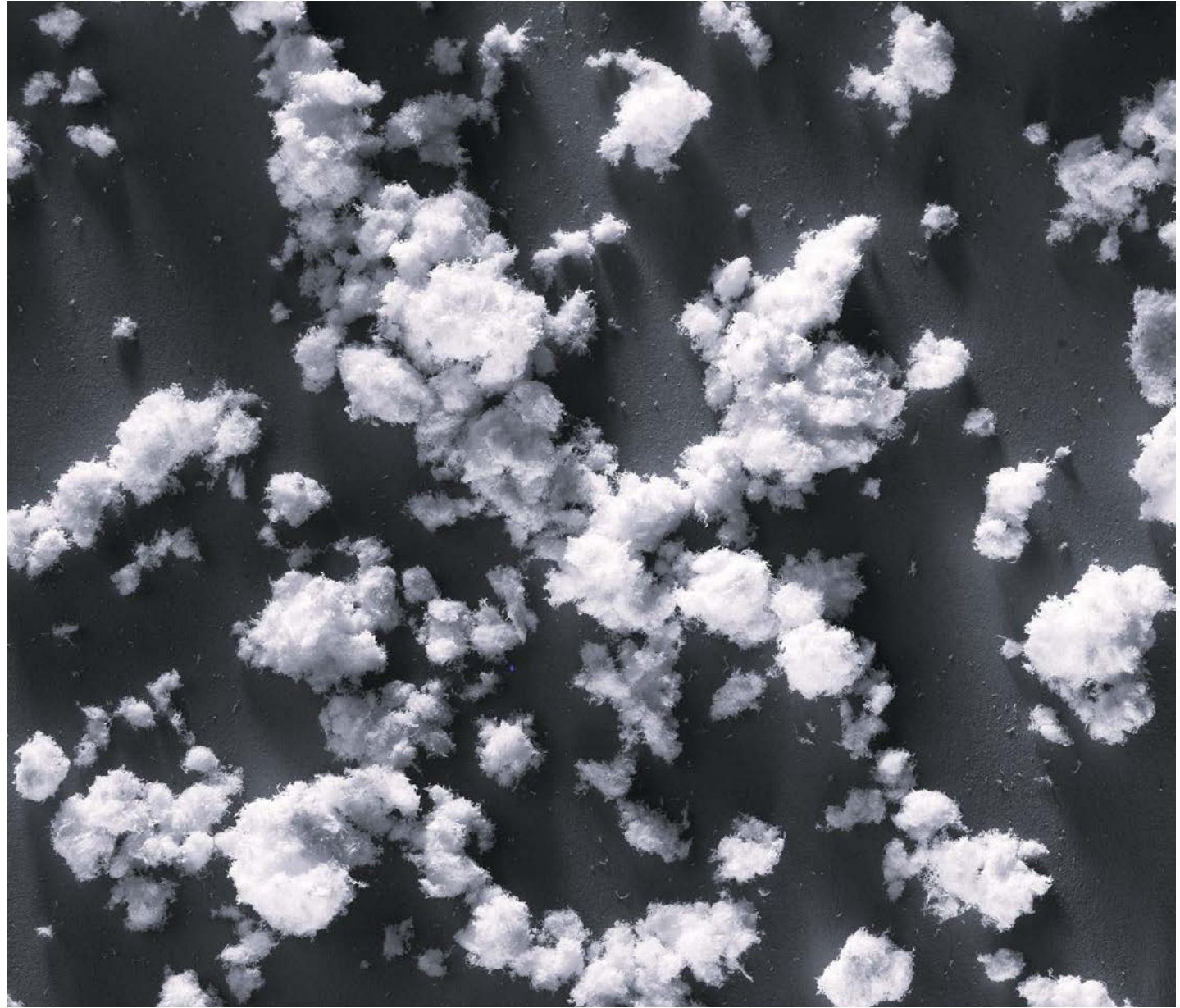


MINIFIBERS, INC.

SHORT STUFF® 101

An Introduction to Fibrillated HDPE

SHORT
STUFF®
Fibrillated
HDPE





SHORT STUFF[®]

What is it??

Short Stuff[®] is a highly fibrillated HDPE performance additive that also functions as an effective rheological modifier. It can be incorporated into a formula with other modifiers like bentonite clay or fumed silica, or it can be used to replace these.

Fibrillated – what does that mean?

- Fibrils
- A threadlike fiber or filament

Fibrillated HDPE vs. Other Fibers



Natural Pulp

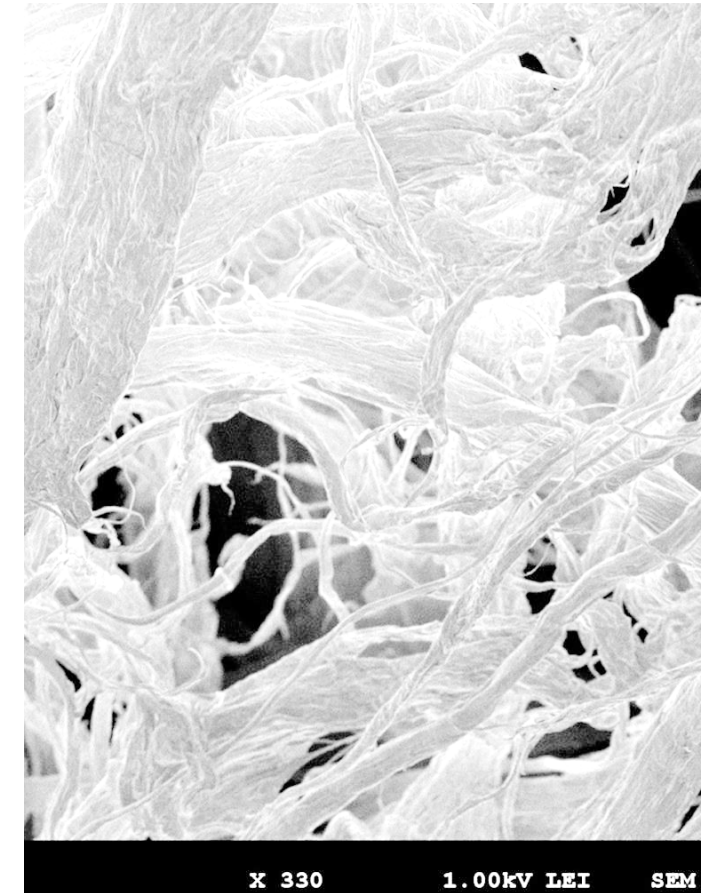


Short Stuff®

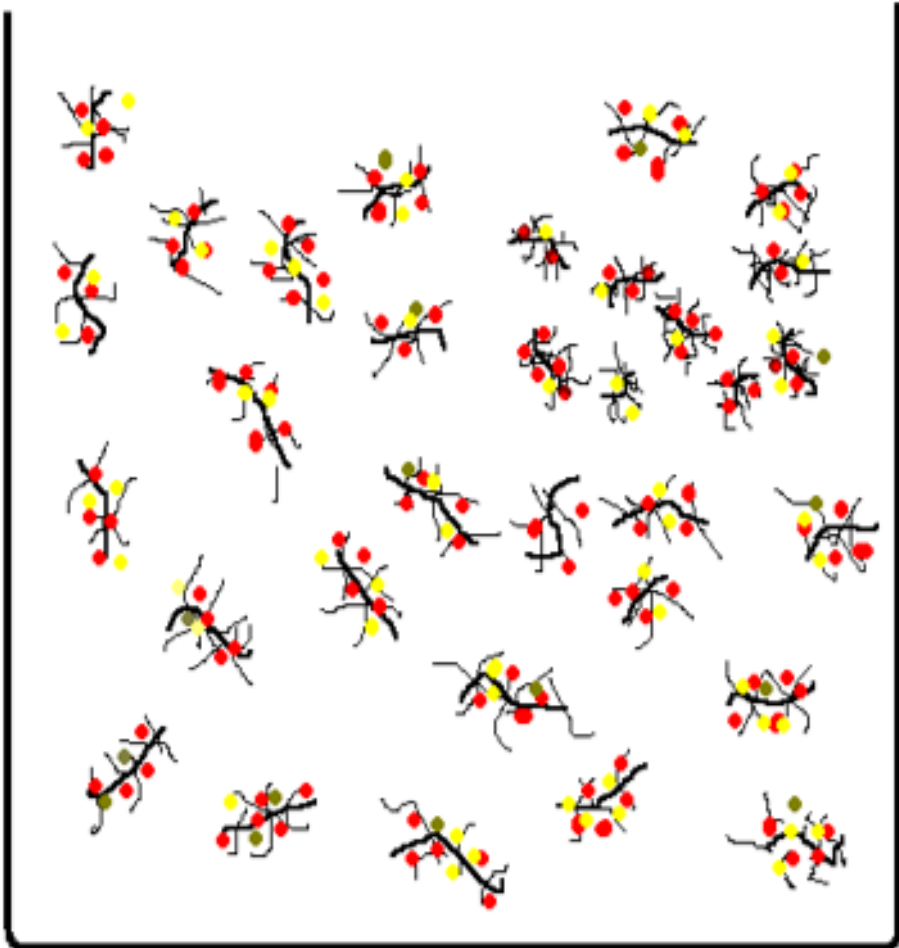


Polyolefin Fibers

The main branch can be up to 25 microns in diameter depending on the grade selected, but the three-dimensional structure is complex.



SHORT STUFF® - How does it work?



- Particles and fibrils entangle
- Provides suspension and prevents settling

The highly fibrillated structure of Short Stuff® develops a network in the liquid phase that provides anti settling, flexibility, reduced shrinkage during drying, and improved film build.

Short Stuff® works by physical presence only. There are no requirements for dispersant, cross-linking, pH activation, or minimum batch temperature.

Applications that Benefit from Short Stuff®

- Direct to Metal/Industrial Coatings
- Stucco/EIFS/Joint Compounds
- Pipe Coatings/HVAC Mastics
- Marine/Protective Coatings
- Construction Adhesives
- Grout/Tile Adhesives
- Epoxy Floor Coatings
- Cool Roof Coatings
- Concrete Repair
- Deck Coatings
- Shot Crete



Impact of SHORT STUFF® in Coatings

- Crack resistance – reduces shrinkage during drying.
- Improves tensile strength and elongation.
- Eliminates hard packing of large particles.
- Increases durability and wear resistance.
- Improves particle suspension.
- Provides thixotropic viscosity control.
- Improves film formation.
- Increases impact resistance.
- Adds texture if desired.

Impact of SHORT STUFF® in Cementitious Products

- Prevents dry crack shrinkage.
- Improves compressive strength.
- Improves flexural strength.
- Increases sag resistance.
- Provides excellent workability.
- Improves distribution of other dry ingredients.
- Enhances flow & application properties.
- Reduces rebound in shotcrete applications.

Properties of SHORT STUFF® Fibrillated HDPE

GRADE	ESS5F	* ESS50F	ESS2F	* ESS20F	E380F	* E505F	E620F	E780F	E990F
Average Length (mm)	~0.1	~0.1	~0.6	~0.6	~0.5	~0.6	~0.65	~0.9	~1.0
Diameter (microns)	5	5	5	5	15	15	15	25	20
Surface Area (m ² /gm) Measured by gas absorption	12	12	12	12	8	8	8	8	8
Melting Point	~135°C / ~275°F								
Moisture Content (%)	<2.0								
Specific Gravity (g/cm ³)	0.96								

* For improved dispersion in aqueous systems.



Manufacturing & Processing

- Hydrophilic grades should be added directly to the water early in the grind process.
- Hydrophobic grades should be added directly to the grind with fillers/pigments in water based or solvent based systems.
- Either grade can be post-added to most systems under moderate shear.



Short Stuff[®] Fibrillated HDPE is available from

MINIFIBERS, INC.

www.minifibers.com