulation systems consist of multiple components delivered to a job site where they are mixed and sprayed in place prior to applying the wall covering.

Thermal Barrier

A material, product or assembly that prevents or delays ignition of an unexposed surface by limiting the temperature rise and by acting as a flame exposure barrier for a minimum of 15 minutes. This would include ½ in. (13 mm) or greater thickness of gypsum wall board, or a material, product or assembly that has met the requirements of NFPA 275 *Standard Method of Fire Tests for the Evaluation of Thermal Barriers*.

Thermoplastic

Polymers which soften when heated and harden when cooled. This process is repetitive provided the material is not heated above the point at which decomposition occurs.

Thermoset

A material that solidifies or “sets” irreversibly when heated. This property is usually associated with cross linking of the molecules induced by heat, chemical reaction or radiation.

4 GENERAL REQUIREMENTS

4.1 Markings

4.1.1 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;
- model number or product identification,
- “Must be installed in accordance with the manufacturer’s provided installation guidelines”.

4.2 Manufacturer’s Installation Instructions

4.2.1 The manufacturer shall supply all necessary instructions and other assistance to the installer to ensure proper installation in accordance with the Approved wall assembly. Printed instructions shall be provided by the manufacturer to demonstrate proper installation procedures.