

New material continues to cool using zero energy, while dissipating heat into atmosphere

Features

The radiative sky cooling material is a new material that cools by utilizing the ambient temperature, without electricity. It utilizes the principle of “radiative cooling”, which is a known cause for the drop in temperature at night, releasing heat into the air, even in direct sunlight.

The material contributes to low carbonization and decarbonization of the atmosphere overall.

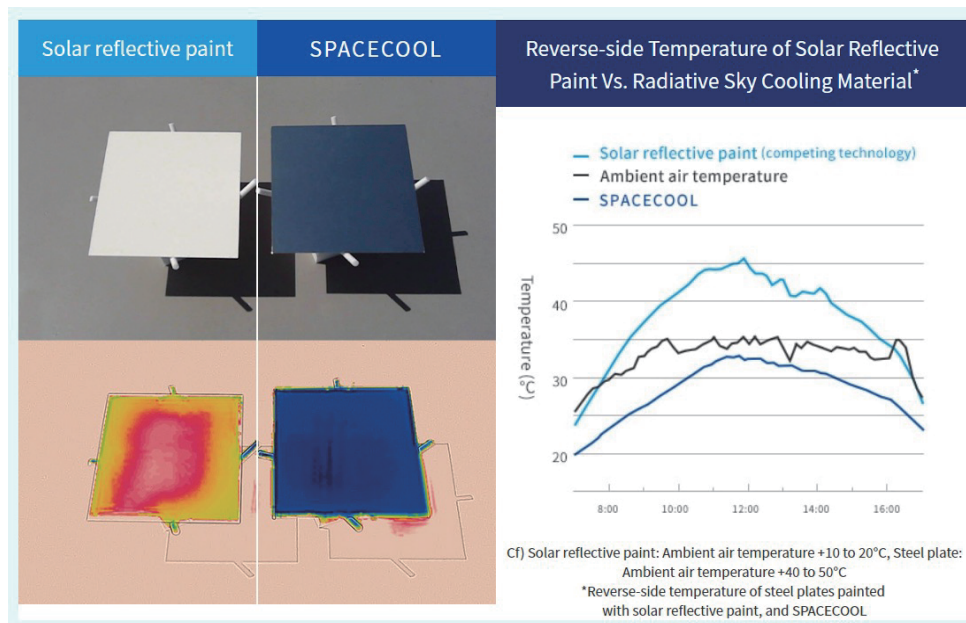
Basic Concept or Summary

This material is a product that reduces the temperature*¹ to a level that is lower than an ambient temperature, in direct sunlight, by releasing heat into the atmosphere, without using any energy. Osaka Gas confirmed that the surface temperature of this material under direct sunlight drops up to about 6°C*³ below the ambient temperature through a validation experiment, achieving the highest level of cooling performance in the world*⁴.

- *1: Using the proprietary optical control technology of Osaka Gas, the heat input from sunlight is reduced and heat radiation magnified with thermal radiation*², which was made possible through the design of the material.
- *2: A phenomenon of heat on a heated object is transported as an electromagnetic wave (light).
- *3: The temperature was measured at the Energy Technology Laboratories of Osaka Gas in Konohana Ward of Osaka City (ambient temperature at the time of the measurement was about 35°C). The surface temperature of the steel plate, treated with the radiative sky cooling material, was also measured.
- *4: According to our investigation, based on published papers.

External appearance of radiative sky cooling material (film)





Effects or Remarks

Our technologies take a holistic approach to sustainability, allowing communities to thrive in harmony with our planet.

- Values relating to safety and comfort, such as the prevention of heat stroke and sustained freshness of food products, are provided to offer favorable outcomes for humans.
- Values relating to business, such as the prevention of failure with outdoor equipment and other such reliability, improved efficiency, with the use of space and cost reductions, are all provided to offer advantages for goods.
- Values relating to emissions control and environmental improvements, such as the suppression of greenhouse gases through zero energy consumption, are provided to offer benefits for society.

Two products are available in our product line: Film and canvas. It is presumed that the canvas will be used as a membrane material for membrane buildings, whereas the film will be used as a covering attached to container warehouses and the like.

Installation in Practice or Schedule

Domestic None (sales launched around summer of 2021)

Overseas Same as above

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