

# Field-Applied Roof Coatings: Increasing Your Understanding

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## Roof coating basics...



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## A definition...

**ROOF COATING.** A fluid-applied, adhered coating used for roof maintenance or *roof repair*, or as a component of a *roof covering system* or *roof assembly*.

*-International Building Code, 2021 Edition*



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## Another definition...

**ROOF COVERING.** The covering applied to the roof deck for weather resistance, fire classification or appearance.

*-International Building Code, 2021 Edition*



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### SECTION 1509 ROOF COATINGS

**1509.1 General.** The installation of a *roof coating* on a *roof covering* shall comply with the requirements of Section 1505 and this section.

**1509.2 Material standards.** Roof coating materials shall comply with the standards in Table 1509.2.

**TABLE 1509.2  
ROOF COATING MATERIAL STANDARDS**

MATERIAL	STANDARD
Acrylic coating	ASTM D6083
Asphaltic emulsion coating	ASTM D1227
Asphalt coating	ASTM D2823
Asphalt roof coating	ASTM D4479
Aluminum-pigmented asphalt coating	ASTM D2824
Silicone coating	ASTM D6694
Moisture-cured polyurethane coating	ASTM D6947

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ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

3. The mechanical equipment screens shall be constructed of fire-resistance-rated roof covering with Section 2303.2 for exterior installation.

4. Where the fire separation distance is not less than 20 feet (6096 mm), the mechanical equipment screens shall be constructed of materials having a flame spread index of 25 or less when tested in the minimum and maximum thicknesses permitted for use with such fire rated independently in accordance with ASTM E84 or UL 723.

**[BC] 1511.7 Other rooftop structures.** Rooftop structures not regulated by Sections 1511.2 through 1511.6 shall comply with Sections 1511.7.1 through 1511.7.5, as applicable.

**[BC] 1511.7.1 Aerial supports.** Aerial supports shall be constructed of noncombustible materials.

**Exception:** Aerial supports not greater than 12 feet (3658 mm) in height measured from the roof deck to the highest point on the aerial supports shall be permitted to be constructed of combustible materials.

**[BC] 1511.7.2 Bulkheads.** Bulkheads used for the shelter of mechanical or electrical equipment or vertical shaft openings in the roof assembly shall comply with Section 1511.2, as prescriptive. Bulkheads used for any other purpose shall be considered as an additional story of the building.

**[BC] 1511.7.3 Downcomers.** Downcomers shall be of the same type of construction as required for the roof in which such downcomers are located or the exterior walls of the building.

**[BC] 1511.7.4 Fences.** Fences and similar structures shall comply with Section 1511.6 as mechanical equipment screens.

**[BC] 1511.7.5 Flagpoles.** Flagpoles and similar structures shall not be required to be constructed of noncombustible materials and shall not be limited in height or number.

**[BC] 1511.8 Structural fire resistance.** The structural frame and roof construction supporting loads imposed upon the roof by any rooftop structure shall comply with the requirements of Table 601.1. The fire-resistance reduction permitted by Table 601.1, Item 4, shall not apply to roofs containing rooftop structures.

Section 1507 for roofs that provide positive roof drainage.

2. Encroaching or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency weathertight) drains or cloggers in Section 1502.2 for roofs that provide for positive roof drainage. For the purposes of this exception, existing secondary drainage or cloggers systems required in accordance with this code shall not be removed unless they are replaced by secondary drains or cloggers designed and installed in accordance with Section 1502.2.

**1512.2 Roof replacement.** Roof replacement shall include the removal of all existing layers of roof assembly materials down to the roof deck.

**Exception:** Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507.

**1512.2.1 Roof recover.** The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

1. Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.
2. Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.
3. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1512.3.
4. The application of a new protective roof coating over an existing protective roof coating, metal roof panel, built-up roof, spray polyurethane foam roofing system, metal roof shingles, mineral-surfaced roll roofing, modified bitumen roofing or thermoset and thermoplastic single-ply roofing shall be permitted without tear off of existing roof covering.

**1512.2.1 Exception:** A roof recover shall not be permitted where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate to have the additional roofing.
2. Where the existing roof covering is clay, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.


**SECTION 1512**  
**REROOFING**

**1512.1 General.** Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.


**Exception:**


1. Roof replacement or roof recover of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of 1/4" per vertical in 12 when basement (2-percent) slope is


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*Is a building permit required for re-coating?*



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National Director of Technical Services  
Karnak



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# Asphalt

Cutback (Solvent-based)

- Composed of asphalt, solvent, fillers
- May or may not contain fibers or modifiers

Emulsion (Water-based)

- Composed of asphalt, clay, emulsifiers
- May or may not contain fibers or modifiers





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# Asphalt

Advantages:

- Proven performance
- Low cost per gallon
- Useful for priming and preparing roofs for reflective coatings

Disadvantages:

- Non-reflective





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# Asphalt

Applicable Substrates:




- Smooth BUR
- Smooth & Granule Mod. Bit.
- Granule Cap Sheet
- Metal
- Concrete

Limitations:

- Limited applicable substrates
- Limited color offering - Black

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# Aluminum

Cutback (Solvent-based)

- Composed of asphalt, aluminum pigment flakes and solvent
- May or may not contain fibers or modifiers

Emulsion (Water-based)

- Composed of asphalt, clay, emulsifiers and aluminum pigment
- May or may not contain fibers




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# Aluminum

Advantages:

- Single-coat application
- No primer/base coat necessary
- Lowest cost reflective coating
- Performance since 1950's

Disadvantages:

- Less reflective than white
- Affected by ponding water
- Perceived at "low-tech"





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# Aluminum


Applicable Substrates:

- Smooth BUR
- Smooth & Granule Mod. Bit.
- Granule Cap Sheet
- Metal
- Concrete


Limitations:


- Limited applicable substrates
- Limited color offering – Aluminum only






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# SEBS

- Thermoplastic rubber, hydrocarbon solvent, reflective pigments and proprietary additives
- Produces a reflective, rubber-like elastomeric coating
- May be colored – most white, gray or tan





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# SEBS


Advantages:

- High elongation & tensile strength
- Excellent adhesion – use over several different roof surfaces
- High reflectivity and emissivity
- Wide application window
- Low permeance
- Corrosion resistance


Disadvantages:


- Lower percent solids by weight






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# SEBS

Applicable Substrates:

- TPO, PVC, Hypalon
- EPDM
- Metal
- Concrete
- Asphalt - Smooth BUR & Mod. Bit.

Limitations:

- Asphalt surfaces require bleed blocking primer or base coat





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# When to Coat a Roof

- When roof is DRY internally!
  - Perform moisture survey & core cuts
- When lacking surface protection
  - Granule loss
  - Worn previous coatings
- When surface cracks, but no leaks
  - Alligatored BUR surfaces
  - Single-ply surface cracks





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# When to Coat a Roof

- When metal roof shows
  - Surface rusting
  - Painted surface eroded
- To improve reflectivity
- To keep fire rating of roof assembly
- To improve aesthetics





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# When **NOT** to Coat a Roof

- Roof is wet
  - Remove and replacement of wet not feasible
- Roof is not secure
  - Loose insulation
  - Unsecured membrane
- Rusted through metal panels
- Membranes eroded past scrim or integrity greatly affected





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## Coating – Surface Preparation


- Extremely important
- Most important step in the application process
- Have well thought out plan before starting





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## How Clean is Clean?

- All surface must be dry, sound and free of dirt, dust, rust, grease, oils or foreign substances
- White rag test
- Painters tape test





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## How Long do Roof Surfaces Need to Cure Before Coating?

- New BUR: 90-180 days
- New Mod. Bit:
  - Hot-applied – 90-180 days
  - Torch-applied – Coat after membrane cools
  - Cold-applied – 90-180 days
  - Self-adhered – 30 days
- TPO/PVC: Allow to weather min. 4 years
- EPDM: Coat after installation and cleaning
- Metal: Allow to weather 30 days



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## How Long do Sealants & Mastics Need to Cure Before Coating?

- Check with sealant/mastic manufacture
- Check with coating manufacturer
- If similar chemistries – typically 24-48 hours, but check with manufacturer





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## How Thick Should Coating be Applied?


- Dependent upon coating and manufacturer
- **IMPORTANT** to follow manufacturer's application guidelines
- Coating applied too thick may mud-crack or blister.
- Use wet mill gauge or grid roof to monitor application quality control






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## How Long do Coatings Last?

- Longevity dependent upon coating type, substrate, surface preparation, application, and environmental conditions
- When applied per manufacturer's specification expect 3-5 years up to 20+ depending on coating type





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# Are Coatings Offered with Warranties?

- YES – material and material & labor warranties available
- Confirm with the manufacturer – may differ based on coating, substrate, and applicator qualifications
- Note: Warranties do not cover existing substrate – surface preparation is key to success of application



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# Jim Martin

## National Sales Manager

### RM Lucas

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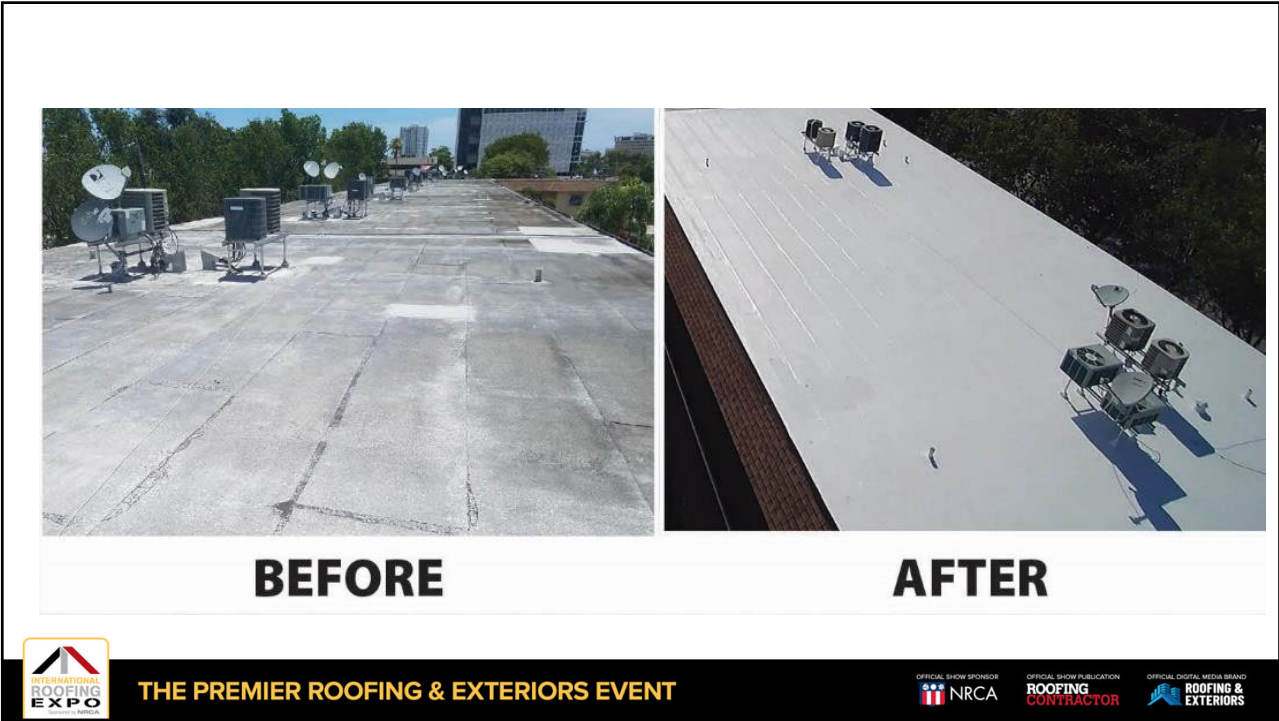
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31

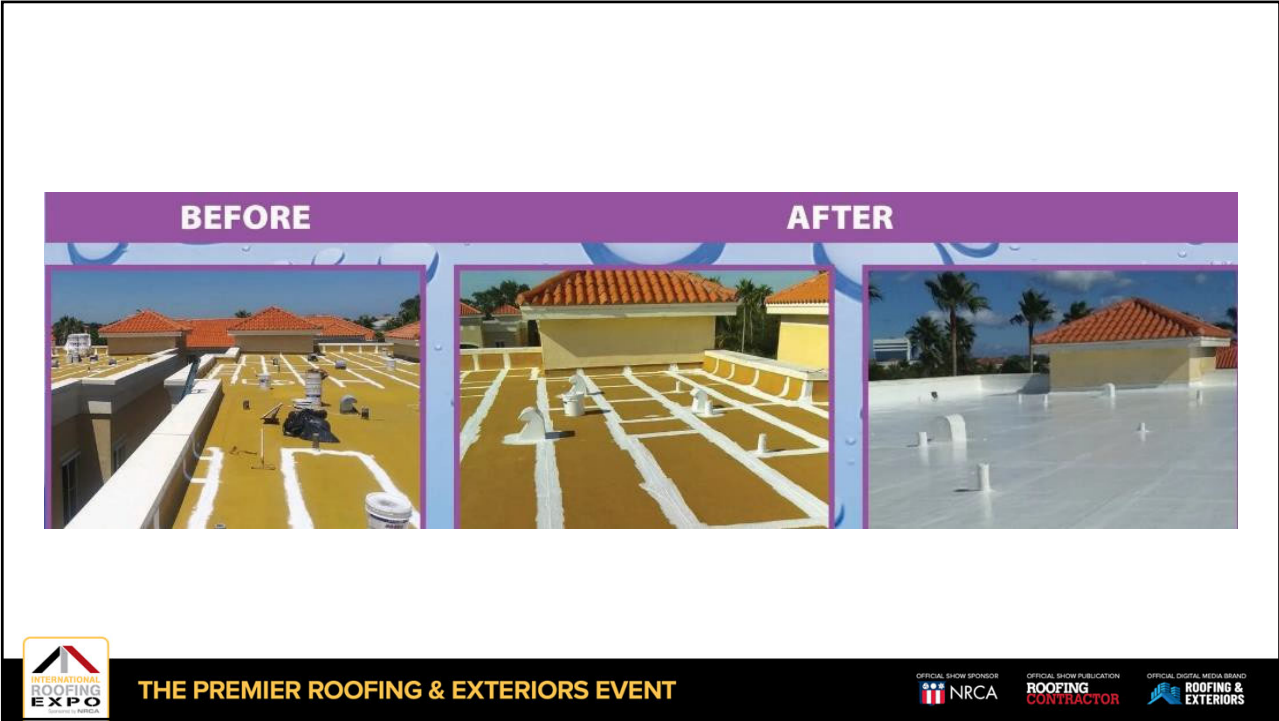



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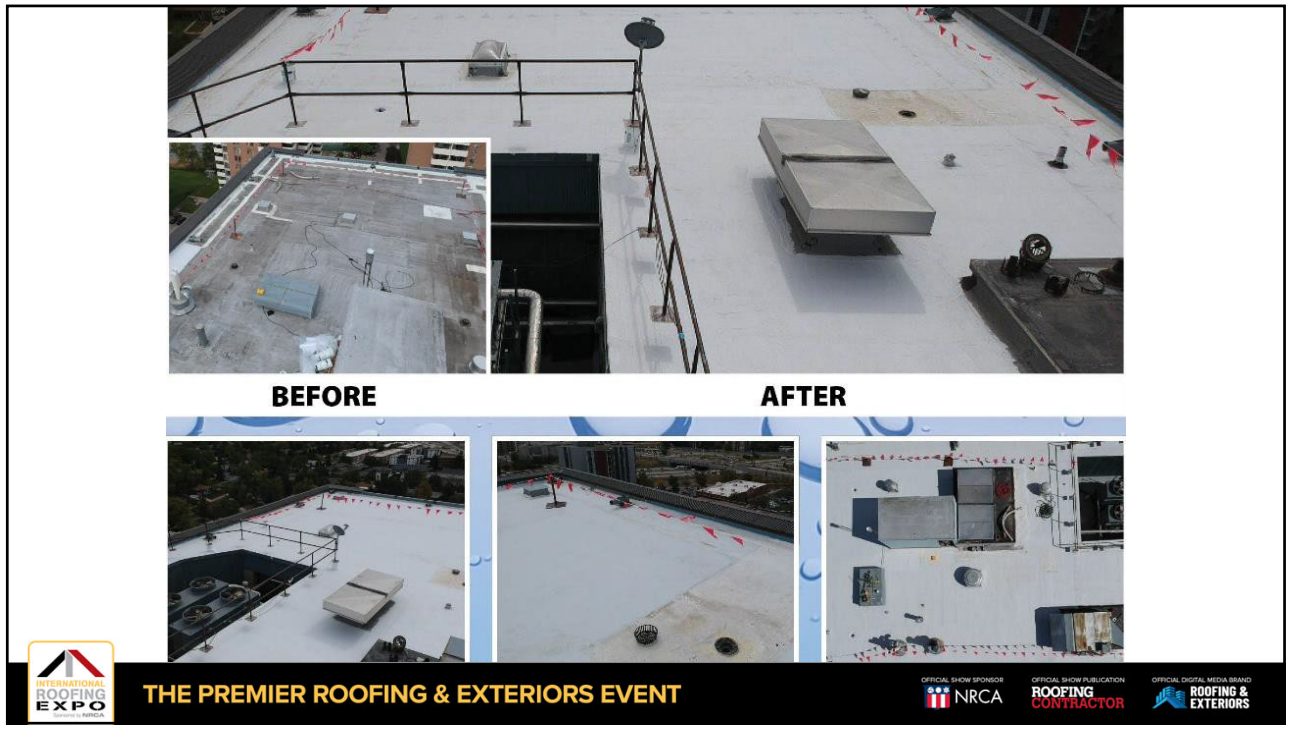




33



34



35



36

**BEFORE** **AFTER**

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**Is the Roof a Candidate for a Coating System?**  
**First Step is a Visual Inspection**

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**Core Cuts & Thermal Imaging are the Next Step to Accessing if the Roof is a Candidate for Coatings**

**FLIR ONE GEN 3**  
Thermal Camera for Smart Phones

**FLIR ONE PRO**  
Pro-grade Thermal Camera for Smart

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The Final Step is Approval from the coating manufacturer and Choosing the Correct Coating System

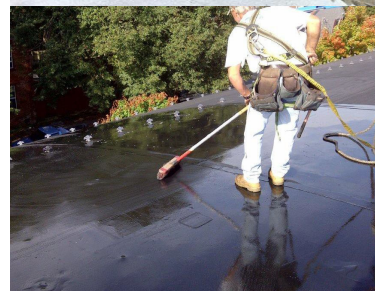


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41

Cleaning All Roof Types




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42

Clean to prep Existing Roofing Systems and for Future Maintenance



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Primers



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44

Applying to Granular Modified



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Applying to EPDM, Granular Modified, Metal & Old Urethane Coating System



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Applying Coating to Concrete, PVC, TPO, EPDM & Granular Cap



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High Performance Acrylic Roof and Wall Coatings



- Systems for metal, modified bitumen, and single-ply roofs
- Energy Star Rated
- Extends life of existing roof
- Lowers building temperatures
- UV stable formulations
- System warranties available



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