TECHNICAL BULLETIN FC-4

FAQs ON SLUMP, AIR CONTENT & COMPRESSIVE STRENGTH WHEN USING TUF-STRAND SF

EUCLID CHEMICAL

Q: How much slump loss can I expect with the use of TUF-STRAND SF?

A: Depending upon the applied dosage rate, a slump loss can be expected with the use of just about any fiber type on the market. The higher the fiber content in the concrete mix, the higher the potential loss of slump of concrete. All fiber types act like aggregates in the concrete mix and are required to have paste coating the individual strands. The more surface area to cover, the higher the paste demand within the mix. The more paste covering the fibers, the less available to act like a lubricant within the mixture and loss of slump will occur.

Specifically to TUF-STRAND SF, the unique design of the fiber is that it increases surface area, through self-fibrillation, while mixing, maximizing its bond within the concrete. Generally, it is recommended to mix TUF-STRAND SF for 4 to 5 minutes for normal concrete mixtures in ready-mix operation after all other mixture constituents have been added. For these types of applications, slump loss of 1 to 5 in. (25 – 125 mm) can be expected for dosage rates of 3 to 10 lbs/yd^3 (1.8 – 6 kg/m^3) respectively. Slump loss should be countered by the use of plasticizing agents such as mid to high range water reducers. The use of water will impact the compressive strength and possibly cause segregation of the concrete mix. For more detailed information on different mixing applications and concrete mix designs, please contact your local Euclid Chemical Sales Representative.

Q: Will the use of TUF-STRAND SF impact the air content or compressive strength?

A: Generally, the use of fibers does not adversely impact the air content or compressive strength of concrete. It may sometimes be perceived that strength or air is altered, but this is usually caused by excessive mixing, addition of water, higher temperatures and/or incorrect measurement of moisture in aggregate stockpiles. Air fluctuations can also be attributed to changes in actual slump of concrete – Note that the fibers only alter the visible slump and that fiber reinforced mixtures should have slump flow measured under vibration such as using an inverted slump cone. Concrete mixtures that have low cement contents may sometimes not support the use of higher dosages of fiber and mixing problems will result, usually in the form of "fiber balls" or "stony" mixtures. At all times, ensure that the slump of the concrete does not fall to zero (no slump or workability).

For additional questions, comments or further explanations, please feel free to contact The Euclid Chemical Company at your convenience.