Silver Shield

Radiant Barrier
SUMMER APPLICATION

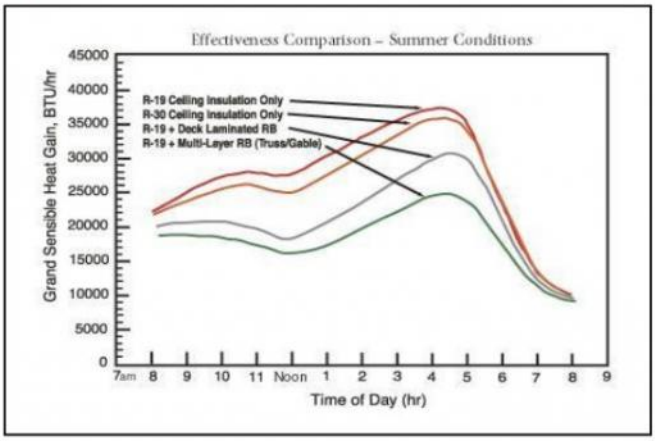
In summer conditions, the hot underside of the roof radiates heat to the ceiling insulation surfaces where it is absorbed and re-radiated to the living space of the home. HVAC systems located in the attic are also impacted by the radiant energy, increasing the load on the system. The installed R-Value of the insulation and the HVAC system performance ratings are compromised by the high radiant load which increases energy costs and decreases comfort.

Silver Shield Radiant Barrier

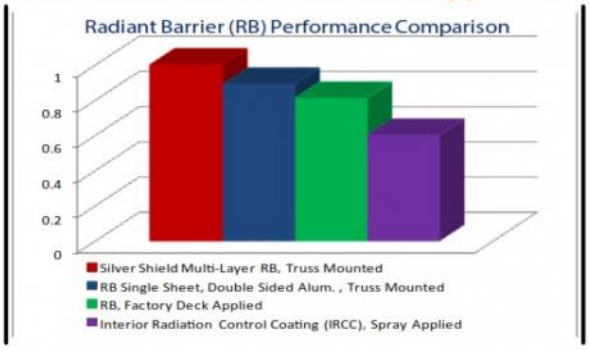
- ☒ Significantly Reduces Heat Gain & Attic Temperatures
- ☒ Improves the Ceiling Insulation Performance
- ☒ Improves HVAC Ducts and System Performance
- ☒ Reduces heat gain on knee walls
- ☒ Saves Energy [1]

Silver Shield provides the best performance when you need it the most.

During the peak summer conditions when the temperature difference between the outside and inside is greatest, Silver Shield is four times more effective than adding additional insulation. [2]



Best Product & Most Effective Application



1. 11% utility cost savings in summer, "Summary Report on Fi-Foil Radiant Barrier," Russet Southwest Corporation. 12% - 14% reduction in cooling use in summer, "Performance Analysis of Radiant Barriers on Heating and Cooling Loads of Homes in the Southwest and Southeast United States," University of Nevada Las Vegas. 8% - 12% annual cooling cost reduction, "Comparative Summer Attic Thermal Performance of Six Roof Constructions," Florida Solar Energy Center.
2. Average energy savings is 9% and peak demand was reduced by 16%. "FPC Residential Monitoring Project: New Technology Development - Radiant Barrier Pilot Project", Florida Solar Energy Center.

SILVER SHIELD ATTIC APPLICATION - SUMMER Side 1

Southface MEMBER

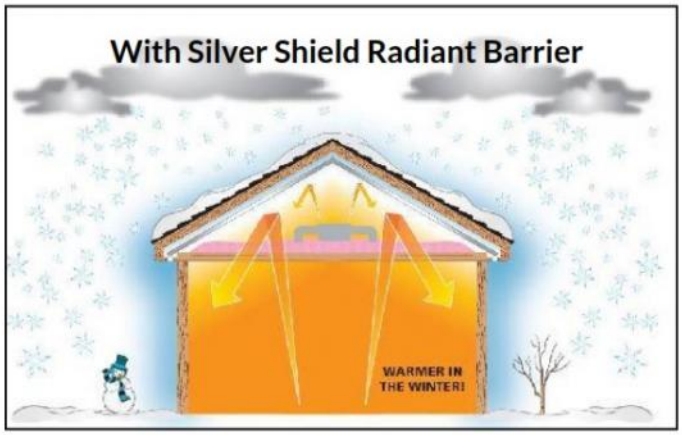
MEMBER FGBC FLORIDA GREEN BUILDING COALITION

CODE Fi-FOIL SEE OUR IAPMO ES REPORTS COMPLIANT

Silver Shield

Radiant Barrier
WINTER APPLICATION

In winter conditions, ceiling insulation and duct system surfaces radiate heat to the cold underside of the roof decking where it is absorbed and re-radiated to the atmosphere. The result is higher energy costs and reduced comfort.

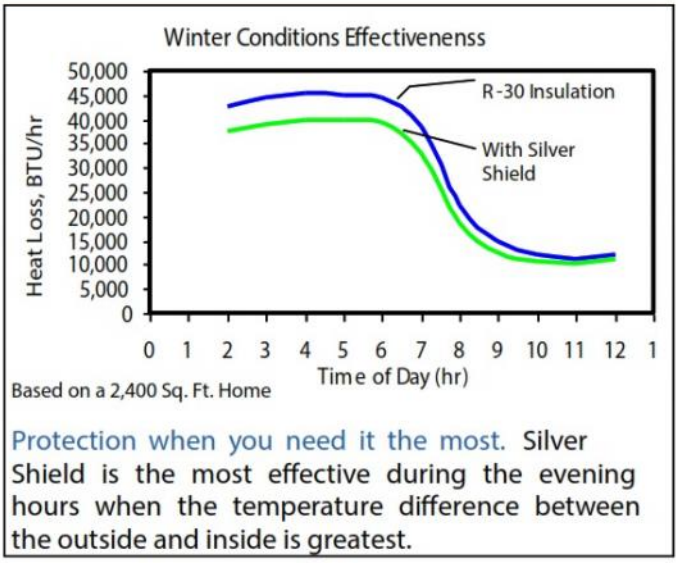


Silver Shield installed at the roof line reduces winter time heat loss by reflecting heat back towards the interior of the home. The HVAC ducts and ceiling insulation "see" a heat reflecting surface vs. a high absorbing cold roof deck.

In the image to the right, Silver Shield was installed over the living area in a Minnesota home. As a test, Silver Shield were installed in a small area above the un-insulated garage. The evidence is visible. Heat loss is occurring in the area where Silver Shield is not installed - there is no snow on the roof!

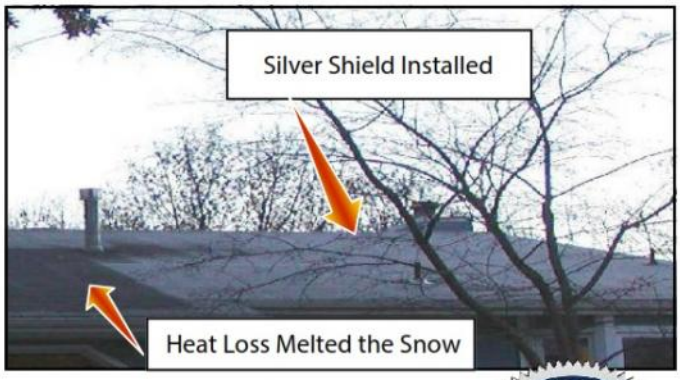
Silver Shield in the Winter:

- ☒ Performs Better than other Radiant Barrier Products
- ☒ Reduces Heat Loss
- ☒ Improves the Ceiling Insulation Performance
- ☒ Improves HVAC Ducts and System Performance
- ☒ Reduces the Potential for Ice -Damming and Subsequent Roof Damage
- ☒ Saves Energy [3]



Based on a 2,400 Sq. Ft. Home

Protection when you need it the most. Silver Shield is the most effective during the evening hours when the temperature difference between the outside and inside is greatest.



3. 3.6% utility cost savings in winter, Summary Report on Fi -Foil Radiant Barrier, Russet Southwest Corporation. 4% - 6% reduction in heating use in winter, Performance Analysis of Radiant Barriers on Heating and Cooling Loads of Homes in the Southwest and Southeast United States, University of Nevada LV.

CODE Fi-FOIL COMPANY SEE OUR IAPMO ES REPORTS COMPLIANT

SILVER SHIELD ATTIC APPLICATION - WINTER Side 2

Silver Shield
Reflective Insulation

Specification Sheet

Fi-Foil's Silver Shield™ is an insulating product composed of multiple layers of low emittance (low-e) materials designed to significantly reduce radiant heat transfer. The inside layer is a metalized polymer. The outside layer is reinforced aluminum foil kraft paper bonded with a fire retardant adhesive. The layers expand when installed to form a reflective air space to provide enhanced thermal performance and protect the low emittance surface from the performance reducing effects of dust accumulation. Since metalized and foil-based aluminum products have a near zero water vapor permeance, Silver Shield™ is perforated to allow water vapor transmission. Product applications include roofs, knew walls, and gables.

Applications:

Attics: Silver Shield™ can be installed in roof cavities for attic radiant barrier applications. In addition to the reflective properties of the product, the enclosed air space provides an R-value which increases the thermal performance of the attic insulation system. This product application reduces ceiling heat transfer, improves the performance of HVAC systems and ducts, as well as improves comfort levels in both winter and summer conditions.

Walls facing Attic Spaces: Vertical knee walls in bonus rooms present design challenges for maintaining thermal performance over time. Silver Shield™ assists the mass insulation by maintaining the alignment with the air barrier or wall board. In essence, Silver Shield™ holds mass insulation against the drywall to prevent attic-air circulation. In addition, Silver Shield™ reduces the respective heat gain and loss in summer and winter conditions by providing a low-e surface(s) facing the attic adding to the R-value of the insulation system.

External Walls: Silver Shield™ can be used in a wall cavity to reduce heat gain and loss through radiation and convection. Thermal Performance varies with the placement of the product in the wall assembly.

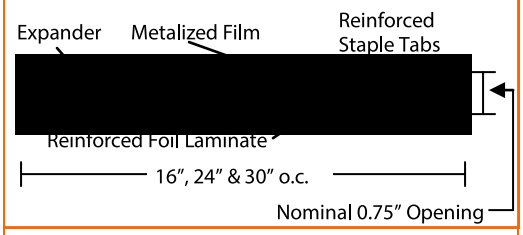
Radiant Barrier System (RBS) is a building construction consisting of a low emittance (0.1 or less) surface bounded by an open air space. An RBS is used for the primary purpose of limiting heat transfer by radiation.

Reflective Insulation is thermal insulation consisting of one or more low emittance surfaces, bounding one of more enclosed air spaces. Reflective Insulations reduce radiant and convective heat transfer

Test Data

ASTM E 96 - Water Vapor Permeance Hi-Perm	5.00 perms
ASTM E 84 - Flammability	
Flame Spread Rating	0
Smoke Development Rating	0
Interior Wall & Ceiling Finish Classification	Class A
ASTM C 1371 - Thermal Emittance	
1st Layer MET PVC Metal Side	0.04
2nd Layer Foil Laminate	0.03
ASTM STP 1116 - R-values for a Reflective Air Space	
Heat Flow Up at 45° (Enclosed 3/4" air space)	R-2.0
Heat Flow Down at 45° (Enclosed 3/4" air space)	R-3.3
Heat Flow Horizontal (single low-e surface)	R-1.7
Heat Flow Horizontal (multiple low-e surfaces with an enclosed 3/4" air space)	R-4.6
ASTM D 3310 - Corrosivity	Pass
ASTM C 1224/Section 9 Adhesive Performance	
Bleeding	None
Delamination	None
Pliability	No signs of cracking or delamination
ASTM D 2261 - Tongue Tear Test	MD 1.77 ... CD 2.32
ASTM C 1338 - Mold & Mildew	Pass

Technical Drawing



Product Information

Furring/Stud Spacing (o.c.)	16"	24"	30"
Width Expanded	17.5"	25.5"	31.5"
Diameter	8"	10"	6"
Lineal Footage	375'	250'	100'
Coverage (sq.ft.)	500	500	250
Weight (lbs.)	26	22	10

Compliance and Approvals

- Meets: ASTM C 1313
- Compliance with the following code *
  - 2012, 2009, and 2006 International Building Code (IBC)
  - 2012, 2009, and 2006 International Residential Code (IRC)
  - 2012, 2009, and 2006 International Energy Consevation Code (IECC)
  - 2010 and 2007 Florida Building Code (FBC)
  - 2010 and 2007 Florida Residential Code (FRC)
  - 2010 and 2007 Florida Energy Conservation Code (FECC)
- Evaluated in accordance with *
  - ICC-ES AC 220 - Acceptance Criteria for Sheet Radiant Barriers, approved September 2010
- State of California Bureau of Home Furnishings and Thermal Insulation
  License #T1390, Registry #CA -T390 FL

* See IAMPO-ES Report #0291

High Recycled Content

Certified by a third party testing and inspection service(R&D Services, Inc.), Reflective Insulation has more than 22 percent recycled content, with at least 21 percent being post-consumer content.

16" Silver Shield	More than 22% Recycled Content
24" Silver Shield	More than 22% Recycled Content

PO Box 800, Auburndale, FL 33823
(800) 448-3401 F: (863) 967-0137

Fi-FOIL COMPANY
FiFoil.com