

What is the Product?

Shock Doctor Hotbed Insoles



What is it used for?

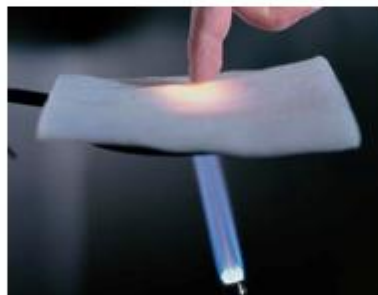
These shoe inserts retain warmth in cold conditions and insulate from heat in hot conditions

What's nano about it?

- This technology uses a material with high surface area and pores of around 10nm.
- Aerogel is a silicon (Si) based solid that is 99.8% air and 1000 times less dense than glass.
- The insulating properties of aerogel fabric (pyrogel) can protect against extreme temperatures in close proximity with limited material.
- A block of aerogel as large as a human weighs less than 1 pound but can support 1000 pounds.

How does it work?

- The aerogel material is very porous and has a very high surface area which traps more air and gives the material excellent insulating properties. The trapped air helps reflect the energy that your body gives off.
- The inserts offer lightweight support for your feet and is rated to be twice as effective as an insulator made of other materials used for insoles that is the same thickness.
- The chart shows the R-factor* rating per inch of aerogel compared to other materials.
- An inch of aerogel is more than 4 times more efficient than an inch of fiberglass and 2 times better than foam as an insulator.



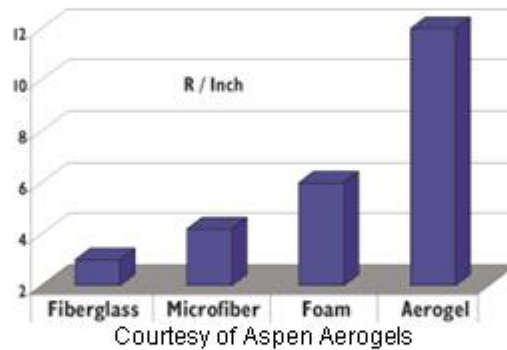
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- Pyrogel AR5401 is used for the shoe insoles. Pyrogel AR5401 is aerogel that is infused with carbon. The carbon helps to absorb odor.

Does it have other applications?

Yes.

- Jackets and gloves can be made thinner but still keep you warm in the winter.
- NASA uses this technology to keep astronauts safe in harsh conditions in outer space.
- Planes can use aerogel as an insulating material to lower the planes weight and increase the fuel efficiency.
- Due to its heat insulating properties, this material can be used for fire protective clothing.

Price?

The price is around \$13.00 for a pair of insoles.

Glossary:

- **R-factor**- This is a value that describes the insulating power of a specific material. Initially designed to describe how well radon gas is kept from passing through certain building materials.

This information was obtained from:

- The Jet Propulsion Laboratory at the California Institute for Technology
- Aspen Aerogels Inc.

