



Solid-State Phase Change Floor Tile for Use in Passive Solar Applications

The importance of energy conservation and efficiency is now quite clear. The use of passive solar systems integrated into residential and commercial structures offers an efficient mechanism to increase energy and cost savings. The use of Phase Change Materials (PCMs) incorporated in trombe walls, ceilings and floors are examples of such passive solar energy applications.

PCMs work by absorbing latent heat during a change in phase from solid to liquid. The stored energy is then released on a reversal of the phase of the materials. Different types of PCMs have been tested in different settings, from attic insulation to wallboard. Construction materials incorporating PCMs have been estimated to save up to 20% of house space-conditioning costs.

Researchers in the Department of Mechanical Engineering at Colorado State University have developed a prototype floor tile that uses microencapsulated PCMs. The microcapsules contain the phase change material as it changes phase from solid to liquid and back again. These prototype tiles incorporating microencapsulated PCMs have been found to reduce annual heating costs by an average of 24%.

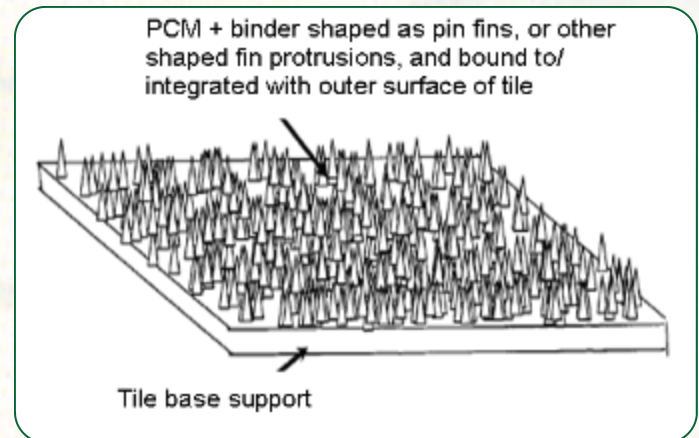
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Patent Information

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Inventor Information

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Features and Benefits

- Phase change materials (PCMs) offer extremely high heat capacity for storage of latent heat.
- Microencapsulation system contains the material while in liquid phase.
- Floor tiles incorporating PCMs reduce building heating costs by 24% or more.
- PCMs unobtrusive on underside of floor tile, do not affect aesthetic design of floor.

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