FAQs

Home
About Us
Contact Us
FAQs
Calculators
Do It Yourself
Web Cams
Site Map
Concrete Quiz
Hot Weather Tips
MSDS

Table of Contents

What is concrete?

Concrete is a material made from cement, aggregates (rock and sand), water, and admixtures (chemicals that enhance or modify the properties of concrete). Concrete is one of the most widely used and versatile building products known to man.

Back to Top

What is cement?

Cement, or Portland cement, is a dry powder made from limestone and other materials. It is burned in a kiln and then ground finely. Cement reacts chemically with water to cause concrete to harden. There are several different types of Portland cement, designated as Type I, Type II, etc.

Back to Top

What is ready mix?

Ready mix, also known as ready mixed concrete, is a type of concrete that is delivered in trucks that agitate and/or mix the concrete on the way to the job or at the job site. The concrete is delivered in a plastic, unhardened state. The truck-mounted, revolving drum mixer was invented by Stephen Stepanian. Stepanian filed the first truck mixer patent application in 1916.

Back to Top

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What is the difference between cement and concrete?

Cement is an ingredient in concrete. It is the ingredient that forms a paste with the water, sand, and admixtures and fills the space between the coarse aggregates (rock) and binds the rocks together. The term "cement" is commonly misused to refer to concrete.

Back to Top

What is flyash?

Flyash is a byproduct of coal-burning power plants. When used properly in concrete, it improves the quality of the mix and saves money. Concrete with flyash will typically have a higher ultimate strength, although early strength will be lower than with straight cement. Sometimes users will complain about "too much flyash in the mix." That is rarely the problem. More often the problem is not enough cement in the mix.

Back to Top

What do you do when concrete hardens in the truck?

First of all, you do everything you can to prevent that from happening. If it happens anyway, then you get inside the mixer drum with an air hammer and break it out. It is a difficult job and nobody likes to do it.

Back to Top

How much does concrete weigh?

Normal weight concrete weighs about 4000 lb. per cubic yard. Lightweight concrete weighs about 3000 lb. per cubic yard.

Back to Top

How much does a concrete truck weigh?

If a truck is carrying 10 cubic yards, then the weight of the concrete is 40,000 lb. The truck will weigh approximately 26,000 lb. for a total of 66,000 lb.

Back to Top

What is finishing?

Finishing is the process used to create the surface texture of the completed concrete pour. Finishing involves several different steps. Depending on the type of surface desired, it can involve striking off, floating, edging, jointing, troweling, texturing, and curing.

Back to Top

When is it too cold to place concrete?

It depends. Concrete will not set when the concrete temperature is below about 35F. Many times specifications will say something like "Concrete may not be poured when the temperature is 37F and falling." With heated water and aggregates, accelerating admixtures, and other methods, jobs can be poured below freezing, but it is more expensive. In most southern states there are so few freezing days that it is not worth it to try to pour when the temperature is below freezing.

Back to Top

When is it too hot to place concrete?

It depends. High temperatures (90F and above) cause concrete to set faster. High temperatures also reduce the strength of concrete. Strong winds and low humidity can also cause problems with plastic shrinkage and drying shrinkage cracks, even at moderate temperatures. To avoid these problems, planning, timing of the finishing operations, proper use of retarding admixtures, and proper curing are necessary. More...

Back to Top

Is there really a cement shortage?

Supplies of cement, the key ingredient in concrete, are sometimes very tight. Several factors are involved.

First, strong construction markets cause increased demand. If winter weather is good, there may be little opportunity to prepare a large inventory for spring construction activity.

Another factor is the availability of imported cement. The booming Asian economies are straining worldwide cement capacity and shipping availability. These conditions make imports of cement more expensive and difficult to acquire.

Regulations and a "build it anywhere not anywhere near anything" attitude have restricted increases in domestic production. Domestic plants have not kept up with the increased demand. In Texas, demand is much greater than the amount of cement produced in Texas.

Back to Top

Where do your raw materials come from?

The cement comes from plants in Midlothian, Texas. The natural river sand we use comes from the Trinity River bottoms southeast of Dallas. Crushed limestone, the primary coarse aggregate we use, comes from quarries near Bridgeport, Texas.

Back to Top

Why does my concrete job cost so much?

Concrete is the most versatile and economical building material in the world, but there are costs involved in doing the job properly. The cost of the concrete itself is a relatively small percentage of the overall job. Insurance, labor, benefits, materials, excavation, hauling, disposal, supervision, taxes, tools, and equipment are some of the expenses a contractor faces. If you receive a "cheap quote" it is probably because the contractor is not including all of these things. For example, they may not have insurance, which can be more expensive than the cost of the concrete. However, if they don't have insurance, the job could end up costing you many times the original quote.

Back to Top

When can I drive on my new driveway?

It depends on many variables, two of which are mix design and temperature. If you need your driveway quickly, ask your supplier to provide a high early strength mix. Normal concrete will reach 1/3 of its ultimate strength in 3 days, 2/3 in 7 days. Ideally, you should wait 7 days, however that is not always possible. Some high early strength concrete mixes can be driven on in 24 hours or less.

Back to Top

Does concrete hurt the environment?

Actually, concrete construction is environmentally friendly. Concrete is energy efficient. Concrete contains recycled materials. Concrete reduces urban heat islands. Concrete is manufactured locally. Concrete structures are durable. Concrete pavements can be recycled. The raw materials used in concrete come from the most abundant minerals on earth.

Back to Top

What are those orange spots on my sidewalk?

It may be fertilizer. Some fertilizer includes iron, and when the granules get wet on the concrete they leave rust spots. Fortunately, the effect is temporary.

Back to Top

Can I put a topping on my concrete floor?

It depends. Keep in mind that any cracks in the underlying surface will probably be reflected in the new surface. For thin overlays up to 2 inches, polymer-based overlay cement products should be used. One product is good for applications in the 0- to 1/8-inch category, another for up to 1/2 inch, and another for 2-inch-thick applications. Polymer cement products have good flexural and tensile strength ratings and are much more crack-resistant. They also have much higher compressive strengths than regular concrete.

For toppings of 2 or more inches, a very rough profile on the existing floor is needed. Shotblasting or chipping will give the new floor a surface to bond to. The day before you place concrete, wet down the surface and keep it wet until you place concrete but don't have any standing water on the slab during placement. For bonding, use a 50% mix of portland cement and sand slurry. You can use a 50% mix of water and latex bonding agent (like Acryl 60) to make the slurry. Squeegee or sweep with a stiff broom the slurry into the existing floor just ahead of concrete placement. The slurry must not dry before concrete is placed over it. Consult your ready mix supplier for the proper concrete mix to use for topping.
Source: *Concrete Construction,* February 2003

Back to Top

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