

Overview

The CRRC is proposing a revision of the ANSI/CRRC S100 (2021), *Standard Test Methods for Determining Radiative Properties of Materials* (CRRC S100). The initial draft of proposed changes underwent public review between January 5, 2024 and February 19, 2024 and was approved by the CRRC S100 Consensus Body. The Consensus Body evaluated several comments on the draft standard and approved the changes presented in this document via multiple ballots between March 2024 and August 2024. Excerpts of the draft standard with the approved changes in ~~strikeout~~ and underline can be found on pages 3 through 7 of this document. A summary of the additional revisions is described on pages 1 and 2 of this document.

Summary of Additional Revisions to Draft S100 Standard

S.1.5 Glossary of Terms

- Revised the definition for “Roofing Product, Liquid-Applied” for clarity and accuracy. The revised definition is based on a modified definition of roof coating in the International Building Code.
- Revised the definition of “Test Farm Site” to remove redundancy with the requirements in Section R.S.2.6 of the standard.
- Revised the definition for “Wall Product, Architectural Coating” for clarity and accuracy. The revised definition aligns with the United States Environmental Protection Agency National Rule.
- Removed the definition of “Wall Product, Factory-Coated Metal” because there is already a definition in the standard that includes any substrate, not only metal (“Factory-Applied Roof or Exterior Wall Product Component - A material or component made by an Other Manufacturer (OM) which is applied to a substrate in a factory or coating facility”).
- Revised the definition of “Wall Product, Insulated Vinyl Siding” to avoid naming properties after their symbols; to place units before dimensional values; and to use the International System of Units, which is the practice used in the standard.

S.1.6 References

- Adopted use of ambulatory standards for the following reasons:
 - Undated reference documents are commonly used by standard development organizations, including ASTM and CAN/ULC, which recommend undated references unless there is valid technical reason for a dated reference;
 - the standards that are used in the S100 standard are mature and rarely have any technical changes to the methodology used in evaluating physical properties;

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- Accredited Independent Testing Laboratories (AITLs) are required to meet the requirements of the latest version of the methods they are accredited to, unless otherwise required. Maintaining multiple systems for different versions of a method can be overly complicated for AITLs, especially considering that standards rarely change in a way that impacts test results; and
- referenced standards often undergo minor edits that do not impact the testing process more frequently than the S100 standard is updated.

R.S.3.2 Standard Production Line Roofing Product Specimen

- Revised the section to remove language that is redundant to definition of “Standard Substrate” in Section S.1.5 in the standard (Glossary of Terms).

R.S.3.3 Factory-Applied Coating Products

- Revised the section to remove language that is redundant to definition of “Standard Substrate” in Section S.1.5 in the standard (Glossary of Terms).

W.S.2.6 Requirements for Field Exposure of Wall Products

- Added details for the exposure of wall product test specimens.

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Redline Version of Second Draft CRRC S100 Standard*

Proposed changes shown in strikeout and
underline

* The title page of the CRRC S100 standard has been omitted
from this draft version.

S.1.5 Glossary of Terms

Portions of the draft standard that have not undergone changes since the first public comment period have been removed in this draft version.

Roofing Product, Liquid-Applied – ~~A roofing product that is applied as a liquid to a roofing substrate in order to improve the Solar Reflectance and/or Thermal Emittance, among other things. A liquid-applied, adhered coating used for roof maintenance or roof repair, or as a component of a roof covering system or roof assembly.~~

Test Farm Site - ~~One of three~~ A authorized locations where a product is placed for weathering exposure before the measurement of Aged Radiative Properties.

Wall Product, Exterior Architectural Coating – ~~A paint that is applied directly to an exterior wall. Exterior Architectural Coating Wall Product is a coating recommended for field application to stationary structures and their appurtenances, and to portable buildings. This definition excludes adhesives and coatings recommended by the manufacturer or importer solely for shop applications or solely for application to non-stationary structures, such as airplanes, ships, boats, and railcars.~~

Wall Product, Factory-Coated Metal – ~~A paint or coating that is applied to a metal substrate in a factory or coating facility.~~

Wall Product, Insulated Vinyl Siding – ~~A Vinyl Siding Wall Product containing an additional insulative layer with an R-value no less than 2.0. A Vinyl Siding Wall Product containing an additional insulative layer with a thermal insulance (R-value) not less than 0.35 m²·K/W (2 h·ft²·°F/BTU).~~

S.1.6 References

The standards referenced in this Standard are ambulatory references, unless otherwise stated for a particular standard.

ASTM International (ASTM)

100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
www.astm.org

- ASTM C1371-~~15~~(2022), Standard Test Method for Determination of Emittance of Materials Near Room Temperature using Portable Emissometers.
<https://doi.org/10.1520/C1371-15>
- ASTM C1549-~~16~~(2022), Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
<https://doi.org/10.1520/C1549-16>

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- ASTM C1864-~~17(2022)~~, Standard Test Method for Determination of Solar Reflectance of Directionally Reflective Material Using Portable Solar Reflectometer. <https://doi.org/10.1520/C1864-17E01>
- ASTM D751-~~19~~, Standard Test Methods for Coated Fabrics. <https://doi.org/10.1520/D0751-19>
- ASTM D1005-~~95(2020)~~, Standard Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers. <https://doi.org/10.1520/D1005-95R20>
- ASTM D1730-~~09(2020)~~, Standard Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting. <https://doi.org/10.1520/D1730-09R20>
- ASTM D3679-~~21~~, Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding. <https://doi.org/10.1520/D3679-21>
- ASTM D7091-~~22~~, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals. <https://doi.org/10.1520/D7091-21>
- ASTM D7254-~~21~~, Standard Specification for Polypropylene (PP) Siding. <https://doi.org/10.1520/D7254-21>
- ASTM D7793-~~21~~, Standard Specification for Insulated Vinyl Siding. <https://doi.org/10.1520/D7793-21>
- ASTM D7897-~~(2018)~~, Standard Practice for Laboratory Soiling and Weathering of Roofing Materials to Simulate Effects of Natural Exposure on Solar Reflectance and Thermal Emittance. <https://doi.org/10.1520/D7897-18>
- ASTM E805-~~22~~, Standard Practice for Identification of Instrumental Methods of Color or Color-Difference Measurement of Materials. <https://doi.org/10.1520/E0805-12AR17>
- ASTM E891-87(1992), Tables for Terrestrial Direct Normal Solar Spectral Irradiance Tables for Air Mass 1.5. Note: Currently a withdrawn standard. <https://www.astm.org/e0891-87r92.html>
- ASTM E903-~~20~~, Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres. <https://doi.org/10.1520/E0903-20>
- ASTM E1918-~~21~~, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field. <https://doi.org/10.1520/E1918-21>
- ASTM G7/G7M-~~21~~, Standard Practice for Atmospheric Environmental Exposure Testing of Nonmetallic Materials. https://doi.org/10.1520/G0007_G0007M-21
- ASTM G147-~~17~~, Standard Practice for Conditioning and Handling of Nonmetallic Materials for Natural and Artificial Weathering Tests. <https://doi.org/10.1520/G0147-17>
- ASTM G197-14(2021), Standard Table for Reference Solar Spectral Distributions: Direct and Diffuse on 20° Tilted and Vertical Surfaces. <https://doi.org/10.1520/G0197-14R2>

The International Organization for Standardization (ISO)

1, ch. de la Voie-Creuse, Case Postale 56
CH-1211 Geneva 20, Switzerland

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www.iso.org

- ISO/IEC Standard 17025-~~2017~~, General requirements for the competence of testing and calibration laboratories.
- ISO/IEC Standard 17011-~~2017~~, Conformity assessment -- General requirements for accreditation bodies accrediting conformity assessment bodies.

Roofing Section R.S.3 - Test Specimen Selection

Portions of the draft standard that have not undergone changes since the first public comment period have been removed in this draft version.

R.S.3.2 Standard Production Line Roofing Product Specimen

(B) Substrate:

1. Liquid-Applied Coating on Smooth Substrates: Coating shall be applied to the substrate(s) intended for end use, to a standard aluminum panel or to a substrate approved by the certifying agency. The Standard Substrate shall ~~conform to 3003 H14 uncoated aluminum alloy in be prepared in~~ accordance with ASTM D1730. Alternative substrates shall be as recommended by the manufacturer for field installation. Liquid-Applied coating Specimens shall be applied at the minimum dry film Thickness or coverage recommended by the manufacturer for use on site. The dry film Thickness shall be within 20% of the manufacturer's recommended minimum Thickness and shall be verified upon initial testing by an AITL in accordance with the procedures set forth in Section R.S.2.5 of this Standard.
2. Factory-Applied Roof Product Components: Factory-Applied Roof Product Component Specimens shall be applied to the substrate(s) intended for end use or to a standard aluminum panel. The Standard ~~aluminum panel~~Substrate shall ~~conform to 3003 H14 uncoated aluminum alloy be prepared~~ in accordance with ASTM D1730.

R.S.3.3 Factory-Applied Coating Products

Portions of the draft standard that have not undergone changes since the first public comment period have been removed in this draft version.

(A) Substrate:

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1. Factory-Applied Coatings: Factory-Applied Roof Product Component
Specimens shall be applied to a substrate(s) intended for commercial use or to a standard aluminum panel. The Standard Substrate shall ~~conform to 3003 H14 uncoated aluminum alloy in be prepared in~~ accordance with ASTM D1730.

Exterior Wall Section W.S.2 – Conduct of Tests

W.S.2.6 Requirements for Field Exposure of Wall Products

Portions of the draft standard that have not undergone changes since the first public comment period have been removed in this draft version.

- (A) Specimen Mounting: Exposure shall be in accordance with ASTM G7/G7M. Specimens shall be exposed on wood backing at a 90° ~~tilt, equator-facing~~ (South-facing in the Northern hemisphere or North-facing in Southern hemisphere) either in an offset rack that horizontally staggers Specimens or on the top row of a non-offset rack to minimize cross-contamination induced by drip.