

# FIBERMESH®

## FREQUENTLY ASKED QUESTIONS

### Batching and Mixing

#### 1. Can fibers “ball up” in the concrete? **Yes**

All fiber types (steel, micro and macro synthetic) have the potential to “ball up” in the concrete mix. This can happen when the fibers are added into a mix that does not have enough fine particles. Once the fibers are coated by the fines and paste the chances of the fibers balling decrease. Steel fiber fibers can “ball” when they are not added at a consistent uniform rate (ribbon fed) into the mix. A trial mix should be performed to ensure that the mixture will support the fiber type, dosage and batching sequence.

#### 2. Do Fibermesh fibers float or sink in concrete? **No**

This is a misconception with absolutely no validity. Concrete is a composite material composed of rock, sand, cement, water and appropriate admixtures. Floating or sinking is based on the different specific gravities of materials. The important specific gravity is the specific gravity of concrete, which is greater than 2.0, the viscosity of concrete makes it difficult for either floating or sinking. However, specific gravity does play a role in the application rate of fiber reinforced concrete. The higher the specific gravity of a fiber, the lower the volume contribution is per pound of fibers employed. For example, Fibermesh polypropylene fibers (specific gravity 0.91) deliver 25% more volume of material per pound than nylon fibers (specific gravity 1.14).

#### 3. Do Fibermesh fibers absorb water from the batch mix? **No**

Polypropylene, the material used to manufacture all Fibermesh synthetic fibers, does not absorb water and is chemically inert. Some fibers, such as nylon, do absorb water. Fibers that absorb water can lead to problems with the mix design and future bonding of the fibers to the concrete paste structure.

#### 4. When are Fibermesh fibers introduced into the concrete?

Synthetic micro, macro or blend of micro/macro fibers should be introduced during the addition of the aggregates and water or at the end of the load of concrete. Five minutes mixing time or 70 revolutions, at full charging speed, will disperse the fibers throughout the concrete.

Steel fibers or micro/steel blend should be introduced during the addition of the aggregates and water or at the end of the concrete load. Steel fibers need a constant and uniform (ribbon fed) addition into the concrete mix. Five minutes mixing time or 70 revolutions, at full charging speed, will disperse the fibers throughout the concrete.

#### 5. Can Fibermesh fibers be mixed on the jobsite? **Yes**

The fibers can be mixed at the jobsite but the required time for the fibers to be thoroughly mixed throughout the concrete needs to be followed (see question 4). There are many advantages to adding Fibermesh fibers at the ready mix plant, including economics and safety.

#### 6. Can Fibermesh® fibers affect the use of admixtures? **No**

Fibermesh fibers work without affecting the chemical hydration of the cement. Their action is purely mechanical and is compatible with all concrete mixes and admixtures. Fibermesh fibers have no effect on the use of admixtures. However, fibers manufactured of other materials, which are absorptive, should be tested prior to their inclusion with chemical admixtures.

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7. Do Fibermesh fibers affect the water/cement ratio of concrete? **No**

There is no need for mix design changes, such as water/cement ratio when Fibermesh fibers are employed. Typical application rates have no effect in water/cement ratio.

8. Can Fibermesh fibers affect the slump of concrete? **Yes**

Apparent slump loss is often a function of the length, application rate, and type of fiber employed. Slump is not the same as workability. Properly engineered concrete fibers increase the cohesiveness of the concrete mix, which produces a more favorable consistency at the same slump. It is recommended that a super plasticizer be added if an adjustment to the slump is required. It is a good practice to perform a test pour prior to placing fiber reinforced concrete.

9. Do Fibermesh fibers affect the workability of concrete? **Not at typical dosage**

The dynamics of fresh concrete while standing still (slump) are not necessarily the same as the actual dynamics of fresh concrete while in motion (workability). A gross misconception exists regarding slump/ workability. In the field, it is often incorrectly believed that a slump test is a test of workability, when in fact slump testing only correlates the mix with gravity. Only at unusually high dosages will fibers affect workability.

10. Do Fibermesh® fibers entrain air? **No**

Fibermesh fibers do not affect air entrainment nor do they create air entrainment. Sometimes fibers can produce entrapped air (0 to 1%) since, they can act like paddles bringing air into a mix. Entrapped air can be vibrated out of the concrete.

11. Do Fibermesh fibers affect concrete yield? **No**

The typical application rate of Fibermesh fiber reinforcement has no effect on yield.

12. Do Fibermesh fibers affect the unit weight of concrete? **No**

Unit weight of concrete is based on exact proportioning of the mixture and air content. Fibermesh fiber reinforcement has no effect on unit weight.

13. Do Fibermesh fibers affect the use of fly ash? **No**

Fibermesh fibers are mechanically anchored in the paste fractions of the concrete. Their use with any cementitious or pozzolanic component, such as fly ash, affects neither the Fibermesh fibers nor the fly ash composite.

14. Do Fibermesh fibers work with silica fume enhanced concrete? **Yes**

Silica fume is used in concrete to produce high strength concrete. The resulting dense, high strength concrete is more brittle and prone to plastic cracks. Fibermesh fibers greatly enhance the benefits of silica fume concrete due to their ability to reduce plastic crack formation and transform a very brittle material into a more ductile one.

15. Do Fibermesh fibers work with all cement types (I-II-III-IV-V)? **Yes**

Fibermesh fibers mechanically reinforce the paste areas of the concrete and work with all cement types.

16. Do Fibermesh fibers work with lightweight aggregate? **Yes**

Fibermesh fibers have been tested for use with lightweight aggregate. A series of comparison testing shows that Fibermesh fibers have a beneficial effect on lightweight concrete. All of the Fibermesh plastic and hardened concrete benefits are achieved with lightweight concrete.

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