

## **59a Development of Recyclable Paraffin-Based Composite Coating for Moisture Barrier Applications**

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One of the major applications of paraffin wax is as an anti-moisture and protective coating on corrugated containers. Approximately 1.5 million tons of wax coated corrugated containers are produced each year in the United States. These treated containers cannot be recycled and are currently landfilled or burned. Development of environmentally benign, recyclable coatings has been attracting much attention in the recent years, but given the significant price advantage of petroleum wax, a commercially feasible substitute appears unlikely. In this presentation, research on the development of modifications to paraffin coating to enhance recyclability is reviewed. Efforts include the addition of a reinforcing phase to modify bulk mechanical and surface properties as well as the rheology of the paraffin melt. Properties of engineered coatings were characterized using differential scanning calorimetry, x-ray diffraction, static and dynamic mechanical testing and scanning probe microscopy. Also discussed are the structure of wax-fiber composites and the penetration kinetics of saturating coatings and adhesion to fiber surfaces.