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JANUARY 19-21, 2022
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Roof coating basics...
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*
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>
<thead>
<tr>
<th>MATERIAL</th>
<th>STANDARD</th>
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<tbody>
<tr>
<td>Acrylic coating</td>
<td>ASTM D6083</td>
</tr>
<tr>
<td>Asphalitic emulsion coating</td>
<td>ASTM D1227</td>
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<tr>
<td>Asphalt coating</td>
<td>ASTM D2823</td>
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<tr>
<td>Asphalt roof coating</td>
<td>ASTM D4479</td>
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<tr>
<td>Aluminum-pigmented asphalt coating</td>
<td>ASTM D2824</td>
</tr>
<tr>
<td>Silicone coating</td>
<td>ASTM D6694</td>
</tr>
<tr>
<td>Moisture-cured polyurethane coating</td>
<td>ASTM D6947</td>
</tr>
</tbody>
</table>
3. The mechanical equipment screen shall be constructed of fire-resistance-rated wood complying with Section 2502 for exterior installation.

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

[BG] 1511.7 Other roof assemblies. Roof assemblies not required by Sections 1511.2 through 1511.6 shall comply with Sections 1511.7.1 through 1511.7.5, as applicable.

[BG] 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 as measured from the roof deck to the highest point on the aerial support shall be permitted to be constructed of combustible materials.

[BG] 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 1511.2.9 as pressure. Bulkheads used for any other purpose shall be considered an additional story of the building.

[BG] 1511.7.3 Docklines. Docklines shall be of the same type of construction as required for the roof in which such dock lines are located or the lowest walls of the building.

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

[BG] 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 combustible.

[BG] 1511.8 Structural fire resistance. The structural frame and roof construction supporting loads imposed upon the roof by any roof assembly shall comply with the requirements of Table 603.1. Fire-resistance ratings permitted by Table 603.1, Note 1, shall apply to roofs containing roof framing.

SECTION 1512 RE-ROOFING

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

Exceptions:

1. Roof replacement or roof renewal of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of 1/4", unit vertical on 12 unit horizontal (4-over-12-slope) in Section 1507 for roofs that provide positive roof drainage.

2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drain or straps in Section 1502 for roofs that provide positive roof drainage. For the purposes of this exception, existing secondary drain or straps systems required in accordance with this code shall not be removed unless they are replaced by secondary drain or straps designed and installed in accordance with Section 1502.

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 binder membrane that is adhered to the roof deck, the existing ice binder membrane shall be permitted to remain in place and covered with an additional layer of ice binder membrane in accordance with Section 1507.

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

1. When 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 panels systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roof and roof coverings for support, shall not require the removal of existing roof coverings.

3. Metal panel, metal tile and concrete and clay tile roof coverings shall be permitted to be installed over existing wood decks 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 sheathing, mineral-surfaced roll roofing, modified bitumen roofing or thermoset and thermoplastic single-ply roofing shall be permitted without the removal of existing roof coverings.

1512.2.3.1 Exception: A roof recovery shall not be permitted where any of the following conditions occur:

1. Where the existing roof or roof covering is not sealed on its perimeter to the point that the existing roof or roof covering is not adequate to serve as a base for additional roofing.

2. Where the existing roof covering is slate, clay, ceramic or asbestos-cement tile.

3. Where the existing roof has two or more applications of any type of roof covering.
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 coverings.
Is a building permit required for re-coating?
Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association
10255 West Higgins Road, 600
Rosemont, Illinois  60018-5607

(847) 299-9070
mgraham@nrca.net
www.nrca.net

Twitter:  @MarkGrahamNRCA
Personal website:  www.MarkGrahamNRCA.com
Types of Roof Coatings
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
Asphalt

Advantages:
• Proven performance
• Low cost per gallon
• Useful for priming and preparing roofs for reflective coatings

Disadvantages:
• Non-reflective
Asphalt

Applicable Substrates:
• Smooth BUR
• Smooth & Granule Mod. Bit.
• Granule Cap Sheet
• Metal
• Concrete

Limitations:
• Limited applicable substrates
• Limited color offering - Black
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, emulsifier and aluminum pigment
- May or may not contain fibers
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”
Aluminum

Applicable Substrates:
• Smooth BUR
• Smooth & Granule Mod. Bit.
• Granule Cap Sheet
• Metal
• Concrete

Limitations:
• Limited applicable substrates
• Limited color offering - Aluminum
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
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
SEBS

Applicable Substrates:
• TPO, PVC, Hypalon
• EPDM
• Metal
• Concrete
• Asphalt - Smooth BUR & Mod. Bit.

Limitations:
• Asphalt surfaces require bleed blocking primer or base coat
When to Coat a Roof

- When roof is DRY!
  - Perform moisture survey & core cuts
- When lacking surface protection
  - Granule loss
  - Worn previous coatings
- When surface cracks, but no leaks
  - Alligatore BUR surfaces
  - Single-ply surface cracks
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
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
- Membrane eroded past scrim
Coating – Surface Preparation

• Extremely important
• Most important step in the application process
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
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 – No wait time
- TPO/PVC: Allow to weather min. 4 years
- EPDM: Coat after installation and cleaning
- Metal: Allow to weather 30 days
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
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
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
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
Thank you!

Chris Huettig
National Director of Technical Services
chuettig@karnakcorp.com
BEFORE

AFTER
Is the Roof a Candidate for a Coating System?

First Step is a Visual Inspection
Is the Roof a Candidate for a Coating System?
First Step is a Visual Inspection
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 Phones
The Final Step is Approval from Lucas and Choosing the Correct Coating System
Cleaning All Roof Types
Clean to prep Existing Roofing Systems and for Future Maintenance
Primers
Applying to Granular Modified
Applying to EPDM, Granular Modified, Metal & Old Urethane Coating System
Applying Coating to Concrete, PVC, TPO, EPDM & Granular Cap
Lucas Acrylic Coatings

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
Thank you!

Jim Martin
National Sales Manager
jmartin@rmlucas.com