

Mystery Sand

Can sand keep itself dry?

Description

In this activity, kids play with surprising sand that doesn't get wet!

Suitable for kids ages 3 and up.



Materials

“Magic” (hydrophobic) sand

Ordinary colored sand

Two containers for sand
(tubs with a flat bottom are best)

Water

Spoon

Eyedropper (optional)

Note: Hydrophobic sand is inexpensive and available at toy stores and on the internet—look for “magic sand” or “aqua sand.” Ordinary colored sand is available at craft stores and pet shops.



Time

Preparation: 5 minutes

Activity: 15 minutes or longer

Cleanup: 15 minutes

Safety

Use normal precautions while doing this activity. Avoid getting sand in eyes.

Step 1

Grown-ups, get everything ready!

Put the “magic” sand in one container and the ordinary sand in the other container.

Set out a small container of water, the spoon, and the eyedropper (optional).



Step 2

Kids, investigate the sand!

Check out the two kinds of sand. Can you see or feel a big difference?

Sprinkle a little water on both kinds of sand, using a spoon or eyedropper. Now can you see a big difference?



Step 3

Once you figure out which sand is special, there are lots of other fun things to try!

Use your finger to make a “path” in the sand. Put a drop of water on the path, and tilt the tray to make it follow the path.

Pour sand into the water and then scoop it out with the spoon. Is it wet?

Sprinkle a “raft” of sand on the surface of the water, and poke it gently with your finger. Can you use the sand to keep your finger dry?



What's going on?

The special sand has been chemically treated to repel water. This *hydrophobic* (“water fearing”) sand is coated with a silicon compound. The layer is only one nanometer thick, so the coated sand looks and feels like regular sand, but it behaves very differently.

Ordinary sand—the kind you find at the beach or a playground—gets wet. That’s because sand and water molecules are attracted to each other.



Hydrophobic sand

How is this nano?

The layer of silicon compound coating the hydrophobic sand is only one nanometer thick.

A nanometer is a billionth of a meter. That’s really, really small.



Your fingernails grow a nanometer every second!

Nano coatings

Nanotechnology takes advantage of the way things behave differently at the nanoscale to make new products and applications. Sometimes a nano-coating is all it takes to make ordinary sand extraordinary!

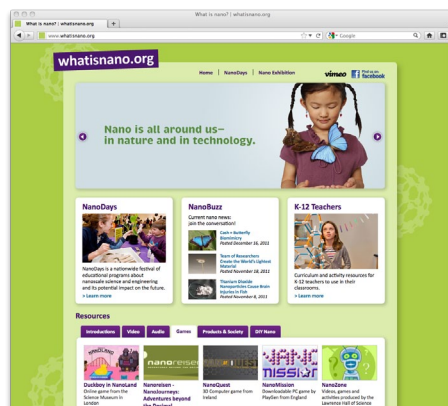
Hydrophobic sand was invented to clean up oil spills. It repels water but attracts oil.



Learn more

Learn more at:

www.whatisnano.org



Credits



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"Magic Sand," JCE Classroom Activity #23, Journal of Chemical Education 77(1): 40A-40B, January 2000.

Activity photographs, Gary Hodges Photography

Image of oil spill, www.istockphoto.com