



Designation: ~~C1321-04~~ Designation: C1321 - 09

Standard Practice for Installation and Use of Interior Radiation Control Coating Systems (IRCCS) in Building Construction¹

This standard is issued under the fixed designation C1321; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice has been prepared for use by the designer, specifier, and applicator of IRCCS (Interior Radiation Control Coating Systems) for use in building construction. The scope is limited to recommendations related to the use and installation of IRCCS, including a surface(s) having a far-infrared emittance of 0.25 or less that is sprayed or painted.² Some examples that this practice is intended to address include: (1) low emittance surfaces in vented building envelope cavities intended to retard radiant transfer across the vented airspace; (2) low emittance surfaces at interior building surfaces intended to retard radiant transfer to or from building inhabitants; and (3) low emittance surfaces at interior building surfaces intended to reduce radiant transfer to or from heating or cooling systems. See Fig. 1 and Fig. 2 for typical applications.

1.2 This practice covers the installation process from pre-installation inspection through post-installation. It does not cover the production of the Interior Radiation Control Coating Materials.

1.3 This practice is not intended to replace the manufacturer's installation instructions, but it shall be used in conjunction with such instructions. This practice is not intended to supersede local, state, or federal codes.

1.4 This practice assumes that the installer possesses a good working knowledge of the application codes and regulations, safety practices, tools, equipment, and methods necessary for the installation of Interior Coating Materials. It also assumes that the installer understands the fundamentals of building construction that affect the installation of an IRCCS.

1.5 When the installation or use of Interior Radiation Control Coating Materials, accessories, and systems may pose safety or health problems, the manufacturer shall provide the user appropriate current information regarding any known problems associated with the recommended use of the company's products and shall also recommend protective measures to be employed in their safe utilization. The user shall establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Specific precautionary statements are contained in Sections 5 and 7.*

2. Referenced Documents

2.1 ASTM Standards:

C168 [Terminology Relating to Thermal Insulation](#)

C1371 [Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emitters](#)

E84 [Test Method for Surface Burning Characteristics of Building Materials](#)

E96/E96M [Test Methods for Water Vapor Transmission of Materials](#)

2.2 NFPA Standards:³

NFPA 54 National Fuel Gas Code

NFPA 211 Standard for Chimneys, Fireplaces and Vents

2.3 Other Documents:

CPSC Product Safety Fact Sheet No. 18 "The Home Electrical System"⁴

3. Terminology

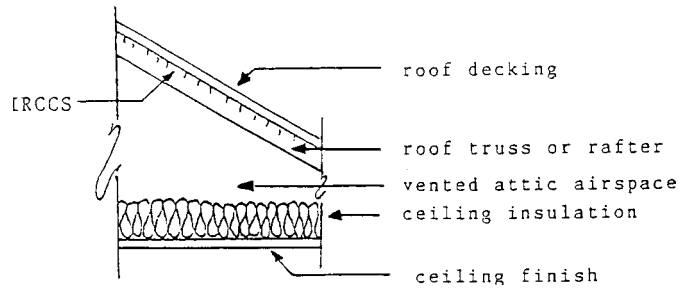
3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology C168.

¹ This practice is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.21 on Reflective Insulation. Current edition approved May 1, 2004. Published June 2004. Originally approved 1996. Last previous edition approved in 1998 as C1321-98. DOI: 10.1520/C1321-04. Current edition approved Nov. 1, 2009. Published December 2009. Originally approved 1996. Last previous edition approved in 2004 as C1321-04. DOI: 10.1520/C1321-09.

² The as-manufactured emittance of Interior Radiation Control Coating product, as determined on a typical substrate, should be stated on the label (see 7.2.1).

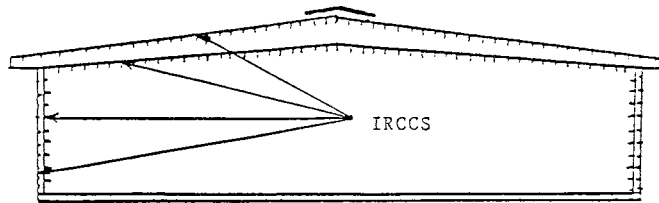
³ Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

⁴ Available from U.S. Consumer Product Safety Commission, Washington, DC 20207.



NOTE 1—Apply IRCCS to cover the exposed roof deck area. The low-emittance surface of the IRCCS must face the interior of the attic.

FIG. 1 Typical Residential Use



NOTE 1—Apply the IRCCS to cover the entire interior surface area. The low-emittance surface of the IRCCS must face the interior of the bldg.

FIG. 2 Typical Industrial, Commercial, and Agricultural Use

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *applicator*—the person or persons who apply interior reflective coating materials in buildings.

3.2.2 *conditioned space*—any space in a building that is served by a heating or cooling system.

3.2.3 *Interior Radiation Control Coating Systems (IRCCS)*—a building construction consisting of a low emittance (0.25 or less) surface bounded by an open air space. An IRCCS is used for the sole purpose of limiting heat transfer by radiation and is not specifically intended to reduce heat transfer by convection or conduction.

3.2.4 *open air space*—a vented building cavity (for example, a vented attic) or a large conditioned or unconditioned building space.

3.2.5 *Discussion*—A large building space is defined as one whose minimum dimension exceeds two feet.

3.2.6 *owner*—the person, partnership, corporation, agency, or other entity who owns the building in which the IRCCS is to be applied whether such ownership is by virtue of deed, contract, or any other instrument for acquiring legal title under the laws of the state in which the building is located.

4. Significance and Use

4.1 This practice recognizes that effectiveness, safety, and durability of an IRCCS depends not only on the quality of the materials, but also on the proper installation.

4.2 Improper installation of an IRCCS will reduce its thermal effectiveness, cause fire risks and other unsafe conditions, and promote deterioration of the structure in which it is installed. Specific hazards that can result from improper installation include: heat buildup in recessed lighting fixtures, deterioration or failure of electrical wiring components, and deterioration of wood structures and paint failure due to moisture accumulation.

4.3 This practice provides recommendations for the installation of IRCCS materials in a safe and effective manner. Actual conditions in existing buildings will vary greatly. ~~In some cases additional care should be taken to ensure safe and effective installation. greatly.~~

4.4 This practice presents requirements that are general in nature and considered practical. They are not intended as specific recommendations. ~~The user should consult~~ Consult the manufacturer for recommended application methods.

5. Safety Precautions

5.1 The applicator shall wear proper clothing and equipment as recommended by the manufacturer and shall follow local codes and safety regulations for building construction sites. (For example, hard hats, safety goggles, and respiratory protection ~~may~~ will be required, depending on site conditions.)

5.2 Ventilation ~~should~~ shall be provided to insure that mist and overspray are immediately dispersed from the application area. If natural ventilation is not adequate, place OSHA approved fans may be placed in windows or doors adjacent to the application area to improve ventilation.