

San Jose Considers Adopting Energy-Efficient Wall Coating Standards

June, 2009 may be an important month in the fight to combat global warming. The city of San Jose, California is poised to become the first municipality within the United States to adopt a heat-reflective exterior wall coating code based on the 2008 Green Seal-11 (GS 11) standards. As part of San Jose's ambitious 15-year "Green Vision," the Department of Public Works is expected to incorporate GS-11 into the revision of its Standard Specifications as well as facility design guidelines for public buildings. If San Jose adopts GS-11 then other cities within the state are expected to follow suit and then other U.S. states will follow later. A Californian city will once again be a catalyst for progressive environmental change.

Heat-reflective wall coatings combat global warming by keeping homes cool during hot summer months. If a home absorbs less solar radiation from the sun, then air conditioning usage will be reduced, meaning power plants will burn less fossil fuels to run the cooling systems. A Department of Energy (DOE) report conducted by Oakridge National Laboratories (ONL) in Tennessee found that cool wall coatings could reduce cooling usage by up to 21.9 percent, depending on climate and other variables. Since many homes consume an estimated 10,600 pounds of CO₂ per year (5.3 tons) on electrical usage, and half of that is used on heating and cooling, then one home could potentially reduce its carbon footprint by approximately 583 pounds of CO₂ per year with a cool wall

coating system. On a macro level, if that 583-pound savings is multiplied by 10 million residential homes, then the reduction in CO₂ is more than 1.2 billion pounds per year. This is why San Jose's vote to adopt a heat-reflective wall coating standard is so important for climate control. Heat-reflective wall coatings, in conjunction with heat-reflective roof and pavement coatings, can significantly reduce global warming.

Unfortunately, many coating manufacturers are not willing to make the transition into energy efficiency. Just about every major industry has contributed something to improve climate control except them. The paint industry may point towards reduced VOCs within their coatings as their effort to improve air quality; however this was forced on them by groups such as the EPA and the South Coast Air Quality Management District (SCAQMD). It was not a voluntary move and was met with great resistance.

Many coating manufacturers tried to sue the EPA to prevent new VOC legislation from going into effect.

Reducing VOCs in architectural coatings has been a positive step forward for improving air quality but it is not enough. Energy efficiency, combined with low VOCs, is the way of the future. According to the California Air Resource Board (CARB), in 1975 there were 113 million tons of VOCs emitted per day from 50 million gallons of paint sold annually.

In 2005, there were 95.1 million tons of VOCs emitted per day from 110 million gallons of paint sold annually, a 16% reduction in emissions. The actual



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reduction in VOC emissions is closer to 50% since coating sales have more than doubled. Reducing VOCs in coatings has been good for improving air quality, but low VOCs combined with energy efficiency is a much better way of addressing current atmospheric and environmental concerns.

Cool Roof Coating Manufacturers

If retail coating suppliers do not develop cool wall coatings then a new market could be circumvented for cool roof coating manufacturers. Many cool roof coating manufacturers currently offer high-performance heat-reflective wall coatings; however, they are being sold without any regulations or standards to follow. It would be a major opportunity for them to diversify their businesses at the expense of retail coating suppliers.

An analogy can be made between the U.S. auto industry and U.S. coating manufacturers. For many years, U.S. car makers refused to make energy-efficient vehicles. They instead continued to manufacture gas-guzzling SUVs, which polluted the air with excessive amounts of carbon emissions. Some foreign car makers, on the other hand, started producing fuel-efficient, hybrid cars and took significant market share away from the big three U.S. auto makers. The same scenario could happen within the U.S. coatings industry. If retail paint producers do not reformulate their coatings to meet new energy-efficiency requirements then cool roof coating manufacturers will step in to meet this demand. If San Jose adopts the first-ever heat-reflective wall coating standard in June and retail coating manufacturers idly sit by, then the commercial exterior wall coating industry may be dominated by cool roof coating suppliers.

What is A Heat-Reflective Coating?

A heat-reflective coating has the ability to change the radiative properties of a hot surface to a cool surface. It must maintain a high solar reflectance (SR) thermal emittance (TE) and ultraviolet radiation (UV) resistance over a long period of time. It is difficult to place precise reflective numbers on a coating since it largely depends on the substrate and other variables. For example, a cool wall coating with a SR of 70 and TE of 90 will provide little thermal resistance to a wall that is covered with closed-cell, rigid insulation. Rigid foam insulation prevents air movement and thermal bridging through

the wooden studs. However, if a wall has traditional fiberglass insulation with exposed wooden studs, a heat-reflective coating can significantly reduce solar absorption, thermal bridging and cavity convection due to a reduction of surface temperature on the out-

side walls. If an exterior wall is cooler, then it will absorb less energy, resulting in a lower demand for air conditioning, hence, fewer fossil fuels being burned at power plants and less CO₂ emitted into the air. Some power plant facts are noted as follows: