

SOLAR GUARD

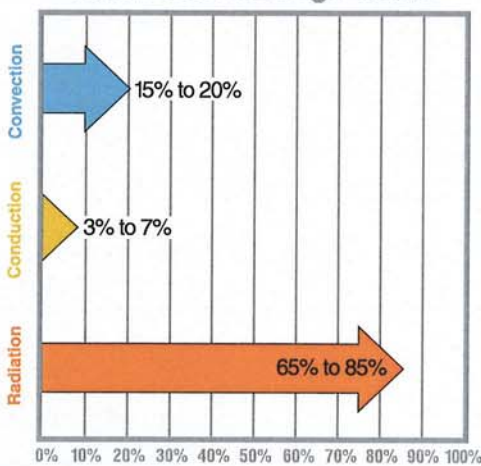
REFLECTIVE INSULATION

SolarGuard high performance reflective insulation consists of a 1/4" fiberglass core bonded to either two exterior layers of 99% pure aluminum or one layer of aluminum and one layer of durable white scrim-reinforced facing material.

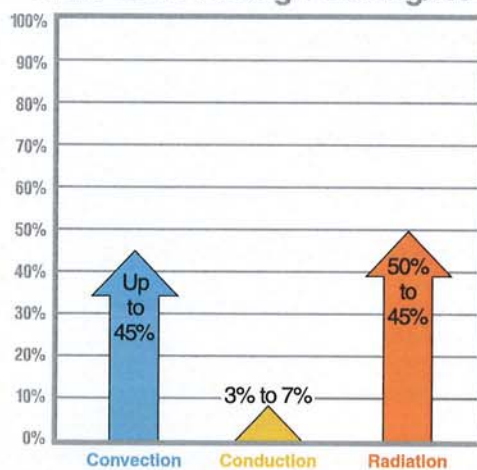
SolarGuard® can Reflect **97%** of Radiant Energy Striking It!

According to research done at Pennsylvania State University, approximately 75% of total heat transfer in a building occurs through radiation. The foil in SolarGuard can reflect 97% of radiant energy striking it. (See Chart)

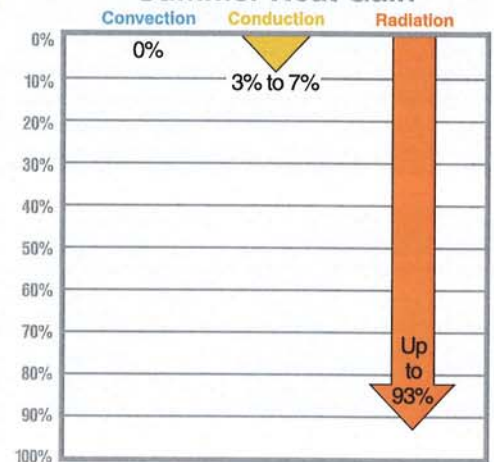
Heat Loss through Walls



Heat Loss through Ceiling/Roof

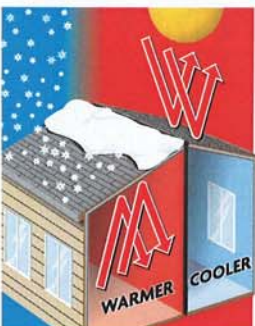


Summer Heat Gain



APPLICATIONS

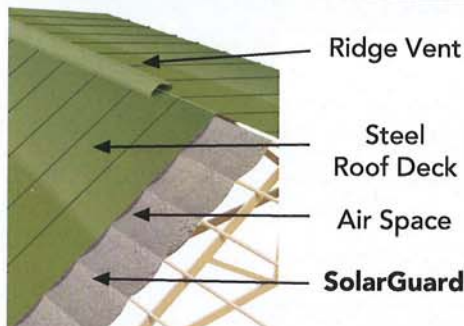
RESIDENTIAL



Nearly all homes have problem areas where comfort is compromised. Typical problem areas include rooms that are adjacent to unconditioned space, such as an attic or rooms over

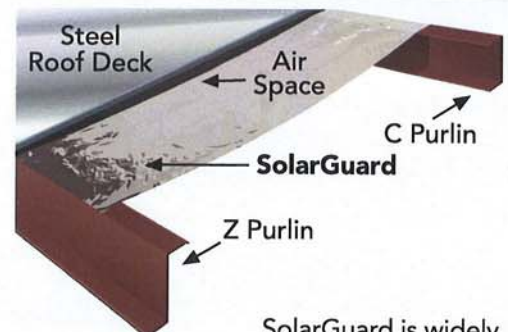
crawl spaces or basements. Use SolarGuard to help correct these problems by blocking radiant heat gain or loss. SolarGuard is perfect for many residential applications. SolarGuard is so versatile you'll want to keep it handy for use on every job!

AGRICULTURAL



SolarGuard reduces heat gain and improves comfort. Because of that, animal productivity is increased and mortality reduced. SolarGuard is the perfect way to protect your investment.

COMMERCIAL



SolarGuard is widely used in metal buildings as a condensation blanket. Guardian has also developed the Total Insulation System (TIS). This system uses SolarGuard in conjunction with mass insulation to offer easy installation and high R-values while addressing all three modes of heat transfer.

Thermal Properties: When testing insulation materials in a device called a calibrated hot box, a sample of the material is mounted and different temperatures are maintained on the two sides of the sample. The difference in temperature is referred to as the Delta (Δ) T. A smaller Δ T will generally result in a higher R-value. The Δ T used in testing is a critical piece of information that should be reported along with the R-value and test method. Most reflective insulation manufacturers report their R-values based on test results achieved under the ASTM C236 test standard and often fail to report the Δ T. Often the exceptional R-values reported are based on only a 10 degree Fahrenheit Δ T. The ASTM C236 test standard is outdated and may soon be discontinued by ASTM. ASTM C1363/C976 is more current. When testing to this standard a Δ T of 30 degrees Fahrenheit or more is usually used. To properly evaluate the thermal performance of reflective insulation materials, only ASTM C1363/C976 test results, with a 30 degree Fahrenheit or greater Δ T should be considered.

Fire Properties: Many other reflective insulation products claim a Class 1 rating per ASTM E84, however they must support their product with poultry wire when testing in order to achieve these results. While the ASTM E84 test standard allows the use of such support, when burned in an unsupported condition that is more typical of their installation in a metal, post frame or other type of building, some bubble-pack or foam core reflective insulation products generate a Flame Spread many times the 25 rating required to achieve a Class 1 rating. All SolarGuard E84 test results reported herein were achieved without the use of additional support beneath the sample. Additionally, SolarGuard passes the UL1715/UBC 26-3 Room Corner Wall Fire Test. SolarGuard White and Solarguard Foil meet all requirements for reflective insulation as required by the 2000 International Building Code (IBC). When you specify a high performance reflective insulation product, insist on the safest product available today – SolarGuard, by GBP Silvercote. A detailed specification for SolarGuard can be downloaded from: <http://www.silvercote.com/ProductDetail.asp?ProductID=56>.

Evaluation of SolarGuard as an Air Barrier Material: The air flow rate through SolarGuard, a foil-faced fiberglass blanket, has been measured in accordance with ASTM E 2178.¹ The air flow measurements were performed on product supplied by Guardian Building Products to the National Concrete Masonry Association. The air flow rate data that were obtained are shown in the following table. Each data point in the table is an average of the five observations for a specimen having an area of one square meter.

TABLE 1. AIR FLOW DATA FOR SOLARGUARD

Pressure Difference (PA)	Air Flow (SLPM)
25	1.322
50	1.816
75	2.228
100	2.442
150	3.044
300	4.530

The data in Table 1 can be described by the following equation with a R^2 of 0.997.

$$\text{Air Flow} = 0.99809 + 0.01621\Delta P - 0.0000149\Delta P^2 \quad (1)$$

The correlation shows a bias of 0.99809 SLPM, the Air Flow at $\Delta P=0$. The air flow rate corrected for bias is shown as Equation (2)

$$\text{Air Flow Corrected} = 0.01621\Delta P - 0.0000149\Delta P^2 \quad (2)$$

Air barrier material is defined by the ABAA² as having an air flow rate of no more than 0.02 L/s.m² at $\Delta P = 75$ Pa. Air flow rate calculated using Equation (2) is 1.132 SLPM at 75 Pa or 0.0189 L/s.m² at 75 Pa for one square meter of area. SolarGuard satisfies the ABAA definition for an air barrier material.

¹ National Concrete Masonry Association Job 07-318, May 21, 2007

² Air Barrier Association of America

SOLARGUARD WHITE

Physical Properties	Test Method	Values
Flame Spread	ASTM E84 25	25
Smoke Developed	ASTM E84 25	25
Full Scale Corner Wall	UL 1715/UBC 26-3	PASS
Thermal Performance*	ASTM C1363/C976	Heat Flow Down R-10.3 Heat Flow Up R-7.6 Heat Flow Horizontal R-8.7

SOLARGUARD RFSK and FOIL

Physical Properties	Test Method	Values
Flame Spread	ASTM E84	0 (RFSK) / 5 (FOIL)
Smoke Developed	ASTM E84	0 (RFSK) / 15 (FOIL)
Full Scale Corner Wall	UL 1715/UBC 26-3	PASS
Thermal Performance**	ASTM C1363/C976	Heat Flow Down R-11.6 Heat Flow Up R-8.3 Heat Flow Horizontal R-9.0

SOLARGUARD FOIL

MASONRY WALL THERMAL PERFORMANCE TESTS***

Furring Used	Test Methods	Values
1x2 Wood 16" o.c.	ASTM C1363/C976	R-5.83
1x2 Wood 24" o.c.	ASTM C1363/C976	R-6.14
2x2 Wood 16" o.c.	ASTM C1363/C976	R-6.56
7/8" Metal Hat Channel 16" o.c.	ASTM C1363/C976	R-5.44

(*) System R-Values per ASTM C976/C1363, Air to Air with a 30 degree Fahrenheit temperature differential. These tests were conducted using a Calibrated Hot Box apparatus. The reflective insulation tested was .25" thick fiber glass insulation with foil facing on one side and a white scrim-reinforced facing on the other side. The test sample was installed in the middle of a 2 x 4 wood stud cavity, the wood framing was 16" o.c. with 3/4" thick plywood on each side. All R-Values are in hr-sq. ft.-degree F/BTU.

(**) System R-Values per ASTM C976/C1363, Air to Air with a 30 degree Fahrenheit temperature differential. These tests were conducted using a Calibrated Hot Box apparatus. The reflective insulation tested was .25" thick fiber glass insulation with foil facing on one side and a reinforced foil scrim facing on the other side. The test sample was installed in the middle of a 2 x 4 wood stud cavity, the wood framing was 16" o.c. with 3/4" thick plywood on each side. All R-Values are in hr-sq. ft.-degree F/BTU.

(***) System R-value per ASTM C1363/C976, Air to Air with a 50 degree Fahrenheit temperature differential. These tests were conducted using a calibrated hot box apparatus. All tests measure in the Horizontal Heat Flow direction. The reflective insulation tested was .25" thick fiberglass insulation with foil facing on both sides. The test sample was installed between a 3/4" plywood exterior sheathing (used to simulate a 4" thick cinder block wall) between the furring material defined in the table above. A 1/2" gypsum wall board was applied to the other side of the test sample.

AVAILABLE COAST TO COAST!

SolarGuard Reflective Insulation is made under U.S. Patent #6,797,356. Other Patent Pending.



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