What is "Radiant Barrier Paint"?

Mary Edmondson
Executive Director
Reflective Insulation Manufacturers Association (RIMA)

There has been a lot of talk lately about the benefits of radiant barrier paint. The problem is, according to definitions set forth by the American Society of Testing and Materials International (ASTMI), there is no such product currently available. There are low-emittance paints, which are also known as interior radiation control coatings. These products offer a benefit; however, there are many companies marketing a "radiant barrier" paint, and it is important that professionals and consumers alike understand the difference.

Let's begin by defining a radiant barrier. A radiant barrier is a low-emittance surface facing a large air space. The thermal performance or the reduction of radiant heat transfer is proportional to the surface emittance of the radiant barrier material. Emittances of materials range between zero, no radiant heat transfer, and one, that of a black surface with maximum radiant heat transfer rate. Common building materials, such as wood, masonry, and fiberglass insulation have surface emittances of 0.8 or greater and therefore have high radiant heat transfer rates. Products defined as radiant barriers by ASTM have a reflective/low-emittance surface where the emittance is 0.10 or less.

ASTM calls paint an interior radiation control coating (IRCC) if the IR emittance is 0.25 or less (ASTM product specification C 1321, "*Standard Practice for Installation and Use of Interior Radiation Control Coating Systems in Building Systems*"). The ASTM standard also identifies the method for measuring the emittance (C 1371, "*Test Method for Determination of Emittance of Materials near Room Temperature Using Portable Emissometers*"). IRCCs are a non-thickness dependent, low-emittance coating when applied to building materials such as plywood, OSB, metal siding or plasterboard, according to the manufacturer's installation instruction, lowers the surface emittance to less than 0.25. An IRCC performs by changing the emittance of the surface where it is applied. Building products, such as wood, brick, painted surfaces and plasterboard have high emissivities (0.7 - 0.95). When heated above the temperature of adjacent surfaces, they radiate heat energy to cooler surfaces. An IRCC lowers their surface emittance reducing the ability to radiate heat.

The Reflective Insulation Manufacturers Association (RIMA) conducted testing of several low-emittance paints in 2006 measuring the surface emittance of several paint products claiming reflective benefits that ultimately didn't even meet the qualifications for an IRCC, let alone a radiant barrier. Seventeen products were tested. Four products met the qualifications for an IRCC. *(You can find those test results on www.rima.net under 'Technical Info').* So, not only are IRCCs not radiant barriers but some paints are not even IRCCs.

Depending on your building project, both radiant barriers and IRCCs can contribute to the overall thermal performance of a building. Just be sure to do your homework before purchasing a low-emittance paint product. If it's being called a 'radiant barrier paint' – Beware! Check the emittance, ask for test data and make sure it meets ASTM standards before you buy.

For more information on radiant barriers, interior radiation control coatings (IRCCs) and reflective insulation, visit www.rima.net or contact the Reflective Insulation Manufacturers Association (RIMA) at 800/279-4123. If reflectives are new to you, take the time to learn more. Not only will you be doing your part to reduce energy consumption in your community, but you will create a new profit center for your business and gain more satisfied customers.