



Concrete

Have you ever watched concrete being poured? Making concrete seems pretty easy, doesn't it?

In fact, it takes skill. That's especially true in the construction of large structures, such as skyscrapers.

Many people think that cement and concrete are the same thing. But there is a difference. Cement is a substance that serves as a binder—sort of a glue. Concrete is a **mixture** of cement, water, and *aggregate*. Aggregate can be sand, gravel, or crushed rock.

Other materials can be added to give concrete special properties. For example, a certain material might make concrete harden more quickly.

An early kind of cement was “natural cement.” This was a mixture of limestone and clay that was mined in mountains. The mixture was heated and then ground to a powder. The cement used most widely today is Portland cement. It is much like natural cement but is manufactured very precisely.



Left: Concrete has rocks mixed with cement and sometimes iron bars to reinforce it. Above: Cement is a smooth powder that water gets added to.

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When making concrete, it is important to get the mixture of materials just right. If the mixture isn't correct, the concrete might shrink too much. Or it might be rough and weak.

As concrete hardens, it undergoes a chemical reaction. Substances in the cement bind with water molecules, giving the concrete a solid structure.

To make concrete even stronger, steel bars are often added to it. This kind of concrete is called *reinforced concrete*.



A total of 6.6 million tons of concrete were used to make Hoover Dam!



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✓ Brain Check

- What is the difference between cement and concrete?
- What is natural cement?
- What is reinforced concrete?