

Why Fiber Mesh instead of Wire Mesh

While its not really this simple, the main uses for Fiber Reinforced Concrete (FRC) are to either 1) prevent micro cracking of the fiber in the plastic state (or before the concrete has hardened) and 2) to ensure tight crack control in the slab if (or when) the slab cracks... otherwise known as “secondary reinforcement”.

Wire mesh in a concrete slab for a court is used exclusively for secondary reinforcement. The sole purpose of the wire mesh in a concrete slab is to try to hold the slab together if it cracks (assuming its actually placed properly in the slab when its poured, which oftentimes it is not). The wire mesh does not offer any plastic state micro crack prevention (aka plastic shrinkage or plastic settlement crack prevention).

Fabpro’s Performax Macrosynthetic fiber, which is the product we would bring with us, is an alternative to traditional wire reinforcement for secondary reinforcement and delivers extremely tight crack control for the slab if it cracks. An additional benefit of the Performax product is that it also offers plastic state micro crack prevention as well.

The performance benefits of synthetic fibers for use as secondary reinforcement can be quantified by an ASTM test method such as ASTM C1399, which delivers an Average Residual Strength performance value of a given fiber. The fiber is tested at different dosage rates (lbs. of fiber per cubic yard of concrete) to allow us to compare to the secondary reinforcing performance of the wire mesh, and ultimately determine the correct fiber dosage rate to be used to replace the specified type of wire mesh for a particular slab. For Courts for Kids projects, the dosage rate of Performax to be used in your courts was determined by using Performax’s ASTM C1399 performance ARS data in comparison to the wire mesh you were intending to use.

The goal of either Wire Mesh or Fiber Mesh in a concrete slab is to provide tight post crack control. In theory, if you could be guaranteed that the concrete wouldn’t crack ever, you wouldn’t need either the wire mesh or the synthetic fibers. However, in the real world, all (or certainly almost all) concrete will crack. Macrosynthetic fibers such as Performax do a fantastic job of managing the size of the post cure cracks when they occur, but also help to prevent the microcracks that occur in the plastic stage of the curing process that can lead to post cure cracks.

We have available a more technical explanation if an engineer is looking for a more detailed analysis.



Wire Mesh laid down before pouring concrete



Fiber Mesh inserted into every mix of concrete.