

Properties of concrete



The concrete, refers to the general name of engineering composite that the cementitious materials set the aggregate cemented into the whole. Generally speaking the concrete refers that cement as cementitious material, sand and stone as aggregate; mix with water (with or without admixtures and additives) according to certain proportion, by mixing, molding, curing, the product is called cement concrete, also known as ordinary concrete, it is widely used in civil engineering.

Properties of concrete:

Peaceability

The most important performance of concrete mixture is peaceability. It said the consistency of mixture properties, fluidity and plasticity, anti segregation bleeding and easy plaster etc. Determination and workability of mixture has many, China mainly adopts the determination of concrete slump cone cylinder slump (mm) and measured Vebe time by Vebe instrument (seconds), as the main indicators of consistency.

Strength

The most important mechanical properties of concrete is strength, which resistance to pressure, pull, bend, shear. The strength of concrete is directly affected by water cement ratio, the variety and dosage of cement, the variety and dosage of the aggregate, mixing, molding and curing. According to the standard of concrete compressive strength, known as the label, divided into C10, C15, C20, C25 etc.

The tensile strength of concrete is only 1/13 to 1/8 of its compressive strength. It is an important aspect of concrete modification to improve the ratio of tensile and compressive strength of concrete.

Deformation

Concrete will produce deformation under the action of load or temperature and humidity, which mainly include elastic deformation, plastic deformation, shrinkage and temperature deformation. The elastic deformation of concrete under the short-term load is mainly expressed by the elastic modulus. Under the action of long term load, the stress is constant, the phenomenon of continuous increase of strain is creep, the strain is constant, and the phenomenon of continuous reduction of stress is relaxation. The volume deformation caused by hydration of cement, carbonization of cement stone and water loss is called shrinkage.

The deformation of concrete is divided into two categories, one is under load deformation, such as deformation, monotonous short-term loading loads and deformation under repeated loading; another has nothing to do with the force, known as the volume deformation, such as deformation caused by concrete shrinkage and temperature change.

Durability

In general, concrete has good durability. But in cold areas, the concrete is easily damaged, especially when the water level changes in the engineering parts and in the condition of frequent freezing and thawing under the condition of full water. To this end, the concrete needs to have a certain degree of frost resistance. When used for water impermeable engineering, the concrete is required to have good impermeability and corrosion resistance. The resistance to permeability, frost resistance and corrosion resistance is the durability of concrete.

