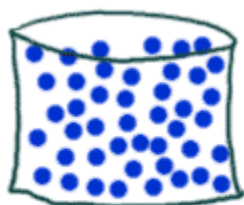


Tap Water



Distilled

## MIXTURE BASICS

Mixtures are usually how you find things in nature. Rocks, the ocean, just about anything you find. They are substances held together by **PHYSICAL**

**FORCES**, not chemical.

When you see distilled water, it's a pure substance which means that there are just water molecules in the liquid. A mixture would be a glass of water with other things dissolved inside, maybe salt. Each of the substances in that glass of water keeps the original chemical properties. So if you have some dissolved substances, you can boil off the water and still have those dissolved substances left over. It will take a higher temperature to melt the salt.

## MIXTURES ARE EVERYWHERE

There are an infinite amount of mixtures. Anything you can combine is a mixture. Think of everything you eat. Just think about how many cakes there are. Each of those cakes is made up of a different mixture.

Solutions are also mixtures. If you put sand into a glass of water it is considered to be a mixture. You can always tell a mixture because each of the substances can be separated from the group in different physical ways. You can always get the sand out of the water by filtering the water away.

## CONCRETE AND SALT WATER

Two classic examples of mixtures are concrete and salt water. You can see them both being made everyday. Concrete is a mixture of lime (CaO)/cement, water, sand, and other ground-up rocks and solids. All of these are mixed together. Workers then pour the concrete into a mold and the concrete turns into a solid (because of the cement solidifying) with the separate pieces inside. While the cement hardening might be a chemical reaction... The rocks and gravel are held in place by physical forces and used for added strength. The rocks and gravel are not chemically bonded to the cement. The gravel is also not evenly distributed, there are still pieces here and there. The concentrations change from area to area. Salt water is a little different. First, it's a liquid. Second, it's an ionic solution. The salt is broken up into sodium (Na) and chloride (Cl) ions in the water.



Now you might be wondering why concrete and salt water are not new compounds when they are all mixed together. The special thing is that the basic parts can still be removed by physical forces. You can take the solid concrete and grind it up again. The individual components can then be separated and you can start all over. Salt water is even easier. All you have to do is boil the water off and the salt is left over, just like when you started.

The thing to remember about mixtures is that you start with some pieces, combine them, and then you can do something to pull those pieces apart again. You wind up with the same molecules (in the same amounts) that you started with.

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