THERMAL & IGNITION BARRIER COATINGS: COMPLIANCE NUISANCE, OR OPPORTUNITY FOR PROFIT?

The comments and opinions in this presentation do not necessarily represent or reflect those of SPFA.
Lots of Stuff
But... I’ll move fast, so there’s time for questions later
Codes and Code Officials

Why Start Here?
"It's not how much money you make, but how much money you keep."
- Robert Kiyosaki
Two Parts

1. Keeping Your Profits
2. Areas of Opportunity
Building codes help protect public health, safety and general welfare as they relate to the construction and occupancy of buildings.

- First codes 1800 BC
- If the building fell the builder was put to death
- 1900 the insurance industry lobbied congress
- Building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provision.
FOUR STEP PROCESS

- Architects design to ICC standards
- Building departments review plans submitted to make sure they meet code requirements
- Contractor/Subs build the structure to at least the minimum code standard
- Inspectors **verify** compliance at the site during construction
WHO’S RESPONSIBLE?

- Fire rated wall gets penetrated by cable and trays
- Hole needs fire stopped to restore rating of the wall
- Filled with standard polyurethane foam instead
When it Comes to the Scales of Justice....

In Construction you are guilty until proven innocent.
NO ONE CATCHES EVERYTHING
While acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable and is hereby relieved from liability for any damages accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

2009 IRC Commentary Chapter 9 R.104.8
LEAVING YOU RESPONSIBLE
WHY THE IMPORTANCE OF COATINGS?
More than 1000 House Fires Reported a Day

17 minutes down to only 3 minutes

384,000 house fires reported in 2010

NIST documented the time to escape a house fire dropped from 17 minutes, in the 1970's, down to 3 minutes today, mostly due to synthetic furnishings and products in our homes.

In our homes or the places we work, Fire Prevention and Fire Protection should always be a primary concern.
IT DOESN’T MATTER WHAT CAUSES A FIRE

1. Cooking
2. Space Heaters/Fireplaces
3. Faulty Electrical
4. Children
5. Candles
6. Chemicals/Flammable Liquids
7. Christmas Trees
8. Barbeques
9. Smoking
10. Appliances
Even if this inspector never focuses on your compliance with the code...

This One Will
Be-Aware

Not everyone has done things right
Problems are surfacing

- Just in Texas
  - Garage access
  - Houston
  - 2 Churches
  - Mexican Restaurant
  - BBQ
- Home inspectors
- Some code officials moving to TB only
What Does the Code Say?

Why IB & TB?
- Roger Morrison’s Breakout Session
- SPFA resources and sessions from prior SPFA conferences

We get calls every day
TB VERSUS IB

Thermal Barrier versus Ignition Barrier

For the safety of occupants and workers, the building code is clear, all spray foams must be separated from occupied space by a 15 minute thermal barrier, such as 1/2” drywall or an alternate code approved system.

To be approved, thermal barrier compliant coatings must pass a 15 minute burn test over foam as a system, requiring them to be equal to, or better than drywall in terms of fire resistance. They provide occupants additional time to exit the premises in the event of a fire in the area’s they are applied.

Ignition barriers only provide a minimal amount of time (<5 min) for someone servicing the mechanical system to escape in the event of a fire in the attic or crawl space they are working in. Because of the limited protection, they cannot be applied in a space to be used for storage or other purposes.

CAUTION: Not all foams and thermal barriers are approved together. Make sure the coating your contractor applies has been approved over the product it is being applied to.
R314.5.3 Attics. The thermal barrier specified in Section 314.4 is not required where attic access is required by Section R807.1 and where the space is entered only for service of utilities and when the foam plastic insulation is protected against ignition using one of the following ignition barrier materials:

1. 1.5-inch-thick (38 mm) mineral fiber insulation;
2. 0.25-inch-thick (6.4 mm) wood structural panels;
3. 0.375-inch (9.5 mm) particleboard;
4. 0.25-inch (6.4 mm) hardboard;
5. 0.375-inch (9.5 mm) gypsum board; or
6. Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm).

The above ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R314.6.

Commentary: In an attic where access is required by Section R807.1 (where attic areas exceed 30 square feet (2.8 m²) and have a vertical height of 30 inches (762 mm) or more), and entry is only for service of utilities, and when foam plastics are used, an ignition barrier may be used in place of a thermal barrier to cover the foam plastic. Multiple materials are listed which can be used as the ignition barrier. See Commentary Figure R314.5.4. The foam plastic material, covered with the ignition barrier can be on the floor, wall (often called a knee wall or gable end) or the ceiling of the attic. The phrase “where entry is only for service of utilities” applies to attics that contain only mechanical equipment, electrical wiring, fans, plumbing, gas or electric hot water heaters, gas or electric furnaces, etc. The attic space cannot be used for storage. The reduced provision (from a thermal barrier to an ignition barrier) provides a barrier whose only purpose is to prevent the direct impingement of flame on the foam plastic insulation.

If the foam plastic insulation has passed testing, in the thickness and density intended for use, in accordance with Section R314.6, no thermal barrier or ignition barrier is required over the foam plastic insulation in an attic and this section of the code does not apply. It is important to note that the actual configuration must be tested. For example, a foam plastic insulation applied to the ceiling of the attic must be tested with the
R314.5.3 Attics. The thermal barrier specified in Section R314.4 is not required where attic access is required by Section R807.1 and where the space is entered only for service of utility equipment (mechanical equipment, electrical wiring, fans, plumbing, gas or electric hot water heaters, gas or electric furnaces) and when foam plastic insulation has been tested in accordance with Section R314.5.4. The foam plastic material, covering the ignition barrier, can be on the floor, wall (often the knee wall or gable end) or the ceiling of the attic. The ignition barrier provides a barrier whose only purpose is to prevent the direct impingement of flame on the foam plastic insulation. If the foam plastic insulation has passed the tests for thickness and density intended for use, the provision (from a thermal barrier to an ignition barrier) provides a barrier whose only purpose is to prevent the direct impingement of flame on the foam plastic insulation.
Compliance

“You can’t need a coating”
Only One Way

Raising the bar

- Training Owners, Code Officials, Home Inspectors
- Educated consumers make good decisions
- Mitigate your risks
Mitigate Risks

- 3” From heat sources
- Gas Appliances
- Walk in door or pull down stairs
- Decked Attic
- Vents or No Vents
- Duct Work
- Insulation on Attic Floor and Roof Deck
2. Must include manufacturer and product name; should include batch or lot number if available.
3. Detailed information on alternative thermal barriers, ignition barriers or bare foam assemblies is available in the referenced product listings, evaluation reports and testing reports.

SECTION D: Installer Declaration

I hereby certify that I have installed the listed spray foam thermal insulations and fire protection per manufacturers’ installation instructions and product listings, and in a manner compliant with local building codes in effect at the time of installation.

Lead Installer: Name (print): ______________________________ SPFA Certification (opt) __________

Signature: __________________________________________ Date: __________________

SPFA Spray Polyurethane Foam Insulation Model Certificate

This form is intended to serve as a guide or template only. It was developed by the SPFA for use by professional contractors and creates no express or implied relationship between the SPFA and the contractor or the contractor’s customer. SPFA neither warrants, represents nor guarantees the workmanship of or materials used by the contractor and disclaims any and all liability for any injuries, losses or damages arising therefrom.

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As with anything,

**Documentation Is Key**

<table>
<thead>
<tr>
<th>NO STORAGE ALLOWED</th>
<th>STORAGE ALLOWED</th>
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<tbody>
<tr>
<td>Property Address</td>
<td>Date</td>
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<tr>
<td>Product Installed</td>
<td>Thickness</td>
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<tr>
<td>Installer</td>
<td></td>
</tr>
<tr>
<td>Specified By</td>
<td>Installer Signature</td>
</tr>
<tr>
<td></td>
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<td>Installer Signature</td>
</tr>
</tbody>
</table>

28
Checking Mil Thickness

Metal Plates
• When using metal sample plates, remove and touch-up after application
### Ignition/Thermal Barrier Certificate

<table>
<thead>
<tr>
<th>Coated Area</th>
<th>Barrier Type</th>
<th>Evaluation/Test Report</th>
<th>Area Coated (sq ft)</th>
<th>Installed Thickness</th>
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<tr>
<td></td>
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<td></td>
<td>Wet Film</td>
</tr>
<tr>
<td>Attic Area 1</td>
<td>☐ TB ☐ IB</td>
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<td></td>
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</tr>
<tr>
<td>Attic Area 2</td>
<td>☐ TB ☐ IB</td>
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<td>Crawlspace 1</td>
<td>☐ TB ☐ IB</td>
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<tr>
<td>Other</td>
<td>☐ TB ☐ IB</td>
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</table>

PLACE VALIDATION STICKERS HERE

PLACE VALIDATION STICKERS HERE
Avoid Taking A Chance

Follow Manufacturers Recommendations on Every Installation

Yes!
Know Your Yields

Don’t Let Clever Marketing Make You Overestimate Your Coverage Rate...

KNOW YOUR YIELD IN THE FIELD!
Know Your Yields

Two Acceptable Testing Methods

Coupons/Tabs

By Weight Used
## Know Your Yields

### One Gallon

On a glass smooth surface.

<table>
<thead>
<tr>
<th>Mils</th>
<th>Per U.S. Gallon</th>
<th>Per Liter</th>
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</thead>
<tbody>
<tr>
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<td>10.00</td>
<td>160.4</td>
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The theoretical yield of intumescent coatings is often calculated when sprayed on gypsum board.

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>Reduction in Yield</th>
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<tbody>
<tr>
<td>Smooth Foam Surface</td>
<td>Up to 10%</td>
</tr>
<tr>
<td>Orange Peel Surface</td>
<td>Up to 15%</td>
</tr>
</tbody>
</table>
Theoretical Yields for Foam Surfaces

Coarse Orange Peel
Up to 25% Reduction in Yield

Verge of Popcorn
Up to 30% Reduction in Yield
Intumescent Coatings

- Produce protective, fire blocking char
- Absorb heat energy
- Deplete Oxygen
- Generate noncombustible gasses
Know Your Coating

Coatings Can Be:
- Easy to apply
- Ductile
• Ductile coating
Intumescent Coatings Can Be:

- Easy to apply
- Ductile
- Washable/Scrubbable
- Water/Oil Based
- Low VOC
- Water Clean Up
- Top Coated/No Top Coated
- Mold/Mildew Resistant
- One/Two Component
- Tinted/Colors
- Higher/Lower Viscosity
- Approved for incidental Food Contact
- Exterior/UV Stable

Know Your Coating
Is this just a Code Compliance Nuisance... or is it,

OPPORTUNITY FOR PROFIT?
Too Expensive!
Other Places They’re Found
OPPORTUNITIES ABOUND

TB’s can help turn space into usable square footage
Applications

From attics to agriculture,
cold storage to crawl spaces,
drop ceilings to open beams,
Like Foam, The Market is Increasing in Size

- Parking Garages
- Hospitals
- Controlled Atmosphere
- Cold Storage
- Motor Pools
- Military
- Churches
- Schools
- Restaurants / Night Clubs
- Agricultural
Residential

- Attics, Crawlspace
- Sheds, Garages, Well Houses, Barns, etc
- Add usable space while increasing safety
- Add-on for model home sales team
- Feature benefit for resale

AND...

- Already foamed houses are another opportunity!
Case Study: High Performance Production Builder

Spray Foam Insulation’s Impact on,
- Price
- Performance
- Sales of New Homes
Eight Communities

- Raise the value of the area
- Bring value to lots they held an hour from the center of the MSA
- Building Science, HVAC, Advance Design Framing

Photo – Demilec USA
Challenges

- Resistance from trades
- Retrain Framers, HVAC, & Insulators
- Financial aspects
100%

Photo – Demilec USA
- Sub-meter the HVAC
- Results?
Results

- Energy Performance
  - Average high temperature for the month of August 102
  - 2414 square feet kept at 75 degrees
  - $43.69
  - Similar home in the area, built in 2001, 2100 square feet over the same period...
  - $305.00
- Customer Satisfaction
  “Our customers are so thrilled with the performance and comfort of these homes they are writing us fan mail.”
Results

- Structural
  - “I’ve got to tell you Ken, many of the homes being built today are nothing but shelter. Our homes have no dust because of the lack of air infiltration, they are quiet and I have had zero call backs on crown molding shrinking. When we used fiberglass we had to go out and fix 40% of our homes.”
Educated Consumers

Generally don’t compromise on Life and Safety
Incredibly Competitive Market

150 Mile Radius has over 100 SPF rigs

Charge a Premium

Educate the Consumer

Install to Code or Better

Stand on their Reputation

As of September, Up Over 20%
Sometimes you just have to pick yourself up and carry on...
Not On An Island
Coatings and foams are always installed and tested as a system
Not all coatings are approved over all foams
Suppliers can help with installation guidelines and scope of work questions
Training Code Officials & Home Inspectors
Compliance support in municipalities
Thank You