

Aerogel

Aerogel is the lightest and lowest-density solid known to exist. It is typically 50-99.5% air, yet can hold 500 to 4,000 times its weight in applied force!

COOL FACTS

- Aerogel is 99% air; it is very light but strong. A block of Aerogel as large as a human may weigh less than a pound yet it can support the weight of 1000 pounds.
- Aerogel is a very good thermal insulator. Aerogel can be used to protect objects from extreme temperatures.
- You can find Aerogel in space; it was used on the Mars Pathfinder rover. One use for Aerogel is in space where it collects very tiny dust particles. After a particle hits aerogel, it buries itself in the material comes to a stop. Then, the aerogel is returned to Earth where scientists can examine it more closely.



Aerogel is 99% air and appears blue to your eyes.

FAQ's

Q: Why is Aerogel blue?

A: The same reason the sky is blue! The very small particles that compose the aerogel scatter blue light more than any other color light which causes aerogel to appear blue.

Q: What is aerogel made from?

A: Aerogel is primarily made of silica. Silica is the name given to a group of minerals composed of silicon and oxygen, the two most abundant elements in the earth's crust. An example of silica is sand which made from quartz.

Q: What is aerogel used for?

A: Aerogel is a very good thermal insulator. It is very expensive now and is not used in households or buildings. However, in the future aerogel may be a common household insulator.

Q: Who invented aerogel?

A: Aerogel was first made in the 1930s by Samuel S. Kistler.

RELEVANCE TO OUR LIVES: Although many of us do not have aerogel in our homes, this does not make aerogel irrelevant to our lives! Aerogel is an important application of technology because of its unusual properties. Primarily, aerogel has been used by NASA to collect dust in space and as an insulator from the extreme temperatures encountered in space exploration. In the future, there will be more uses of aerogel closer to home. For example, transparent aerogel can be used as windows which would keep much more heat in buildings.

RESOURCES:

NASA Jet Propulsion Laboratory (JPL): Technology features aerogel

<http://www.jpl.nasa.gov/news/features.cfm?feature=490>

Microgravity Science: aerogel in your house

<http://science.nasa.gov/newhome/help/tutorials/housefuture.htm>

Time: 2002 Best Inventions

http://www.time.com/time/2002/inventions/rob_aerogel.html