

## Why Use Fiber?

Plastic shrinkage cracking is one of the most common issues when laying concrete. Although minor cracking is almost expected to happen to any concrete, the severity of the cracks as well as number of cracks can be greatly reduced with the use of fibers.

When moisture evaporates faster than it is replaced by bleed water during the plastic state, the surface concrete shrinks. This shrinkage can cause cracks in the surface which may or may not cause structural issues.

Even after the plastic state, your concrete continues to dry. This is referred to as drying shrinkage that happens over an extended period of time. Concrete joints are done during this period to allow the concrete to crack in a controlled pattern. Fiber reinforcement holds these controlled cracks tight to help prevent unplanned cracking and improve the durability of the concrete in place of traditional rebar or welded wire mesh.

Fiber serves two main purposes:

1. Reduce shrinkage cracks.
2. Provide reinforcement in place of traditional rebar or welded wire mesh.

How to use Fiber:

This is probably the easiest step in concrete placement. There is no installation as fibers come in water soluble bags. These bags are added to the truck at the plant and evenly distributed as the concrete is mixed on its way to the delivery site. The only thing you have to do is ask for fibers when ordering your concrete and the rest is taken care of.

Types of Fiber:

There are many kinds of fiber but only two main types:

Type 1, or synthetic fibers, are intended to reduce early shrinkage cracking, drying shrinkage, and temperature cracking during the plastic state. Think of Synthetic fibers as thousands of tiny threads holding the concrete together.

Type 2, or steel fibers, are intended to not only reduce shrinkage cracking but can also be used in place of traditional reinforcement methods such as rebar and welded wire mesh. Steel fibers are often a blend of steel threads and synthetic fiber threads.

### Type 1

FiberMesh 150: Use for Plastic shrinkage cracks. The FiberMesh 150 should be used when aesthetics is an issue such as with colored and stamped concrete.

FiberMesh 300: Inhibits plastic shrinkage cracks and provides entry level secondary reinforcement. FM 300 can be used in place of traditional welded wire reinforcement.

FiberMesh 650: Use for plastic shrinkage and concrete toughness. FiberMesh 650 Can also be used as reinforcement, typically for residential sidewalks and driveways.

## Typical Uses for Type 1: Residential and Light Commercial

Slabs-on-ground

Garage floors

Patios

Driveways

Pool decks

Stamped and/or colored concrete

Sidewalks

Curbs

Parking areas

## Type 2

FiberMesh 950: Use for plastic shrinkage, concrete toughness, higher strength, and reinforcement. Most commonly used as a reinforcement for commercial work.

## Typical uses for Type 2: Industrial and Transportation

Heavy industrial flooring

Warehouses

Freezer floors

Joint-free concrete designs

City Street and intersections

Bridge deck overlays

Note: These are typical uses with recommended dosage per cubic yard from the manufacturer. Engineering or contractors recommendation may be different.

## Thinking Green: Fibers and Pervious Concrete

FiberMesh150 or 300, or any non-steel filament fiber, can be used in pervious concrete applications. Pervious concrete by nature absorbs excess water by pulling it from the surface to the reservoir below. Although the benefits of pervious for SWPP, landscaping, and LEED programs are many, pervious still remains underutilized. Its acceptance in areas that are considered freeze/thaw climates has been slow. Engineers and contractors have been reluctant to use pervious

for fear of excessive cracking or frost heave in freeze/thaw climates. The use of fibers in pervious concrete applications greatly reduces plastic shrinkage cracking and increases freeze/thaw resistance.

Note: Pervious concrete can only be placed by certified contractors. Improperly placed pervious concrete almost always has to be ripped out and replaced.