



Improving Our Climate

3M™ Smog-reducing Granules

Roofing Solutions To Environmental Concerns

(NAPS)—More and more Americans are calling the nation's cities home. According to 2010 Census data, an estimated 80.7 percent of Americans now live in urban areas—up from 79 percent in 2000. Not only does this urban population increasingly tax the country's infrastructure, but it is also having an effect—both directly and indirectly—on the environment.

The Heat Is On

The urban heat island (UHI) effect is a phenomenon in which metropolitan areas are typically warmer than nearby rural areas mainly due to the large areas of paved surfaces and buildings that capture the sun's energy, hold it and slowly radiate the heat back out into the air. The concentration of heat in these densely populated regions creates additional health risks for residents due to heat exposure and the enhanced formation of air pollutants, especially ozone.

Rooftops, roads and parking lots comprise a large percentage of the man-made surface area in urban areas. When analyzing effective UHI mitigation strategies, scientists at the Lawrence Berkeley National Laboratory determined that widespread deployment of "cool roofs" and "cool pavements" would decrease urban temperatures, which in turn could offset some or all of the projected future warming trends.

According to the U.S. Department of Energy, a cool roof is one that has been designed to reflect more sunlight and absorb less heat than a standard roof. Beyond the building itself, cool roofs can also benefit the environment by:

- Reducing local air temperatures;
- Lowering peak electricity demand, which can help prevent power outages; and
- Reducing power plant emissions, including carbon dioxide, sulfur dioxide, nitrogen oxides and mercury.

In order to help protect the environment and meet increasingly stringent ordinances calling for cool roof technology, 3M developed Cool Roofing Granules. These granules are used in shingles that can be energy efficient, solar reflective and economically friendly. This technology can reduce urban heating



Roofing granules offer a variety of solutions to environmental issues found in urban areas.

as well as lower energy consumption in climates with year-round cooling needs. In addition, many of the shingles that contain 3M Cool Granules meet Energy Star requirements, making them the premier choice for green building.

Further, the granules are available in a wide variety of rich colors that can create the perfect shingle color blend.

The Eradication of Smog

Another problem in urban areas is smog pollution, caused by a buildup of nitrogen oxides in the air. An estimated four in 10 Americans currently live in counties with unhealthy levels of particle pollution.

To combat this growing concern, 3M recently launched Smog-reducing Granules, which help remove smog pollution using roofing shingles. Integrated throughout a shingle's surface, the granules are designed with a specialized photocatalytic coating applied to the base mineral. As sunlight hits the shingles, radicals are generated, transforming nitrogen oxide gases into water-soluble ions, thereby improving air quality.

"3M is leading the way with roofing technology solutions for improving environmental impacts on human health and welfare," said Frank Klink, Ph.D., senior laboratory manager, 3M. "The roofing granules are a first for residential asphalt shingles. The new 3M granules will help roofing manufacturers develop high-quality, aesthetically pleasing shingles that can turn any roof into an active smog-reducing catalyst, essentially becoming smog's worst enemy."

To learn more about 3M's commitment to using science for the greater good, visit www.3m.com/sustainability.