

MINIFIBERS, INC.

Checklist for Using FybreTM Synthetic Pulp

FybreTM fibrillated polyolefin pulp has been used in many commercial papermaking systems and other systems designed for handling fibers. Runability of FybreTM has been very good; few problems have been experienced. This checklist is designed as an aid for planning and conducting trials in a wet process.

DISPERSION

- Many applications can tolerate some fiber bundles. Dispersion is then less critical, and conditions can be adjusted accordingly.
 - Union pulping: Add FybreTM to pulper, disperse, and then add wood pulp.
- A. CONSISTENCY
- * Recommend 2.0 to 3.0 wt% for first trial.
(A FybreTM slurry is slightly more viscous or heavier than a wood pulp slurry of same consistency.)
- B. TEMPERATURE
- * Dispersion quality improves as water temperature increases.
(Temperature for optimum dispersion is 50°C.)
- C. TIME
- * Depends on temperature, consistency, FybreTM grade or type, pulper design and dispersion quality needed.
(30 minutes is typical for good dispersion quality with E-400, 3% consistency and 50°C.)
- D. TEST
- * View diluted sample in glass cylinder or on blue glass.
(Addition of a thickener to increase viscosity greatly aids visual inspection of dispersion quality.)
- E. DEFLAKER OR DISC REFINER
- * A deflaker or disc refiner at low power can substantially improve dispersion quality.

REFINING

- FybreTM pulp does not need refining.
 - Cutting type of refining can shorten the FybreTM fibers (not desired). Brush refining can entangle or fuse the FybreTM fibers if plate clearance is too small or power input too high. Use visual test to check for fiber damage (see item D under DISPERSION).
- A. REFINING PROCEDURES
- * Best method is to add FybreTM pulp to pre-refined wood pulp.
(Especially important if wood pulp is heavily refined)
 - * Blends of wood pulp and FybreTM can be refined.

(Disc refiners have given best results. Too heavy refining can cause fiber bundles.)

B. MACHINE REFINING

- * Generally gives no problems.
- * Heavy refining can cause fiber bundles.

PAPER MACHINE

- Fybre[™] pulp behaves much like wood pulp, but is also plastic and thus sensitive to temperature and pressure.
- A certain machine clean-up frequency is associated with every paper grade. Furnishes containing Fybre[™] pulp will also have characteristic machine clean-up frequencies. This frequency must be determined by experience for each machine and grade in the same manner as with all-wood pulp furnishes.

A. WET END

- * May need small adjustments in headbox consistency, foils and vacuums.
- * No problems with trim or wet broke.
- * Very occasional problems have occurred with wire release from Fybre[™] fibers sticking into wire.

B. PRESSES

- * Usually no problems if the wood pulp furnish does not pick.
(Fybre[™] pulp furnishes generally have slightly more picking tendency than all-wood pulp furnishes.)
- * Normal cleaning (showers, doctors) is effective with Fybre[™] pulp.

C. DRYERS

- * Fybre[™] pulp melts at 125 to 135°C (E-type Fybre[™]), 105 to 125°C (UL-type Fybre[™]).
- * Recommend maximum dryer temperature of 115°C (E-type Fybre[™]), 105°C (UL-type Fybre[™]).
(At least during early trials until experience is gained)
(Web temperature will not exceed about 100°C until almost dry.)
- * Sticking occurs if dryer too hot.

D. YANKEE DRYER

- * Too high temperature can cause sticking.
(Maximum temperature depends mainly on web moisture leaving Yankee, Fybre[™] pulp content, furnish, and dryer surface condition.)
- * Recommend starting with low temperature (e.g. 85°C) and gradually increasing.
(Properly fitting doctor is important.)

E. FRICTION POINTS

- * Contact between stationary items and the moving web will generate heat and cause formation of plastic needles. Controls are:
 - (1) Remove friction point
 - (2) Limit heat buildup by web speed, tension, or external cooling.

F. CALENDER

- * Normally use lower loading than with wood pulp.

- * Too hot rolls can cause sticking.
- * Reduce web moisture in proportion to Fybre^l™ pulp content.

WINDING AND CONVERTING

- Webs containing Fybre^l™ pulp have performed satisfactorily on a wide variety of converting equipment: coaters, printers, laminators, extrusion coaters, die cutters, envelope machines, board molding machines, presses, embossers, etc.

A. FRICTION POINTS

- * Plastic needles form if heat generation is sufficient (see item E under PAPER MACHINE).
(Tendency toward needle formation decreases as the paper roll cools)
- * Slitters should run slightly faster than the web.
(Plastic film can form around stationary or high speed slitters.)

B. SPLICING TAPE

- * Avoid heat-sensitive tape (melts Fybre^l™ pulp during tape application).

C. HEAT TREATMENT

- * Sticking may occur between the dry web and surfaces heated about 110°C (E-type Fybre^l™), 100°C (UL-type Fybre^l™).

REPULPING

- * Repulping is possible provided the Fybre^l™ fiber has not been fused or melted by high pressure or temperature. Recommended conditions are:
 - (1) Heated water (up to 70°C).
 - (2) Maximum agitation.
 - (3) Gradual loading of broke.
 - (4) Lower consistency and/or increased pulping time.

Fybre^l™ Fibrillated Polyolefin Pulps available from

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