

# #85 Barrier Coat

## Radiant barrier, radiation control & Vapor Retarder Coating

**A cost effective boost to conventional home insulation that can save energy and money**

### **CERAMIC-ALUMINUM BARRIER COATING**

#### **As a Radiant Barrier: Stops heat from entering or escaping.**

Until now the only types of radiant barriers available were foil film, metalized plastic film, and metalized "chips". These types of barriers are installed by attaching to the underside of the roof with staples or sprinkled about on top of the fiberglass insulation on the attic floor. There are a few spray-able paint coatings available that are sold as radiant barriers but **they all contain volatile solvents** which are not only hazardous to the installer but also to the homeowner as the toxic fumes penetrate down through the ceilings and into the interior. Don't be fooled by the terms "latex base", "water cleanup" as they do not reflect the true chemical makeup of the coating, read the ingredients!

Hy-Tech Barrier Coat is the ONLY radiant barrier paint that contains pure metal (aluminum) pigment, Hy-Tech insulating ceramic microspheres and NO mineral spirits or other volatile, flammable solvents.

#### **How It Works:**

Aluminum is highly reflective to infrared (IR) due to the high concentration of mobile electrons. Barrier Coat contains aluminum metal in the form of thin "Leafing" aluminum flakes which are highly reflective and reduce the penetration of IR radiation. The overlapping aluminum flakes align themselves parallel to and concentrated near the surface of the coating and have reflectance values of 0.75 to 0.8 for the key spectral range of 1 to 8 .mu.m.

In addition to the infrared reflective aluminum pigment, Barrier Coat also contains a very high concentration of heat reducing Hy-Tech Insulating ceramics. The combination of these two heat reduction pigments forms Hy-Tech's exclusive "Ceramic Vacuum Matrix" which minimizes solar-induced heat build-up

#### **As a Sound Barrier:**

The HY-TECH hollow ceramic microspheres are a vacuum inside. Physics law states that nothing can move by conduction through a vacuum, since it represents an absence of matter. In effect we have a miniature thermos bottle... a microscopic hollow vacuum sphere that resists thermal conductivity and reduces the transfer of sound fairly well. Although Barrier Coat reduces the transfer of sound it is not intended to be a solution for serious sound problems. (For sound reduction See [Acousti-Coat #150](#))

#### **As a Vapor Retarder: You Must Prevent Moisture Accumulation**

Moisture control is a major concern associated with thermal insulation. The warm air inside your house contains water vapor. If this vapor passes into the insulation and condenses, it can cause significant loss of insulating value.

If moisture becomes deposited in the building structure, it can cause mold growth, peeling paint, and eventual rotting of structural wood.

Vapor retarders are special materials that reduce the passage of water vapor. Vapor retarders should be used in most parts of the country. In colder climates, place the vapor retarder on the warm side--the lived-in side--of the space to be insulated. This location prevents the moisture in the warm indoor air from reaching the insulation. If you live in an area where the climate is predominantly hot and humid, check with a local builder to determine the correct placement or

need for a vapor retarder. More detailed guidance on regional differences in moisture control recommendations can be found in the [Moisture Control Handbook](#) published by US Department of Energy.

To guard against moisture problems, use Barrier Coat on interior walls and ceilings and provide adequate ventilation for the house. If you have a crawl space you should spray the underside with Barrier Coat.

#### **Barrier Coat #85 Features:**

- Very low odor, soap and water clean up.
- Low applied cost per square foot
- **Dual protection:** The metallic aluminum pigment reflects away radiant energy or heat from the sun during the summer months and in winter the same microscopic aluminum particles prevent radiant heat from leaving the building. Hy-Tech insulating ceramics further reduce conductive heat transfer.
- Permeable, does not trap moisture but reduces its rate of transfer.
- Easily installed using brush, roller, or spray
- Excellent for back priming wood sheathing and siding in new construction not only providing a superior radiant barrier but also protects against wood rot from water intrusion through cracks and splits in the wood
- Saves money by lowering heating and cooling cost of operation and wear and tear of the equipment.
- Improves efficiency of existing insulation by lowering the temperatures that it is exposed to.
- An Easy way to upgrade existing structures
- Easily applied to Attic Space, underside of roof decking, side walls and overhead doors in metal buildings, Duct work, Pipes, interiors of cargo transportation vehicles, barns, storage buildings, animal shelters, grain silos, poultry housing...the applications are endless
- Due to the high reflectivity of the coating Barrier Coat increases interior lighting levels in commercial and industrial buildings which aids in reducing lighting costs.
- In buildings heated by infrared heaters, wood burning stoves or other radiant heat sources, **Barrier Coat** greatly improves the efficiency of the heat source reducing fuel and energy costs
- On interior wall applications **Barrier Coat** not only provides a barrier to radiated heat but also an Aluminum vapor barrier which reduces water vapor transfer through the walls, a real plus for older homes and homes with EIFS wall systems.
- Barrier coat can be top coated with a decorative conventional wall paint.
- Environmentally Friendly! Contains No ammonia, No alcohol, No solvents!
- SAVE Money...Do it yourself. We include with every order, [step by step instructions](#) on how you can easily and inexpensively apply barrier coat.

**If you have seen the RIMA study on coatings, please see our additional information page [Click Here](#)**

Spread Rate: 200 (for attic spray applications) -300 sq ft per Gallon  
Two coats are recommended on new unprimed wood  
to insure an even distribution of the aluminum and ceramic particles.  
Available in 1 Gal and 5 Gal containers  
\$38.00 Per Gal...5 Gallon \$190.00

Keep the Planet Green

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WHY SPRAY PAINT? Well, two good reasons come to mind: it is the least costly of the three primary methods -- brush, roller and spray -- and it is the fastest application method.

The more irregular the space being painted, the greater the advantage of spray over other methods.

An airless spray rig consists of the pumping unit, hose and a gun. No compressor is needed because the paint is pumped through the high pressure hose and forced thru very small tips which break up the paint into various size spray pattern fans. The biggest advantage to airless spraying is that since no air is used to force the paint out, there is very little overspray and the air in the room is not filled with paint laden mist.

The amount of paint delivered is determined by the size of the tip used and by the amount of pressure used. Tips normally are numbered in thousands of an inch. Example: .019 tip indicates a somewhat large tip suitable for most latex paint, a .015 would be ideal for oil base paints, enamels and varnish coatings. Insulating ceramic paints spray best with tips in the .021 range, be sure and remove all filters when using ceramic paints as you do not want to filter out all the ceramics.

**CAUTION:** The pressure at the tip is normally in the 3000 psi range and it can not only cause a severe cut but also inject paint into your skin! Keep your hands and fingers clear of the tip while pressure is on the machine!

**Tools and equipment you will need include,** A 5 gallon bucket to mix all your paint together in, (boxing), to insure you have the same color throughout the mix. Masking tape and lots of plastic to mask off areas not to be painted, A respirator or spray mask, A hat, long sleeve shirt, and some hand cream or lotion for your exposed skin.

When you pickup your spray unit from the paint or rental store ask for an "extension" for the gun. These simply screw onto the gun allowing you extended reach and eliminating ladders.

**Procedure:** Mix all your paint into the 5 gallon pail, insert the dip tube from the pump into the bucket or fill the hopper depending on which unit type you have, make sure all your fittings are tight.

Now, all units have two control knobs, a pressure control and a pump/recirculate knob. In the recirculate mode the paint simply recirculates thru the unit, pumping out trapped air and allows the pump to prime. Turn the knob to recirculate and turn on the power switch. Allow the pump to run for 2 minutes or so and it will prime and push out any trapped air. Now we are going to adjust the pressure. The biggest mistake most people, even some professionals, is spraying with too much pressure. You need just enough pressure to create an even fan with no "tails" which are thick lines at the edge of the spray pattern. Back out the pressure knob and screw it in about 1/3rd of the way (screwing in increases pressure), point the gun at the surface to be painted or a piece of cardboard for testing and with your hand in motion, pull the trigger. If you see a thick stream at the edge of the fan increase the pressure 1/4 turn at a time until the tail is gone.

Now you have the proper amount of pressure for the material you are spraying.

**Technique!!!** Every time you pull the trigger you must follow the same routine. Remember that the second you pull the trigger the paint comes out instantly so, start your hand in motion first and then pull the trigger, release the trigger just before you reach the stopping point of your swing., just remember... hand in motion, pull trigger, spray, release trigger, stop hand motion.

Should you mess up and load an area with too much paint simply take a brush and spread it out.

Maximum transfer of paint is accomplished by holding the gun at the proper distance from the surface to be painted. Too close and you apply too much paint, too far away and you introduce a lot of spray into the air as it is not hitting the surface. This distance varies and depends on the amount of pressure you are using and the viscosity of the paint so experiment until you find the proper distance, normally 12" or so is about right.

Cut pieces of cardboard about 12" wide an 3' long and use them as a shield holding them up against the areas you want to protect. Cut several and when they become loaded with paint lay them aside to dry and you can reuse them later. Its a good idea to keep a bucket of clean water and a sponge handy too, you are going to slip up and overspray onto something you don't want painted and this way you can clean it easily. When you have finished be sure and clean the equipment up, most rental places charge a pretty hefty cleaning charge if you return the unit dirty.

Put the dip tube into a clean bucket of water, back off on the pressure and put the gun into the 5 gallon pail of paint holding the tip just under the surface of the paint. The line has about 1 qt of paint in it and you can push it through with water. As soon as you see the water coming out release the trigger, move the gun over to the bucket of water again holding the tip just under the surface, and pump the water for about 2-3 minutes. Dump the water repeat the process until the water runs clean. Normally 3-4 rinses are necessary. Power OFF! Trigger the gun to release the pressure , clean off the exterior of the gun with a wire brush, remove the tip, clean it well and replace it.

Be sure and replace the filters before returning the unit if you removed them earlier.

Next time you paint why not Insulate!

# Hy Tech Insulating Ceramic Additive for Paint

**Insulation rating, insulation values, insulation r factor, insulation r values, radiant barrier, thermal barrier, thermal insulation, Thermal Transfer... Understanding what all these terms mean and how they apply to energy efficiency.:**

All the materials that are used in the construction of your home or business absorb and transfer Heat. 80% - 95 % of this heat is transferred, from the warmer side to the cooler side by one or more of the following ways.

## 1. \* CONDUCTION:

Conduction is direct heat flow through matter (molecular motion). An example of conduction, if you lay one end of a butter knife on the burner of your stove, the heat travels by conduction through the metal to the other end that you are holding and it soon becomes too hot to hold. Heat is always conducted from warm to cold never from cold to warm.

## 2.\* CONVECTION is the transport of heat within a gas or liquid.

Example-hold your hand above the stove burner and you soon feel the heat being emitted and transferred thru the air upward.

3.\* **RADIATION** is the transmission of electromagnetic rays through space. We experience infrared radiation every day. The heat that we feel from sunlight, a fire, a radiator or a warm sidewalk is infrared. Although our eyes cannot see it, the nerves in our skin can feel it as heat.

Now that you understand how heat is transferred,  
**How do we stop this transfer?**

Up till now, we have used (mass) insulation such as Fiberglass, Cellulose, Styrofoam, etc. to slow down and resist ("R value") heat transfer. These types of insulation materials only work on heat transfer by means of conduction which amounts to between 5 % - 7 % of the total heat transfer into / out of a structure. **That leaves 93 % - 95 % of the total heat transfer to be dealt with by your air conditioner and heater.**

Mass insulation products work by trying to " trap " the heat in air pockets contained between the fibers in the product. Air is a good insulator against conduction but cannot stop radiant heat and once the insulation becomes saturated with all the heat it can absorb it then passes it on through the walls and ceilings.

Summer heat increases interior temperatures placing a huge load on your air conditioning system, and winter heat loss results in higher heating bills.

Ever notice in the summer, the sun has been down for awhile and you touch the interior side of an outside wall and it is still Hot! That's because the wall has been absorbing heat all day and is emitting it into your home. This is why your air conditioner runs well into the night even though the sun has been down for hours and the outside air is cool. The reverse happens in winter, the wall you spend a fortune on heating up transfers that heat to the outside. Your power company loves it and your heating/cooling system works overtime trying to cope with the heat that is being transferred into or out of your home.

Researchers at Oak Ridge National Laboratory in Tennessee which is the technology laboratory managed for the U.S. Department of Energy, took homes in Miami FL, Phoenix AZ and Atlanta GA which were single-story, single-family detached houses with exterior walls constructed of concrete block, and interior walls of wood-framed drywall. They insulated the walls and applied stucco as follows,

"We attached two layers of inch-thick polystyrene foam insulation boards to the exterior walls, next a wire lath, and finally, stucco. After the stucco had dried, it was painted a light color. Total retrofit costs ranged from \$3,610 to \$4,550 per house, averaging \$3.34 per square foot of exterior wall area to be covered with insulation."

**The Results?** "In all cases, insulating the walls resulted in a much lower rate of heat transfer through the walls when the outdoor temperature exceeded the indoor temperature, but the added insulation also increased the retention of heat generated within the house when the outdoor temperature fell below the indoor temperature.

**In some locations--particularly in Miami--the addition of wall insulation actually increased the cooling load during the spring and fall."**

**Note:** "A lower RATE of transfer", not a reduction in the total amount.

The choice is yours, spend \$3.34 per square foot and "Slow down the heat" or use

**The Hy-Tech Thermal Solution:**

Insulating Ceramic Paint Products that give paint the ability to resist and reflect heat while dissipating it.