Dear Lindsay,
One of my co workers believes water can compress. I want to keep an open mind, as I am not my cube's resident physics expert, but he's wrong. Right?

Simon

Can you compress a liquid (water)?

Asked by: Guy Matthews

Answer

The answer is **yes, You can compress water**, or almost any material. However, it requires a **great deal of pressure to accomplish a little compression**. For that reason, liquids and solids are sometimes referred to as being incompressible.

To understand what happens, remember that all matter is composed of a collection of atoms. Even though matter seems to be very solid, in actuality, the atoms are relative far apart, and matter is mostly empty space. However, due to the forces between the molecules, they strongly resist being pressed closer together, but they can be. You probably have experienced compressing something as hard as steel. Have you ever bounced a steel ball bearing off a sidewalk? When you do that, the 'bounce' is due to compressing the steel ball, just a tiny little spot that comes into contact with the sidewalk. It compresses and then springs back, causing the bounce.

The water at the bottom of the ocean is compressed by the weight of the water above it all the way to the surface, and is more dense than the water at the surface.

A consequence of compressing a fluid is that the viscosity, that is the resistance of the fluid to flow, also increases as the density increases.

This is because the atoms are forced closer together, and thus cannot slip by each other as easily as they can when the fluid is at atmospheric pressure.