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This ultra-white paint could cool buildings, cutting the need for air conditioning

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Credit: Purdue University/Jared Pike

Written by **Sara Spary, CNN**

Scientists have developed a light-reflecting "ultra-white" paint, which they say could negate the need for air conditioning and even reduce carbon emissions, if used on a mass scale.

The paint, developed by engineers at Purdue University in Indiana as part of a six-year project, is capable of reflecting up to 98.1% of sunlight and therefore has the ability to cool buildings, according to a press release.



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Unlike traditional paint, the "ultra-white" paint is made with a chemical compound called barium sulfate, which is also used in the production of cosmetics and photo paper.

The barium sulfate particles are made up of varying sizes, which "scatter" the sun's rays and can even cool immediate surrounding surfaces.

White paint has been used for centuries in warmer climates to cool buildings from the heat, but this new formula absorbs far less sunlight and therefore heat, the researchers said.

An infrared camera image shows how a sample of the new, ultra-white paint cools the surrounding area. The image of the left shows the paint in situ, while the image on the right uses special technology to show how it cools the surrounding area. The darker the color, the lower the temperature. Credit: Purdue University/Joseph Peoples

"If you were to use this paint to cover a roof area of about 1,000 square feet, we estimate that you could get a cooling power of 10 kilowatts. That's more powerful than the central air conditioners used by most houses," said lead researcher Xiulin Ruan, professor of mechanical engineering at Purdue.

The researchers said the new white paint was so white it was the equivalent of the blackest black, "Vantablack," which absorbs up to 99.9% of visible light.

It is the "coolest on record," they claimed, capable of keeping surfaces 19 degrees Fahrenheit cooler than other ambient surroundings at night, and 8 degrees Fahrenheit lower during strong sunlight.



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