

Sustainable Packaging with Waterborne Soybean Oil

Abstract-

Packaging is responsible for 46% of total plastic waste, and thus sustainable packaging alternatives are urgently required. Reported herein is coated paper as a sustainable packaging material by using waterborne acrylated epoxidized soybean oil (AESO) to coat Kraft paper. The waterborne AESO was cast onto kraft paper and was then photo-cured. Upon curing, the coated paper was tested for its oil and water repellency as well as its mechanical properties. Biodegradability studies were also conducted for the AESO-coated paper, and our findings suggest that its biodegradability reaches >90% within 90 days. The coating process was also evaluated for its compatibility with paper printing processes and its resistance to hot oil. Overall, the AESO-latex coated paper offers excellent water and oil-resistance, has the desired mechanical properties, biodegradability, and cost-effectiveness, and thus is a sustainable alternative to the current wasteful packaging made from plastic- or plastic-coated paper.