



**THE NEW GENERATION
IN INNOVATIVE INSULATION TECHNOLOGY**



INCREASES COMFORT LEVEL • REDUCES ENERGY COST • IMPROVES RE-SALE VALUE • EXCELLENT SOUND CONTROL



The Air Tite Insulation System for Superior Performance



ATS combines closed-cell polyurethane foam and Guardian Fiberglass Insulation to create a state-of-the-art insulation system. The 1/2-inch layer of spray foam is applied inside the wall cavity prior to the installation of a fiberglass batt. This combination results in an increased level of thermal resistance and virtually eliminates air infiltration.

A unique feature of ATS is that the system can be installed in vertical walls, cathedral ceilings, joist ends between floors or any areas that are difficult to insulate.



The thermal performance of fiberglass insulation is improved by eliminating air infiltration. When properly installed by Guardian-certified installers, ATS will increase comfort level, reduce energy costs, improve re-sale value and provide excellent sound control.

Benefit to Homeowners and Builders

Nearly 80% of new residential construction is single family homes, and with many of those being custom-built, the need for a premium insulation system that offers the best features possible is in strong demand. Homebuyers today are well informed and want the best products and systems in their homes that will make them comfortable and save them money in the future. ATS satisfies modern challenges in construction and allows architects and builders to deliver a superior insulation package.

A large percentage of wall cavities contain some type of wall obstruction like electrical wiring, plumbing, or security systems. In addition, many wall cavities are non-standard framing dimensions making them difficult to insulate. ATS, with foam and fiberglass components, allows installers to easily insulate these difficult areas.



A High-tech, Versatile Insulation System



Spraying closed-cell foam into a garage ceiling cavity beneath a bonus room or bedroom.



Application of closed-cell foam to joist ends and band boards.



Spraying closed-cell foam against polyester mesh on open wall cavity.



Application of UltraFit DS®/Asure R® loose-fill fiberglass insulation with ATS.



Application of kraft faced or unfaced fiberglass insulation; depending on Climate Zone.



Minimal equipment needed to get started

Total System R-value of



Determine the Total System R-value of the ATS System you are installing by adding the installed insulation R-value to the 1/2-inch of foam R-value (fiberglass insulation + foam).

R-13	2X4	R-3	R-11	R-10	
R-15		R-3	R-13	R-12	
R-16		R-3			R-13
R-19	2X6	R-3	R-19	R-16	
R-22		R-3	R-21	R-19	
R-24		R-3			R-21
R-24	2X8	R-3	R-21	R-21	
R-32		R-3			R-29
R-33	2X10	R-3	R-30 Cathedral	R-30 Cathedral	
R-39		R-3			R-36
R-41	2X12	R-3	R-38 Cathedral	R-38 Cathedral	
R-48		R-3			R-45

* Compressed.

¹ See AsureR®, UltraFit DS® and Perfect Fill™ Technical Data Sheets for compliance information.

Technical Data for

Fiberglass Insulation Compliance:

ASTM C 665 requirements include the following test methods:

- ASTM C518 & C687.....Thermal Resistance
- ASTM E 84.....Surface Burning Characteristics
- ASTM E 970.....Critical Radiant Flux
- ASTM E 96.....Water Vapor Permeance
- ASTM C 553.....Moisture Absorption
- ASTM C 1304.....Odor Emission
- ASTM C 665 SECT 13.8.....Corrosiveness
- ASTM C 1338.....Fungi Resistance

Vapor Retarders and the ATS System:

The 1/2-inch thick layer of ATS closed-cell polyurethane foam insulation **is not a vapor retarder** and actually has a water vapor transmission rate well above the 1.0 perm associated with vapor retarders in the construction industry.

Referencing the 2008 DOE R-value Recommendation Map displayed in this brochure (see page 4), Guardian **recommends** the use of an approved vapor retarder in Climate Zones 5, 6, 7 and 8.

Foam Two-Component Compliance:

- ASTM E 84 Class 1 Material Fire Rating, Flame Spread Index of 25, Smoke Developed 200
- R-value of 6 per inch
- Closed cell foam that expands approximately 8:1 ratio during installation
- Tack-Free/Expansion Time 30-60 seconds
- Cuttable in 2-5 minutes
- Fully cured within 1 hour
- Density ASTM D 1622 1.75lbs/ft³
- Closed Cell Content ASTM D 2856 >90%
- ASTM E 283 air barrier value: < 0.01 CFM/ft²

In cases where a vapor retarder is used in conjunction with ATS, it is important that all surrounding building materials be dry at the time of installation. **Local building code officials should always be consulted and their recommendations followed in these matters.**

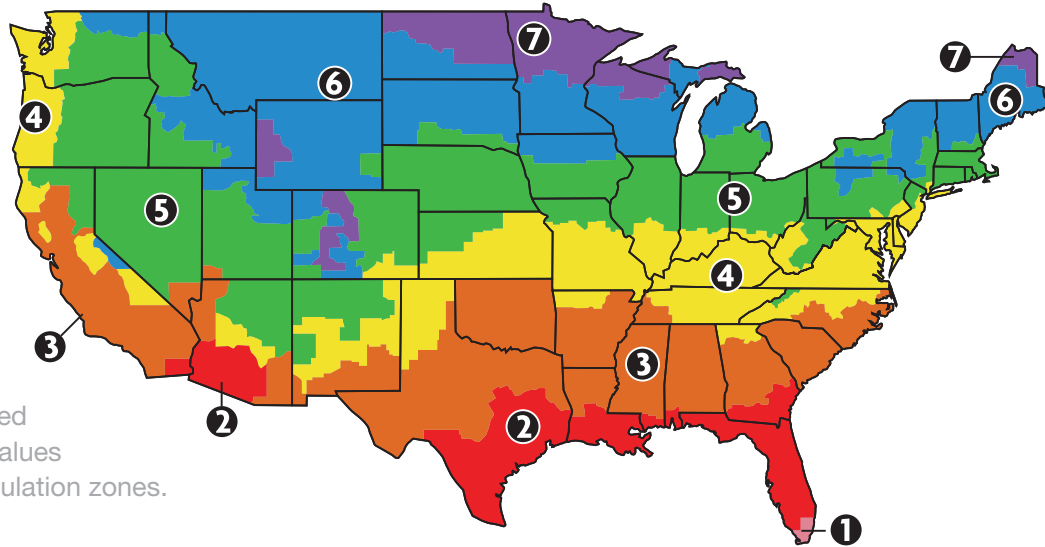
For more details on laboratory and field testing of the ATS System with Vapor Retarders, review the back cover of this brochure.

Department of Energy R-value Recommendations

Insulation is specified by its thermal resistance or R-value. "R" means resistance to heat flow. The higher the R-value, the greater the insulating power.

The amount of insulation you need depends mainly on climate, type of heating (gas, oil, electricity) you use, and the area of the house you plan to insulate.

The U.S. Dept. of Energy has established minimum recommended insulation R-values for 8 distinct parts of the country or insulation zones.



Find the R-values for Your Zone

Find your zone on the map. If you live on the border between two zones, choose the higher rather than the lower values.

Now, compare your insulation zone to the type of heating system(s) installed and the area of the structure where insulation is needed.

Zone 8 includes Alaska

Zone 1 includes Hawaii, Guam, Puerto Rico and the Virgin Islands

R-values for New Wood-Framed Houses

Insulation Zone	Heating System	Attic	Cathedral Ceiling	Wall		Floor
				Cavity	Insulation Sheathing	
1	All	R-30 to R-49	R-22 to R-28	R-13 to R-15	None	R-13
2	Gas, Oil, Heat Pump, Electric Furnace	R-30 to R-60	R-22 to R-38	R-13 to R-15	None	R-13 R-19 to R-25
3	Gas, Oil, Heat Pump, Electric Furnace	R-30 to R-60	R-22 to R-38	R-13 to R-15	None R-2.5 to R-5	R-25
4	Gas, Oil, Heat Pump, Electric Furnace	R-38 to R-60	R-30 to R-38	R-13 to R-15	R-2.5 to R-6 R-5 to R-6	R-25 to R-30
5	Gas, Oil, Heat Pump, Electric Furnace	R-38 to R-60	R-30 to R-38 R-30 to R-60	R-13 to R-15 R-13 to R-21	R-2.5 to R-6 R-5 to R-6	R-25 to R-30
6	All	R-49 to R-60	R-30 to R-60	R-13 to R-21	R-5 to R-6	R-25 to R-30
7 8	All	R-49 to R-60	R-30 to R-60	R-13 to R-21	R-5 to R-6	R-25 to R-30

Features & Benefits of



Virtually Eliminates Air Infiltration

Closed-cell foam creates an exterior air barrier virtually eliminating air infiltration and allowing the fiberglass insulation to perform at its maximum efficiency.

Guardian Fiberglass Insulation

The state-of-the-art combination of Guardian fiberglass insulation and the foam work together to produce higher, installed R-values.

Foam Fills All Gaps and Voids

Foam fills all gaps and voids before the fiberglass insulation is installed, ensuring a great insulation job every time.

Higher R-values

You can attain an R-16 in a 2 x 4 wall frame & an R-24 in a 2 x 6 wall frame; greater R-values for larger dimensional lumber and I-joists.

Excellent Sound Control

Since all the gaps and voids in the walls, rim joist, and around pipes are filled using the foam prior to the fiberglass insulation being installed, this provides excellent sound control properties.

Non-corrosive

All components of the ATS system are non-corrosive.

Substrate Application of Foam

Foam can be applied to OSB, plywood, fiber board, rigid foam board, concrete, polyester mesh, steel and dimensional lumber.

Laboratory and Field Testing of the ATS® System

Interior Vapor Retarders

Guardian recently engaged R&D Services, Inc., a third-party accredited laboratory, to calculate the moisture movement in walls and determine if and where interior (warm-in-winter side of the insulation) vapor retarders are needed. It was decided by R&D Services, Inc., that the WUFI 4.1 (including ASHRAE 160P requirements) program would provide the best methodology to determine the answers to these questions. WUFI is the most advanced and detailed computer modeling program of hygrothermal (moisture and heat) transfer through walls.

Tampa, Atlanta, St. Louis, Chicago, Madison and San Francisco were selected to represent a variety of climatic conditions in simulations to analyze for moisture problems in the ATS walls.

The results of the analysis were not surprising. An interior vapor retarder should be used in heating dominated climates while there is no need for an interior vapor retarder in cooling dominated climates. Specifically, using the Climate Zone map on the inside page for reference, Guardian recommends using an interior vapor retarder (one perm or less) in Zones 5, 6, 7 and 8. An interior vapor retarder is not required in Zones 1, 2, 3, and 4. Local building codes should always be followed.

Condensation Issues

If a coated kraft or polyethylene interior vapor retarder is installed properly in the recommended Climate Zones mentioned above and all surrounding building materials are dry, there should not be condensation issues with the ATS System. Being a good insulation system, the ATS foam shifts the dew point temperature toward the interior of the wall cavity. However, if moisture is controlled to remain outside the insulated wall cavity the location of the dew point temperature becomes irrelevant.

ASTM E 96 Standard Test Method for Water Vapor Transmission

The ATS System does not create a double vapor retarder in a given wall cavity. The 1/2-inch thick layer of closed-cell poly-urethane foam

used for the ATS System is not a vapor retarder. It has a perm rating about five-times higher than the traditionally-accepted one perm or less for a vapor retarder material.

ASTM E 283 Standard Test Method for Air Permeability

The 1/2-inch thick closed-cell polyurethane foam used for the ATS System has been tested in accordance with ASTM E 283 to determine air leakage rate and durability. The resulting air leakage rate was less than the generally-accepted rate for an air barrier as established by the Air Barrier Association of America.

ASTM C 283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Wall, and Door Under Specified Pressure Differences Across the Specimen

Wall cavities containing ATS were placed in an environmental chamber and run through several freeze / thaw cycles by another third-party accredited laboratory facility to determine if there was any degradation of the material; specifically searching for cracks or any de-lamination from the framing or exterior sheathing. The wall cavity was sealed with 1/2-inch thick two component closed-cell polyurethane foam insulation for the ATS System and tested for air permeability before and after the thermal cycling. The ATS System established a near zero leakage rate before thermal cycling, and the 1/2-inch foam layer retained its structural integrity and retained the near zero leakage rate after the thermal cycling was completed.

ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials

The ATS 1/2-inch thick two component closed-cell polyurethane foam meets the requirements for a Class 1 material (FS: 25; SD: 200) when tested in accordance with ASTM E 84 by a third-party accredited fire laboratory.

Environmental Certifications



Guardian Fiberglass – for your health. Indoor air quality is a growing concern with today's tighter construction practices for homes and buildings. And most people spend about 90% of their time indoors where, according to the U.S. EPA, "thousands of chemicals and biological pollutants are found", thus negatively affecting our health. That is why Guardian Fiberglass has made a point to achieve the highest possible product certification – Greenguard Certification. Greenguard certified products can significantly reduce the existence of hazardous emissions and - promote a healthy home environment. Guardian Fiberglass products are tested and certified to meet the tough Greenguard™ IAQ standards.



Guardian is proud to be an ENERGY STAR partner offering proven energy saving products to the marketplace. Because of this partnership, Guardian Fiberglass Insulation helps businesses and homeowners save money on energy bills year after year.



The U.S Green Building Councils LEED (Leadership in Energy and Environmental Design) Green Building Rating System is a voluntary standards and certification program that defines high-performance green buildings – which are more environmentally responsible, healthier and more profitable structures.

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