

HOT VS COLD WATER DENSITY

Let's explore how cold water molecules and hot water molecules interact in this fun science experiment!

INSTRUCTIONS:

STEP 1: Fill one jar with cold water and add a few drops of blue food coloring. Fill the second jar with warm water and add a few drops of red food coloring.

STEP 2: Invert the Hot Water Jar: Place an index card on top of the hot water jar, ensuring it's tightly sealed with no gaps.

Stack the Jars: Carefully invert the hot water jar and place it on top of the cold water jar.

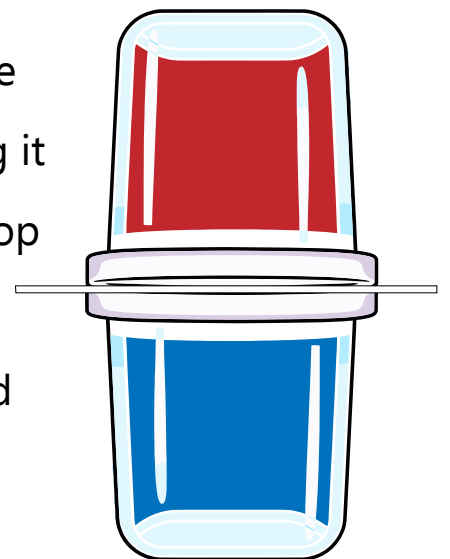
STEP 3: Remove the Card: Slowly pull out the index card so the jars are directly connected.

SCIENCE INFORMATION

Density tells us how tightly packed the tiny molecules are in a substance. In cold water, the molecules are closer together, making it denser or heavier. In hot water, the molecules spread out and move around more, making it less dense or lighter. This means hot water floats on top of cold water because it's lighter. But if you put cold water on top of hot water, the cold water will sink, and they will mix quickly. This experiment shows how temperature affects how things move and mix.

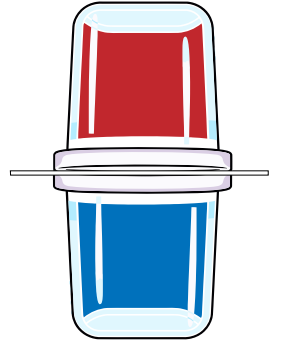
Materials

2 clear jars
(baby food jars work well)
Food coloring
(red and blue work best)
Warm (not boiling)
Cold water
2 index cards or
pieces of stiff paper



Hot vs Cold Water Observations

Use this worksheet to process and evaluate your work.



What happened to the colors when you removed the index card?

Do the colors mix immediately, or do they stay separated for a while?

Which water (hot or cold) seems to stay on top or sink, and why might that be?

Describe any visible lines or layers you see between the hot and cold water.

How do the molecules in the hot water appear to behave differently from cold?
