

Unvented- Sealed Attics and SPF



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CBIA and Energy Commission 2016 Standards Forum

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Bayer Material Science

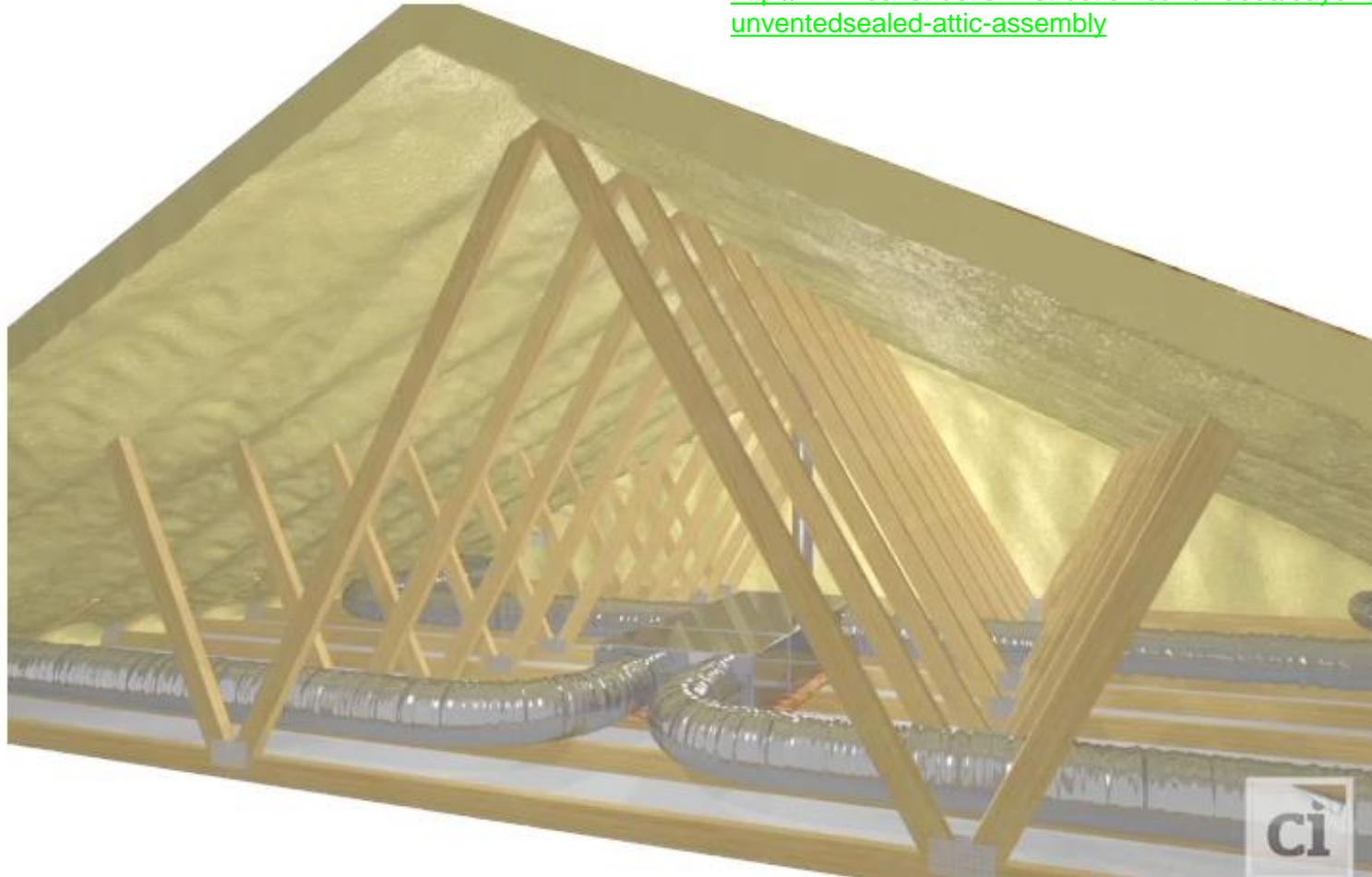
Spray Polyurethane Foam Alliance

Overview

- Spray Polyurethane Foam for Unvented/Sealed Attics
 - Ducts and air handler in semi conditioned space vs. “hottest place on Earth”
- Application of SPF in an attic
- SPF performance in attics
- Builder acceptance
- Questions

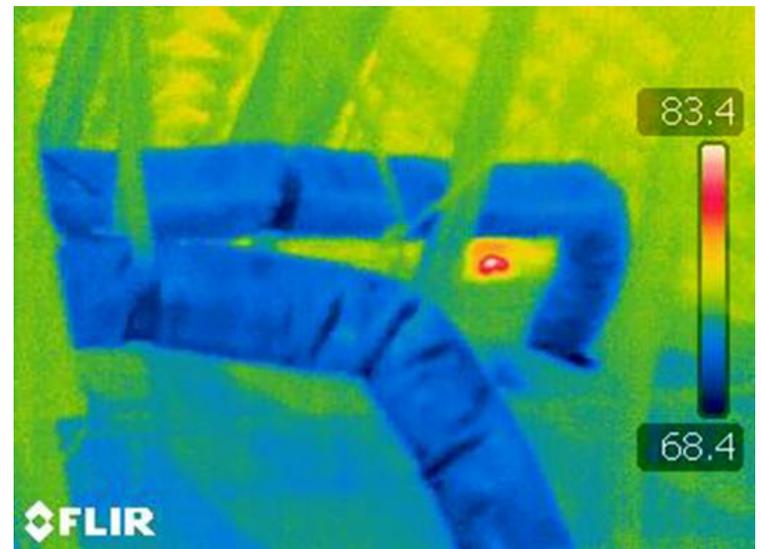
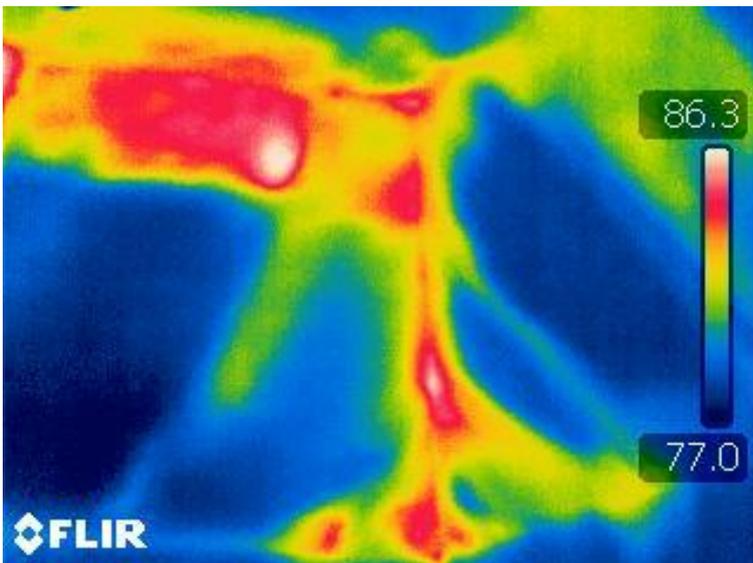
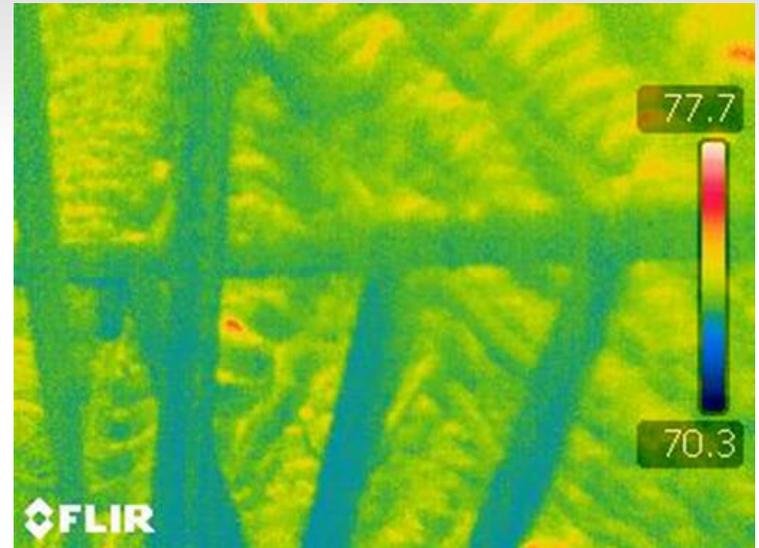
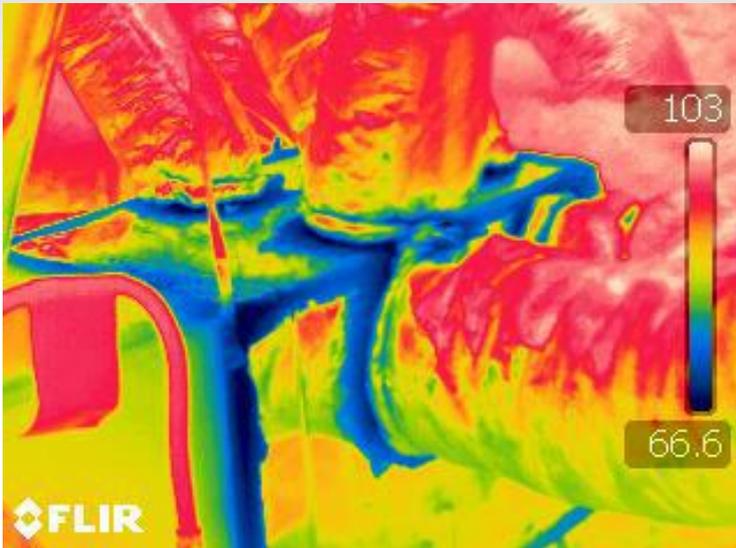
Ducts in Conditioned Space (DCS)

<http://www.constructioninstruction.com/videos/bayer-spf-unventedsealed-attic-assembly>



- Locate ducts and air handler in conditioned space
- HERS verification of no duct leakage to outside

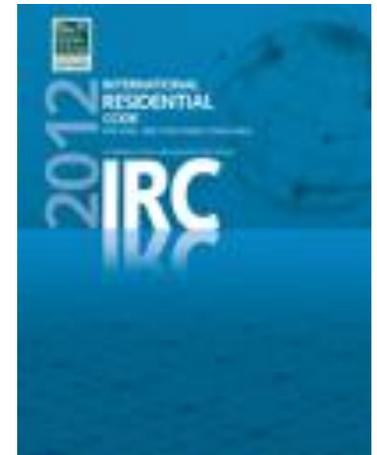
Vented vs Sealed Attic



About Sealed Attics- HPA's

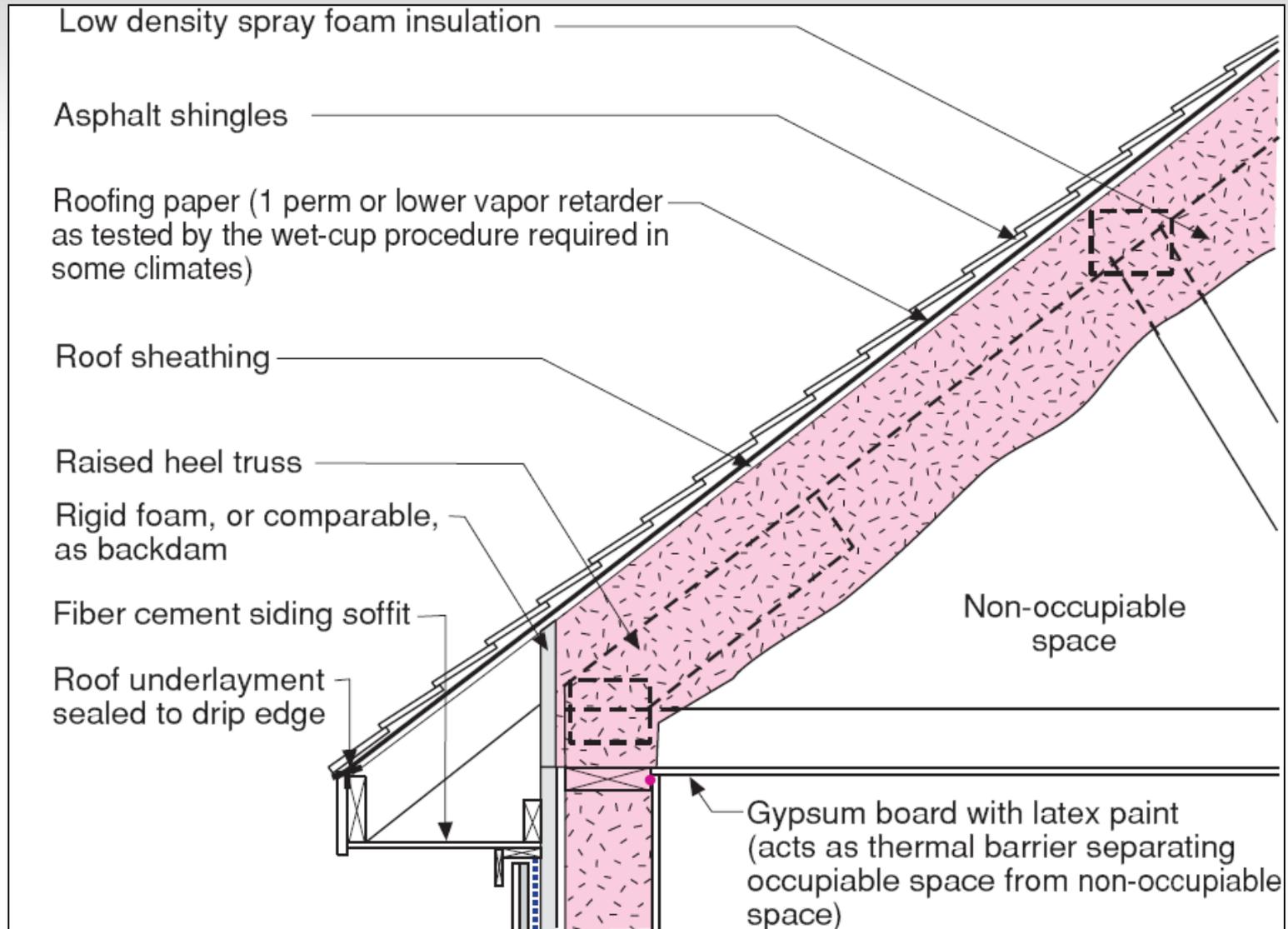
- **Supported by Research**
 - Building America Program (Building Science Corp)
 - Florida Solar Energy Center (D. Parker – 2005)
 - 10-20% energy savings
- **Added to ICC Model Building Codes**
 - Part of IRC since 2007 (Sec R806.4)
 - Permitted and used in all US climate zones
- **Other benefits**
 - Wildfire areas (blocks airborne embers from attic)
 - Cost savings from HVAC downsizing and equipment in attic
 - Brings water and sprinkler systems into condition attic
 - ***NOT a drop in replacement***

<http://www.buildingscience.com/documents/reports/rr-9904-unvented-cathedralized-attics-where-we-ve-been-and-where-we-re-going>



EXAMPLE 1

BuildingScience.Com





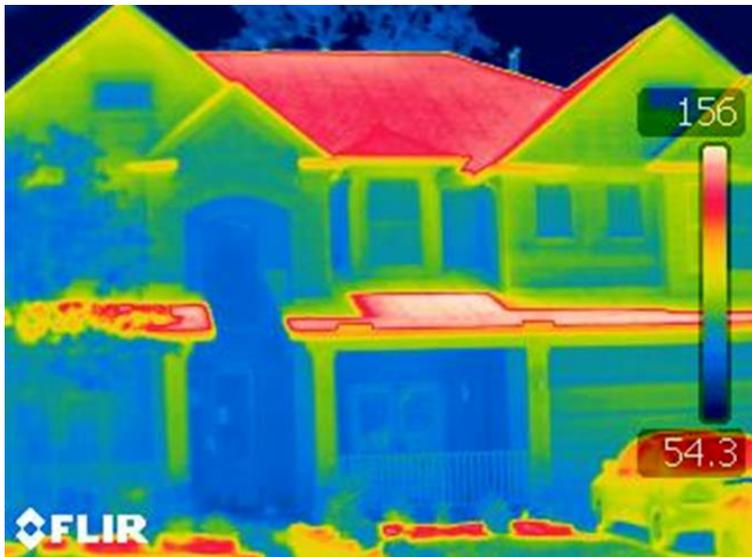
What is Spray Polyurethane Foam (SPF)?



- SPF is polyurethane foam that is spray-applied
- Liquid expansion into foam occurs in-place
- Expands to fill cavity, gaps and voids regardless of shape
- Encapsulates plumbing, wiring and junction boxes
- Direct application onto vertical surfaces or overhead
- Adheres to studs and OSB to form air seal and air barrier
- No settling or slumping over time
- *Special Training Required!*

Spray-applied polyurethane foam (SPF) directly to the bottom of the roof

Energy penalty of larger roof area vs attic floor area (not volume!) is offset by UVA savings

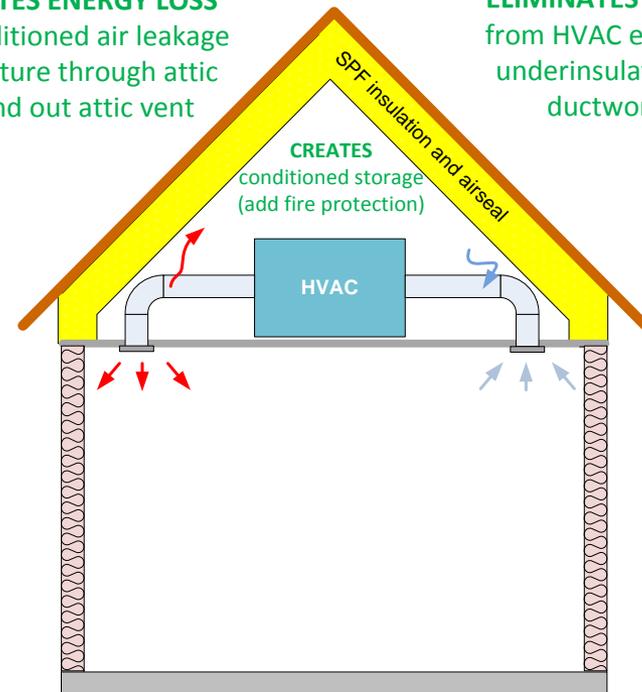


Air, Thermal & Sound Barrier-

a quieter more comfortable home

ELIMINATES ENERGY LOSS
from conditioned air leakage and moisture through attic floor and out attic vent

ELIMINATES ENERGY LOSS
from HVAC equipment and underinsulated and leaky ductwork in attic



With HVAC in Attic



QII- Fill Gaps & Voids

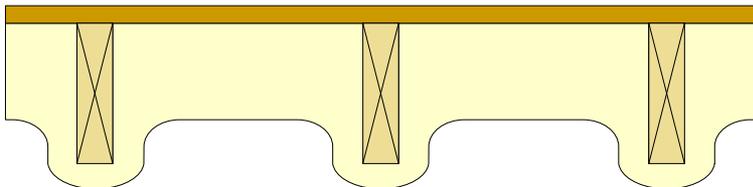




SPF for Sealed-Unvented Attics

- **Spray Polyurethane Foam (SPF) provides best solution for UVA**
 - Consistent thermal performance over wide range of service temperatures
 - Provides integral air-sealing and air barrier
 - Can provide continuous insulation installed below rafters/trusses
 - Adheres directly to substrates; no sagging or settling

Closed-cell SPF adds integral Class II vapor retarder, secondary water barrier and structural strength



Building America- Texas Home Study



Figure 1 - Photos of Three Homes in the South Texas Study

Dishwasher	EF=0.46	EnergyStar, EF=0.66	EnergyStar, EF=0.66
Dryer	Electric	Natural Gas	Natural Gas
Thermostat	Non-programmable	programmable	programmable
PV	None	None	2.4 kW roof tiles
HERS Index (from Reference 1)	86	54	37
Envelope Leakage	5.84 ACH50	3.64 ACH50	1.95 ACH50
Insulation/AB	All loose-fill or batt fiberglass	LF-FG walls, ocSPF UVA	All ocSPF
Duct Leakage	70 CFM25, Qn=0.035	47 CFM25, Qn=0.024	65 CFM25, Qn=0.033



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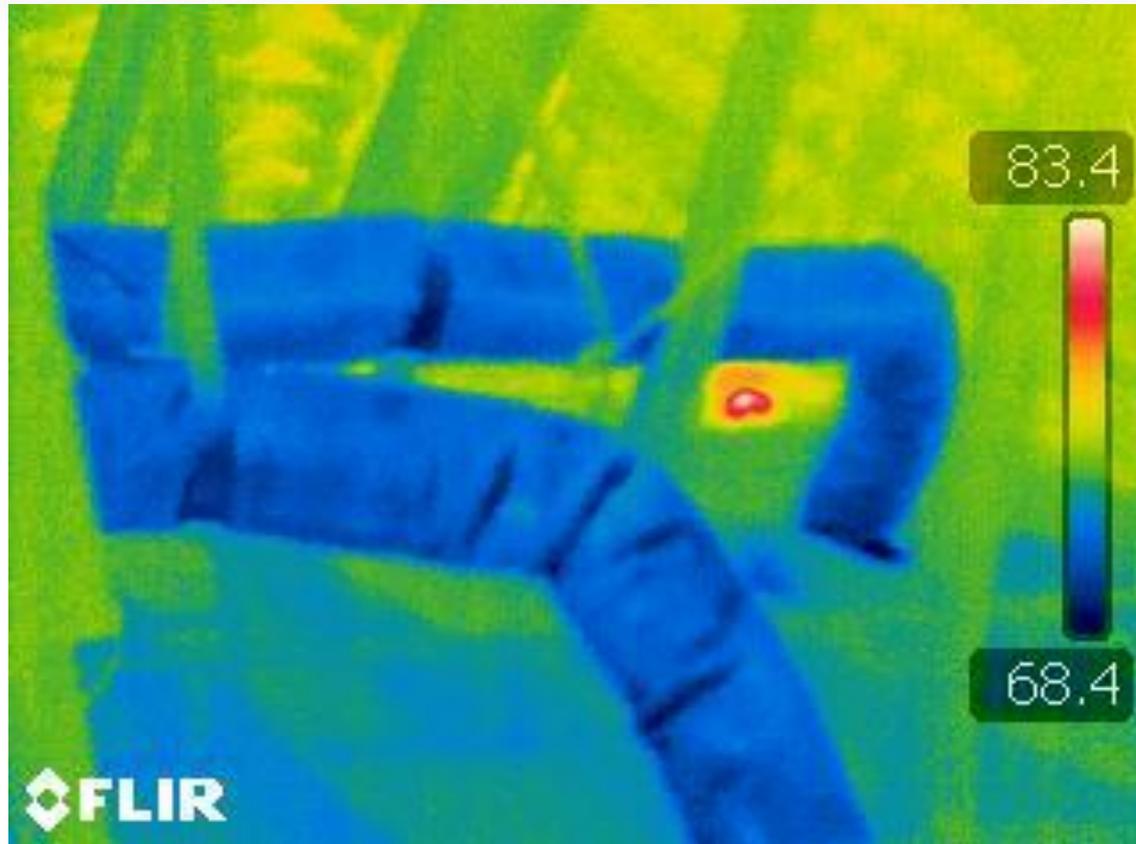
For More Information...

- SPFA Professional Certification Program
- SPFA Website and Annual Conference
- Formulators and Systems House Suppliers

SPRAYFOAM 2015
January 26-29, 2015
Albuquerque, NM

SPFA Website:
www.sprayfoam.org

Ducts in Conditioned Space



Thank You!

- Sealed attic- system design
- Ducts and air handler in conditioned space
- Increased comfort-
 - Cold/hot rooms
 - drafts
- Quieter home
- Hybrid designs for walls and attics

- Questions?



Beazer Homes - Show me the Bunny!

Save money with our energy efficient features, including spray foam insulation!

We're so confident, we're putting a chocolate bunny in our attic to prove it won't melt even during the sizzling Texas summer. Find out how significant these savings can be by visiting any of our Houston area communities and follow Sunny the bunny's attic stay by liking our Facebook page.

#showmethebunny

<https://www.facebook.com/#!/beazerhomes>





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Waterproofing Membrane
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