

# **MINIFIBERS, INC.**

## **Checklist for Using Fybrel<sup>®</sup> Fibrillated Polyolefin Pulps**

Fybrel<sup>®</sup> fibrillated polyolefin pulp has been used in many commercial papermaking systems and other systems designed for handling fibers. Runability of Fybrel<sup>®</sup> 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 Fybrel<sup>®</sup> to pulper, disperse, and then add wood pulp.
- A. CONSISTENCY
- \* Recommend 2.0 to 3.0 wt% for first trial.  
(A Fybrel<sup>®</sup> 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, Fybrel<sup>®</sup> 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

- Fybrel<sup>®</sup> pulp does not need refining.
  - Cutting type of refining can shorten the Fybrel<sup>®</sup> fibers (not desired). Brush refining can entangle or fuse the Fybrel<sup>®</sup> 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 Fybrel<sup>®</sup> pulp to pre-refined wood pulp.  
(Especially important if wood pulp is heavily refined)
  - \* Blends of wood pulp and Fybrel<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> pulp will also have characteristic machine clean-up frequencies. This is 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<sup>®</sup> fibers sticking into wire.

#### B. PRESSES

- \* Usually no problems if the wood pulp furnish does not pick.  
(Fybre<sup>®</sup> pulp furnishes generally have slightly more picking tendency than all-wood pulp furnishes.)
- \* Normal cleaning (showers, doctors) is effective with Fybre<sup>®</sup> pulp.

#### C. DRYERS

- \* Fybre<sup>®</sup> pulp melts at 125 to 135°C (E-type Fybre<sup>®</sup>), 105 to 125°C (UL-type Fybre<sup>®</sup>).
- \* Recommend maximum dryer temperature of 115°C (E-type Fybre<sup>®</sup>), 105°C (UL-type Fybre<sup>®</sup>).  
(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<sup>®</sup> 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<sup>®</sup> pulp content.

#### WINDING AND CONVERTING

- Webs containing Fybre<sup>®</sup> 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<sup>®</sup> pulp during tape application).

##### C. HEAT TREATMENT

- \* Sticking may occur between the dry web and surfaces heated about 110°C (E-type Fybre<sup>®</sup>), 100°C (UL-type Fybre<sup>®</sup>).

#### REPULPING

- \* Repulping is possible provided the Fybre<sup>®</sup> 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<sup>®</sup> Fibrillated Polyolefin Pulps available from

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