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Standard Specification for Exterior Solar Radiation Control Coatings on Buildings[1]

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1. Scope

1.1 The purpose of this specification is to provide general requirements for products used to reduce thermal loads on buildings by reflecting solar radiation from roofs and walls. Radiation control coating (RCC) is a liquid applied coating having a solar reflectance of 0.8 and an ambient temperature total hemispherical emittance of at least .08.

1.2 This specification covers the physical and mechanical properties of liquid-applied radiation control coatings (RCCs) designed for exterior application on buildings or other structures, where ambient air temperatures range form -34 to 54°C (-30 to 130°F). The specification also includes the testing procedures by which the acceptability of the material may be determined.

1.3 The products that comply with this specification may be used for other applications and have other properties not covered by this specification. In such cases, it is advisable to check other specifications that address the applications of interest.

1.4 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*

C 168 Terminology Relating to Thermal Insulation Materials[2]

C 419 Practice for Making and Curing Test Specimens of Mastic Thermal Insulation Coatings[2]

C 461 Test Methods for Mastics and Coatings Used With Thermal Insulation[2]

C 1371 Test Method for Determination of Emittance of Materials Near Room Temperatures Using Portable Emissometers[2]

D 471 Test Method for Rubber Property—Effect of Liquids[3]

D 903 Test Method for Peel or Stripping Strength of Adhesive Bonds[4]

D 2370 Test Method for Tensile Properties of Organic Coatings[5]

D 2697 Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings[5]

D 3274 Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation[5]

E 84 Test Method for Surface Burning Characteristics of Building Materials[6]

E 96 Test Methods for Water Vapor Transmission of Materials[6]

E 903 Test Method for Solar Absorptance, Reflectance and Transmission of Materials Using Integrating Spheres[7]

E 1175 Test Method for Determining Solar and Photopic Reflectance, Transmittance and Absorptance of Materials Using Large Diameter Integrating Spheres[7]

G 26 Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials[8]

3. Terminology

3.1 *Definitions*—Terminology C 168 shall apply to this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *radiation control coating (RCC), n*— a radiation control coating is a material that is designed to have a high solar reflectance (above 0.8) and a high hemispherical emittance (above .08) for long wavelength radiation.

3.2.2 *solar reflectance, n*—solar reflectance is the fraction of incident solar radiation that is reflected.

4. Significance and Use

4.1 It is recognized that the solar reflectance of RCCs may be reduced by accumulations of dirt, dust, and other surface contaminants and that the characteristics of such dirt accumulations can vary for different locations. At this time there is no data to predict the effects of such accumulations, nor have any

[1] This specification is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.21 on Reflective Insulation.

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[2] *Annual Book of ASTM Standards*, Vol 04.06.

[3] *Annual Book of ASTM Standards*, Vol 09.01.

[4] *Annual Book of ASTM Standards*, Vol 15.06.

[5] *Annual Book of ASTM Standards*, Vol 06.01.

[6] *Annual Book of ASTM Standards*, Vol 04.07.

[7] *Annual Book of ASTM Standards*, Vol 12.02.

[8] *Annual Book of ASTM Standards*, Vol 14.04.