SOLOMON
UltraFiber 500®
www.ultrafiber500.com

For Unsurpassed Secondary Crack Control and Automated Fiber Dispensing Technology

Comparison of UltraFiber 500® Alkali Resistant Cellulose Fiber versus Synthetic Polypropylene Fiber for Secondary Reinforcement

Fiber Characteristic	Solomon UltraFiber 500®	Typical Polypropylene	Advantages of Using UltraFiber 500®
Plastic Properties	Min. Impact	Sig. Effects	UltraFiber 500® does not reduce concrete slump or increase air content, thus providing better concrete workability, strength, and density
Placement/Finishing	No special finishing required	Special finishing required	No surface balling, blemishing, or fuzz resulting in a properly sealed, smooth surface and fewer call backs
Strength Properties			
Compressive Strength* (psi)	5 - 15 % gain	Min. Impact	Enhanced internal curing of concrete results in greater compressive strength gains
Curing Effect	Improves/ Hydrophilic	No effect/ Hydrophobic	Improved cement hydration enhances concrete strength properties
Freeze/Thaw Resistance			
ASTM C666 (% ↑)	41	---	Consistently demonstrated improvements to freeze/thaw resistance result in more durable concrete
P18 - 425 (% ↓)	87	---	
Concrete Permeability** (% ↓)	67	---	UltraFiber 500® reduces water permeability of stressed and unstressed concrete which minimizes the potential for corrosion of structural rebar
Absorbency			
Absorption Rate ($mm/s^{0.5}$)	0.0033	0.0045 - 0.0054	Lower absorbency due to more uniform voids and finer porosity results in improved long-term durability
Water Absorbed (grams)	14.3	18.3 - 21.8	
Paste Bonding	Bonding	No bonding	Better bonding with paste results in fewer microscopic voids and openings
Fiber Tensile Strength (KSI)	90 - 130	30 - 70	UltraFiber 500® fibers are as strong as steel
Fiber Count (fibers/lb)	720×10^6	44×10^6	Over 700 million crack-fighting fibers disperse evenly throughout the concrete, facilitating their ability to intersect micro-cracks as they may form, dispersing tensile stress, and reducing macro-cracks
Surface Area (cm^2/g)	25,000	1,500	UltraFiber 500® enhances surface bonding of fibers to concrete, improving bond strength and reducing plastic shrinkage cracking
Fiber Spacing* (µm)	640	950	Closer fiber spacing intercepts more micro-cracks, reducing their growth, ensuring unsurpassed plastic shrinkage cracking control
Fiber Dispersion	No Clumps	Clumps	More uniform dispersion into concrete provides a more uniform performance
Fiber Source	Plantation wood Stable Pricing	Fossil Fuels Erratic Pricing	American-made from a renewable natural resource

*In concrete at 1.5 lb/yd^3
**At 50% stress level

SOLOMON UltraFiber 500 www.ultrafiber500.com	**WWF** **Welded Wire Fabric or Wire Mesh**
1. Reduction in plastic shrinkage cracks - ICC Code approved ESR-1032	Only holds concrete together after it cracks
2. Increases compressive strengths of plain non-reinforced concrete ASTM C39	No effect
3. Increases flexural strength of plain non-reinforced concrete	Increases tensile strength if properly placed (upper 1/3 of concrete slab)
4. Corrosion resistant	Corrodes when exposed to water and chemicals; aesthetics and possible disruption of concrete
5. Superior finish with no effect on workability of mix	No effect on finish, but difficult to maintain placement in slab
6. Easy to place in concrete mix - no minimum cover	Difficult to place, especially in rolls; 1" minimum cover required, upper 1/3
7. Easy to use and cost effective - no labor cost -no safety issues	Difficult to install and expensive - high labor costs - saftey issues
8. Provides three dimensional reinforcement	Provides reinforcement in one plane
9. Always positioned throughout concrete	Seldom - if in lower 2/3 of slab, no beneficial effect
10. Fibers bond effectively with concrete	Bond can deteriorate over time as a result of oxidation/rust
11. Alkali resistant ASTM D6942	Will deteriorate if not properly placed and protected
12. Improves freeze/thaw resistance	No effect
13. Improves curing/internal hydration	No effect
14 Improves impact and shatter resistance	Minor resistance provided if properly placed (upper 1/3 of concrete)
15. Meets or exceeds ASTM specifications	Only if certified
16. Absorbs sealers, color and stains	No effect
17. High bond strength to rebar	No effect
18. Hydrophilic fiber extends hydration process "Provides Internal Curing"	No effect
19. Product supplid in concrete from accurate automated fiber disperser	Storage difficult and detrimental if stored outside
20. American made from a renewable natural resource	Usually imported and rusty at installation