Filler Modification with Starch Encapsulation for Improved Paper Properties

Delong Song, Art Ragauskas, Yulin Deng

Institute of Paper Science and Technology at Georgia Tech

MOTIVATION

To improve the bondability of inorganic filler particles to wood fibers and maintain the paper strength at a high filler content.

CONCEPT

Wet Approach: Starch–filler Composite Precipitation Method using Fatty Acid

APPROACHES

Dry Approach: Spray Dry Method  
(For filler suppliers)

Starch used is raw starch. Both potato and corn starch can be used. 2.5% starch based on clay is enough.

APPLICATION RESULTS

Spray dry clay handsheet property

Spray dry clay mill trial results

SIGNIFICANCE

- The starch coated filler shows higher strength properties than adding filler and starch separately in wet end.
- The techniques of filler modification with starch encapsulation can be used for both PCC and clay.
- Starch-coated fillers can be applied to different paper grades.