

Abstract:

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Optimum Calcium Carbonate for Uncoated Digital Printing Paper

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Abstract

The use of fillers in printing and writing papers has become a prerequisite for competing in a global market to reduce the cost of materials. Use of calcium carbonates (ranging from 18% to 30%) as filler is a common practice in the paper industry but the choices of fillers for each type of papers vary widely according to its use. The market for uncoated digital printing paper is one that continues to introduce exciting growth projections and it is important to understand the effect that different types of calcium carbonates have on the paper properties made of 100% eucalyptus pulp. The current study is focused on selecting the most suitable market available calcium carbonate for the production of uncoated Eucalyptus digital printing paper, targeting a potential filler increase of 5% above the currently used filler content. We made hand sheets using 13 different varieties of widely used calcium carbonates [Nine samples of PCC (two rhombic and seven scalenohedral, covering a wide particle size range from 1.2 μm to 2.9 μm), and four samples of GCC (three anionic and one cationic, with a particle size range from 0.7 μm to 1.5 μm)] available in the market followed by a 12" pilot plant paper machine run. The detailed analysis on the main structural, optical and strength properties of the hand sheets found that the most suitable calcium carbonate for uncoated Eucalyptus digital printing paper production is scalenohedral PCC, with a particle size of 1.9 μm for its positive effects on thickness, stiffness, brightness and opacity of paper.

Keywords:

Filler Loading, Precipitated Calcium Carbonate, Ground Calcium Carbonate, Fiber Savings