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LOW-TECH IS HIGH-TECH IN ENERGY SAVING BUILDING MATERIALS.

by Bruce Mulliken, Green Energy News

It could be that some high-tech wizardry will provide an endless source of clean energy for the future. Maybe electric cars will wean us off of oil. Maybe solar panels will let us walk away from coal. I don't know. But I do know that when we're looking for energy solutions we shouldn't ignore the low-tech basic solutions like incorporating passive sources of energy into our new homes and insulating the dickens out of all of them, new and old.

We may also find that low-tech is not so low after all. High-technology and serious science is put into the research and development of something as simple and energy saving as a tube of caulking. It's hard to image a sheet of wallboard as high technology, but it can be.

It's well known that having a large thermal mass inside a building can regulate its temperature and thus reduce the load on its heating and air conditioning system. The thermal mass, like an interior brick or adobe wall, a concrete floor, a stone fireplace or even heavy plaster walls can moderate the temperature of a room making it easier to heat or cool, saving money and energy.

But it's not always easy to incorporate a thermal mass into new building design and very difficult to add it afterwards. However, a phase-change material can perform a similar function as a thermal mass. A phase change material is one that goes from a solid to a liquid or gas without a change in its chemical composition: ice to liquid water to steam for example.

A new product from National Gypsum that is now being tested by the National Renewable Energy Laboratory (NREL) could bring the temperature moderating qualities of a thermal mass to any new home as well as those being remodeled.

National Gypsum describes the new product: "ThermalCORE is unlike traditional gypsum board in that its core contains Micronal PCM, a microencapsulated high-purity paraffin wax phase change material from BASF. This material changes phase from solid to liquid when it reaches 73^f F, absorbing thermal energy to help moderate a room's temperature, similar to an ice cube melting and absorbing heat to keep a drink cool. Micronal PCM is unlike ice, however, in that it melts at a much higher temperature and is contained within virtually indestructible microscopic acrylic capsules that prevent the wax from leaking as it changes phase. When temperatures fall, the wax solidifies and releases heat. This alternating process of melting and solidifying allows ThermalCORE to absorb daytime temperature peaks, ideally providing a more consistent room temperature."

With the new wallboard the walls and ceiling of a room could be a source of heat in the cooler hours of the day, or help remove heat in the hottest periods. Either way the demand on the buildings heating or air conditioning system will be reduced – possibly reduced down to zero.

it will take a year or so for ThermalCore to be fully tested so don't ask your retailer for it quite yet.

Making sure that a thermal mass or phase change product is optimized will mean a heavy layer of insulation on every exterior surface of the home or commercial building. Thanks to research and development folks at Dow chemical, the task of insulating a structure is in the process of becoming much more pleasant: The company has an itch-free alternative to fiberglass insulation, arguably the most popular type of insulation.

Some fiberglass insulation is incapsulated and glass fibers spun differently to keep the itch at bay. Dow's alternative to glass fiber insulation is dubbed SAFETOUCH (tm) and is made from polyester fiber like that used in clothing and bedding. There is no need to wear gloves, goggles and masks to install it. There is no glass dust. (The protective clothing you might wear would be for protection against existing insulation.)

It can be installed in the same places and in the same way as itchy fiberglass including a home's exterior stud walls, sound deadening interior walls, basement walls and ceiling, attic floors, and crawl spaces. It can be torn to fit with bare hands without gloves and masks.

The company has announced that SAFETOUCH is now available in 53 demographic market areas, including my local Lowes home improvement store. (I looked. It's there.)

Under the new American Recovery & Reinvestment Act of 2009, homeowners who purchase SAFETOUCH may be eligible for a tax credit of up to 30% of the amount paid for the qualified energy efficiency improvements.

I wonder if itch free polyester insulation could someday be manufactured with recycled plastics. I'm guessing the high-tech, green-leaning folks at Dow are thinking about this.

Links:

ThermalCORE
<http://www.thermalcore.info>

National Gypsum
<http://www.nationalgypsum.com>



Dust and itch free insulation installation makes energy conservation more appealing.