Spray foam in the roofing industry—NRCA’s point of view

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Spray Foam 2009
Austin, TX
January 2009
Topics

- ASTM standards
- ICC code development
- The green/sustainability movement
- The NRCA Roofing Manual
ASTM standards

• C1029—SPF for insulation (1985, 2008)
• D5469—Application (1993, 2005)
• D7119—Sampling (2007)
• D7425—SPF for roofing applications (2008)

• 2 new standards in the last couple years
## 2 SPF material standards

### Comparison of ASTM Standards for SPF

<table>
<thead>
<tr>
<th>Property:</th>
<th>C1029, Type III</th>
<th>D7425, Type I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>Thermal insulation</td>
<td>Roof systems</td>
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<tr>
<td>Classifications:</td>
<td>Types I, II, III and IV – based on compressive strength</td>
<td>Types I and II – based on R-value</td>
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<td>R-value, min</td>
<td>6.2</td>
<td>5.6</td>
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<tr>
<td>Compressive strength, psi, min</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Density, lb/ft³, min</td>
<td>**</td>
<td>2.5</td>
</tr>
<tr>
<td>Water vapor permeability, perm-inches, max</td>
<td>3.0</td>
<td>3.02</td>
</tr>
<tr>
<td>Water absorption, volume %, max</td>
<td>5</td>
<td>5</td>
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<td>42</td>
<td>40</td>
</tr>
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<td>6</td>
<td>6</td>
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<td>Closed cell content, %, min</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Surface burning characteristics</td>
<td>Report value</td>
<td>**</td>
</tr>
</tbody>
</table>

**Not included**
Duplication

• There are 2 material standards for SPF.
• They both were (re)approved in 2008; we will have 2 material standards for 7 more years.

• ICC recognized—2012?
• SPFA recognized—??
• NRCA recognized—2012?

• AIA, RCI, CSI recognized—?? Likely when included in IBC/IRC.

• Specifiers and installers need to recognize the potential conflicts—and potential legal ramifications.
Sampling standard

• D7119 (2007)

• Scope:
  – Removal in field for examination of existing and QA for new installations.
  – Describes types and purpose of sample cuts, visual inspection techniques, lab tests and repair or samples cuts.

• Essentially matches current guidelines in NRCA/SPFA QC document.

• I fear misunderstanding will lead to incorrectly specifying it’s use and, therefore, it’s misuse.
Let’s not mess with D5469!
Proposal submitted to ICC re: SPF types.
- Currently required to meet C1029 Type III
- Proposed to add Type IV

The proposal was “...Type III and Type IV.”

In code “speak”, this means all SPF would be required to meet both, so all SPF would be required to have 60 psi compressive strength.

NRCA attended and caught this. It was changed to “...Type III or Type IV.” Now you have a choice!
The NRCA Coating Manual

• Available February 2009
• Intended to be a document for contractor
• Scope is limited to the most common coatings and their application
• Coatings used with SPF roof systems:
  – Acrylic
  – Polyurethane
  – Polyurea
  – Silicone
The NRCA Coating Manual

• Coating substrate groups
  – Metal
  – Bituminous
  – Single-ply
  – SPF

• Substrate and Surface Evaluation chapter
  – SPF
  – Recoating Existing Coatings
The green/sustainability movement

- Durability/longevity
- Insulation (conservation)
- Reduction of solar gain
- Reflectivity (surface issue)
- Vegetative roofs
- Platform for PVs (energy generation)
The green/sustainability movement

• It seems the SPF industry is well positioned to be an active participant in the green/sustainability movement from both the roofing and wall insulation segments of the industry.

• Manufacturer’s should provide specifiers and installers accurate and appropriate information needed to meet/exceed the requirements and intent of the “green” rating systems.

• Rating Systems:
  – USGBC’s LEED
  – GBI’s Green Globes
The NRCA Roofing Manual: Metal Panels and SPF Roof Systems—2008

www.nrca.net
Circulation

• About 3750 copies have been distributed and sold since January 2008.
2008 Manual—SPF Highlights

- Hard copy, CD-ROM and on-line
- Hard copy is free with paid 2008 NRCA membership
- CD-ROM contains:
2008 Manual—SPF Highlights

- Materials
- Design Considerations
- Application
- Roof System Design Guidelines
- Construction Details
  - 100 Construction Details; 38 for Reroofing
Construction Details and Introduction

• Set up for easy use as submittal package
• Priority of details—SPF 3 vs. SPF 3A
• Cricket and saddle recommendations
• Discussion of edge-metal uplift resistance
• And much more…
SMOOTH CONCRETE

INSTALL APPROPRIATE SEALANT (E.G., POLYURETHANE) AND TOOL TO FACILITATE WATER RUNOFF

SHEET-METAL COUNTERFLASHING

CONCRETE FASTENERS

OPTIONAL: COMPRESSIBLE ELASTOMERIC SEALANT OR TAPE TO SPAN IRREGULARITIES

8" MIN. FLASHING HEIGHT--COATING TO EXTEND 2" HIGHER THAN FOAM

ELASTOMERIC COATING

SPRAY POLYURETHANE FOAM (1" MIN. THICKNESS)

PREPARE AS REQUIRED--PRIME IF NECESSARY

ROOF DECK--PREPARE AS REQUIRED

NOTES:

1. THIS DETAIL SHOULD BE USED ONLY WHERE THE DECK IS SUPPORTED BY THE WALL.
2. REFER TO THE SPF INTRODUCTION FOR SHEET METAL COUNTERFLASHING ALTERNATIVES.
3. REFER TO THE ARCHITECTURAL SHEET METAL SECTION OF THE NRCA ROOFING AND WATERPROOFING MANUAL, FIFTH EDITION FOR JOINTERY AND SECUREMENT OPTIONS FOR SHEET METAL.
4. REFER TO THE SPF INTRODUCTION FOR ADDITIONAL INFORMATION.
SMOOTH CONCRETE—EXPOSED SURFACES MUST BE WEATHERPROOFED (BY OTHERS)

8" MIN. FLASHING HEIGHT—COATING TO EXTEND 2" HIGHER THAN FOAM

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1. REFER TO THE ARCHITECTURAL SHEET METAL SECTION OF THE NRCA ROOFING AND WATERPROOFING MANUAL, FIFTH EDITION FOR JOINERY AND SECUREMENT OPTIONS FOR SHEET METAL.
2. REFER TO THE SPF INTRODUCTION FOR ADDITIONAL INFORMATION.
NOTES:
1. FOR AGGREGATE-SURFaced MEMBRANES, MINIMUM THICKNESS FOR SPF IS 1 1/2 INCHES. REFER TO MANUFACTURERS’ SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
2. REFER TO THE ARCHITECTURAL SHEET METAL SECTION OF THE NRCA ROOFING AND WATERPROOFING MANUAL, FIFTH EDITION FOR JOINERY AND SECURITY OPTIONS FOR SHEET METAL.
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PARAPET WALL WITH NEW METAL CAP (COPING)
FOR SPF RE-COVER

2008

NOT DRAWN TO SCALE

SPF(R)-1
EXISTING SHEET-METAL PARAPET CAP TO REMAIN IN PLACE—SEE NOTE 2

EXISTING WEATHERPROOF MEMBRANE
NEW GASKETED FASTENERS

EXISTING GASKETED FASTENERS

NEW REMOVABLE SHEET-METAL COUNTERFLASHING

EXISTING LOOSE MEMBRANE FLASHINGS TO BE SECURED OR REMOVED
NEW ELASTOMERIC COATING
NEW SPRAY POLYURETHANE FOAM (1" MIN. THICKNESS)—SEE NOTE 1

EXISTING ROOF MEMBRANE AND INSULATION (IF ANY)—PREPARE AS REQUIRED
EXISTING ROOF DECK

NOTES:
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2. SHEET-METAL COMPONENTS THAT ARE TO REMAIN IN PLACE SHOULD BE WEATHERPROOF AND HAVE THE EXPECTED SERVICE LIFE EQUAL TO THE NEW ROOF SYSTEM.
3. REFER TO THE ARCHITECTURAL SHEET METAL SECTION OF THE NRCA ROOFING AND WATERPROOFING MANUAL, FIFTH EDITION FOR JOINTER AND SECUREMENT OPTIONS FOR SHEET METAL.
4. REFER TO THE SPF INTRODUCTION FOR ADDITIONAL INFORMATION.
NEW COATING APPLIED TO OUTER EDGE OF EXISTING PARAPET CAP (COPING)

EXISTING WEATHERPROOFING MEMBRANE

EXISTING PARAPET CAP (COPING) TO REMAIN IN PLACE—SEE NOTE 2

AT PARAPET CAP (COPING) JOINTS, INSTALL 4" WIDE REINFORCED BUTYL TAPE PRIOR TO APPLICATION OF NEW COATING

NEW ADDITIONAL COAT OF ELASTOMERIC COATING AT TRANSITION

EXISTING GASKETED FASTENERS

ADEQUATELY SECURE BACK LEG OF PARAPET CAP (COPING)

EXISTING LOOSE MEMBRANE FLASHINGS TO BE SECURED OR REMOVED

NEW ELASTOMERIC COATING

NEW SPRAY POLYURETHANE FOAM (1" MIN. THICKNESS)—SEE NOTE 1

EXISTING ROOF MEMBRANE AND INSULATION (IF ANY)—PREPARE AS REQUIRED

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4. REFER TO THE SPF INTRODUCTION FOR ADDITIONAL INFORMATION.

PARAPET WALL WITH EXISTING METAL CAP (COPING) WITH COATING FOR SPF RE-COVER

2008

NOT DRAWN TO SCALE

SPF(R)-1B
NEW CONTINUOUS CLEAT—SEE THE SPF INTRODUCTION FOR ADDITIONAL INFORMATION

NEW SHEET-METAL EDGE FLASHING (FOAM STOP) APPROX. 4" WIDE FLANGE

PROPERLY PREPARE METAL FLANGE BEFORE APPLYING SPF TO ENHANCE ADHESION

NEW FASTENERS 3" TO 6" O.C. STAGGERED

OPTIONAL: INSTALL V-GROOVE AT EDGE AND INSTALL ELASTOMERIC SEALANT

NEW ADDITIONAL COAT OF ELASTOMERIC COATING

EXISTING SHIM AND WOOD NAailer

NEW WEATHERPROOF MEMBRANE ON TOP OF WALL TURNED DOWN BOTH SIDES

EXISTING LOOSE MEMBRANE FLASHINGS TO BE SECURED OR REMOVED

NEW ELASTOMERIC COATING

NEW SPRAY POLYURETHANE FOAM (1" MIN. THICKNESS)—SEE NOTE 1

EXISTING ROOF MEMBRANE AND INSULATION (IF ANY)—PREPARE AS REQUIRED

EXISTING ROOF DECK

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2. REFER TO THE ARCHITECTURAL SHEET METAL SECTION OF THE NRCA ROOFING AND WATERPROOFING MANUAL, FIFTH EDITION FOR JOINERY AND SECURITY OPTIONS FOR SHEET METAL.

3. REFER TO THE SPF INTRODUCTION FOR ADDITIONAL INFORMATION.
The NRCA Roofing Manual Series

- *The NRCA Roofing Manual: Architectural Metal Flashing, Moisture Control and Reroofing*—2010

Chapter 1—Roof decks
Chapter 2—Insulation
Chapter 3—Roof membranes
Chapter 4—Surfacings
Chapter 5—Design guidelines
Chapter 6—Construction details
Appendices
--Asphalt Shingles
--Clay and Concrete Tile
--Slate
--Wood Shingles and Shakes
--Synthetics and Metal Shingles
The NRCA Roofing Manual: Architectural Sheet Metal, Reroofing and Moisture Control—2010

--Architectural Metal Flashing
--Reroofing
--Moisture Control
--Glossary
Fifth Edition:
--Published in 2001
--Updated in 2003
--Updated in 2006

Sections still applicable:
--Architectural Sheet Metal
--Reroofing
--Moisture Control
--Glossary
NRCA Construction Details CD—2009

- CD-ROM contains construction details from:

- AutoCAD format (.dwg)
Additional NRCA Documents Relevant to SPF


• Quality Control Guidelines for the Application of Sprayed Polyurethane Foam Roofing (NRCA / SPFA, 2003)

• A Field and Laboratory Assessment of Sprayed Polyurethane Foam-based Roof Systems (R. Dupuis, 1998)

• Performance of Sprayed Polyurethane Foam Flashings on CD-ROM (R. Dupuis, 2003)
Also…

• The Center—The Center for Environmental Innovation in Roofing
• NRCA University – online education, customized training (OSHA 10-hour class) and accreditation (CEU)
• Future Executive Institute (FEI)
• roofwinddesigner.com
• energywise.specright.net
NRCA University’s Roofing 101 program offers you an interactive, cost-effective online training tool to learn roofing fundamentals.

Go to www.nrca.net for a link to Roofing 101
Thank You!

Questions?

www.nrca.net
www.professionalroofing.net