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Really Cool Innovative Insulation Materials: Latest in Future Green House Planning

Posted on 24. Dec, 2012 by [Maryruth Belsey Priebe](#) in [Articles](#)

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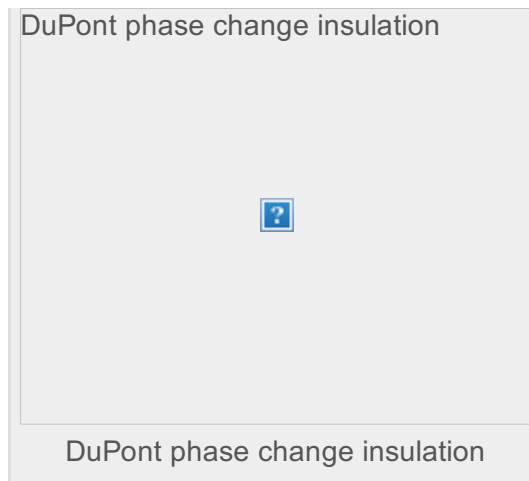
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The building materials industry is constantly innovating, and that means there's always a new crop of really cool green construction materials to check out. For instance, there's always a lot going on in the world of insulation, as you'll see from these three really cool insulation innovations:

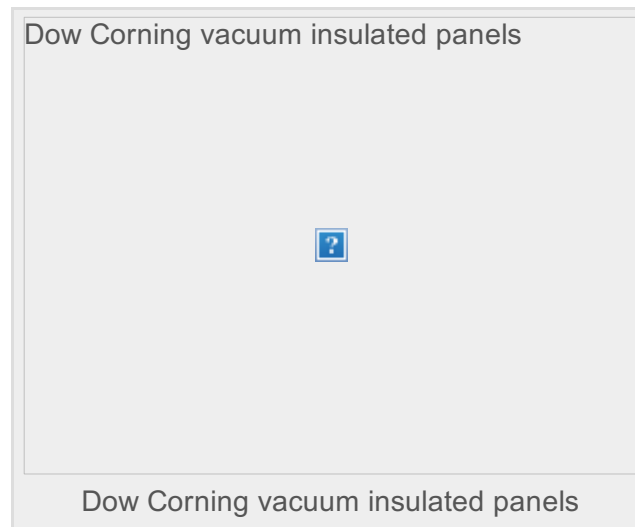
- **Phase change materials:**Essentially a phase change insulation material will absorb heat in one state (usually liquid) and store it until it reaches a certain transition temperature, at which time it changes state (usually into a solid) to release the heat.

The temperature range for the phase changes is usually about 7°C and intended for short-term passive form of heating. Phase change materials are typically used for wall and ceiling boards and at this point are fairly expensive. DuPont currently has a phase change insulation product, [Energain](#), which is available in the UK and is said to provide between 15% and 35% energy savings.



- **Vacuum insulated panels:** This thermal insulation material consists of a gas-tight envelope that surrounds a rigid air-free core. This type of insulation offers better efficiency than conventional insulations, and is said to retain its R-value for 30 years, which is much better than typical insulations. The only downside to this type of material is that it has a rather rigid quality, meaning less structural flexibility.

Dow Corning has developed their own [Vacuum Insulation Panel](#) which they say provides between five and 10 times more thermal resistance than regular insulation materials, though it's still more expensive. Sanyo has a similar product, their [Patented VIPs](#), which allow you to reduce wall thickness by 50% because of their thin construction.



- **Aerogel:** A material developed for space travel, Aerogel is a material composed of nanometer-sized, extreme microporosity that possess very low

conductivity, and is known as the world's lowest density solid. Aerogel is made by using high temperatures and pressure-critical-point drying of a silica gel, and has been used on the Mars Pathfinder and Stardust missions to insulate electronics and capture comet dust. Several companies are looking for more down-to-earth applications, including [Aspen Aerogels](#) who are developing an ultra-thin aerogel insulation for buildings and industrial uses. See more pictures of aerogel via [NASA](#) or buy a sample via [Thinkgeek](#).



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