

Nawaporn Wannawisan 2006: Effect of Modified Starch Coating on Strength Properties of Kraft Paper. Master of Science (Packaging Technology), Major Field: Packaging Technology, Department of Packaging Technology. Thesis Advisor: Mrs. Tunyarut Jinkarn, Ph.D. 117 pages. ISBN 974-16-2678-9

Strength properties are considered significant characteristics of the kraft paper especially one for making corrugated boxes. The main objective of this research is to examine the effect of modified cassava starch coating on the strength properties of kraft paper. Strength properties that are investigated in this research are bursting strength, tensile strength and compression strength. For the compression strength, the study focuses only on ring crush values. Factors to be considered in the research include types of modified starches, concentrations and temperatures of coating solution. In addition, storage tests are also conducted in order to investigate the change of coated papers' performances in the real storage condition of most industrial warehouses. Two types of commercial modified starches (cassava starch) included in the research are oxidized starch (Fibersize 382TM) and cationic starch (Catosize 380TM). Concentrations of starch solutions are prepared at 5, 15 and 25% by weight while starch solution temperatures before coating are prepared at 65°C and 75°C respectively. Further, storage times are set for 1, 2, 3 and 4 weeks (25 - 32°C, 65 - 74%RH). The results show that type of modified starches and starch concentrations significantly affect bursting strength ($p \leq 0.05$). Bursting strength is increased by 8.8 - 12.4% for oxidized starch coating and by 12.3 - 16.0% for cationic starch coating. However, starch solution temperatures before coating do not significantly affect bursting strength. Further, bursting strength of coated papers at all conditions is significantly higher than the uncoated one for all 4 weeks of storage test. According to the results, tensile strength and compression strength can also be improved by oxidized starch and cationic starch coatings especially at 5% concentration of starch coating solutions. However, Tensile strength and Ring crush value of papers coated at this condition are lower than the uncoated paper at some particular storage intervals. In addition, according to the results, cationic starch coating can better improve strength properties of kraft paper compared to oxidized starch coating at same coating conditions.

Nawaporn Wannawisan

Student's signature

Thesis Advisor's signature

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