

Energy-efficient thermal insulation paints including inorganic materials

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Urban areas around the world are experiencing rapid population growth resulting in rapidly increasing residential buildings. As a result, solar energy is absorbed by buildings, causing the temperature of urban structures to become several degrees higher than ambient air temperatures. This phenomenon has the effect of increasing the demand of energy. Energy saving can be achieved by reducing the indoor temperature of the building. One way to reduce the interior temperature is to employ cool paints on building's exterior.

In this study, the inorganic materials such as mica, talc, pearl, and silica were modified with silane coupling agents in order to improve the performance of thermal insulation. The surface temperature of thermal insulation paints with the modified mica was improved the performance thermal insulation of about 10%. Also, the reflectance of thermal insulation paint was 15% higher than conventional paints. The wide use of such materials can contribute to the improvement of urban environmental quality.

Keywords: Thermal insulation paints, Energy saving, Reflectivity, Inorganic material