

Ferrocement tanks for water storage

The use of ferrocement for water storage tanks in developing countries is becoming increasingly popular. It is a particularly simple and cost-effective method of construction. Ferrocement consists of cement mortar reinforced with layers of welded and/or woven wire mesh, sometimes with the addition of a plain wire hoop reinforcement for added strength.

The mortar mix

The mortar mix is usually 1:3 cement:sand by dry volume. The thickness of the reinforced wall of a ferrocement tank is typically less than 50mm, built up from two or three layers of cement mortar. Fairly coarse clean sand, fresh cement and good workmanship are essential to produce good ferrocement. Curing the fresh mortar by keeping it damp for at least a week is also important to improve watertightness and strength.

Construction

If fine wire meshes (<5mm apertures) are available to cover a skeletal frame made of small diameter reinforcing bars (or welded mesh) then a tank can be constructed without needing formwork (shuttering). With these materials, mortar is pushed into the mesh from both inside and outside the tank. More usually firm shuttering is used on the inside of the tank and the first layer of mortar is applied to the reinforcement from the outside. One interesting method uses external formwork of nylon sacking, held tightly to the outside of the reinforcement by closely spaced spirals of string (see figure). With this method the first layer of mortar is applied from the inside of the tank.

Ferrocement can be added inside any existing leaking tank to waterproof it.

