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INFLUENCE OF MOISTURE AND TEMPERATURE ON THE MECHANICAL PROPERTIES OF COATED FIBER-BASED SUBSTRATES AND ITS APPLICATION TO INDUSTRIAL COATING PROCESSES

Fiber-based substrates are used for various roll-to-roll production processes. They are extremely popular for high volume tapes and consumer or industrial packaging material. For a majority of the coated products water-based coating fluids are used. High stiffness, low cost and renewable resources are convincing selling points for fiber-based materials. However, the fiber's anisotropic properties challenge the control of the converting process.

This presentation will first highlight the various moisture-induced mechanisms at laboratory level and explain the processes within the material and their influencing factors. Based on various laboratory results, the influence of moisture and temperature on the dimensional stability and strength of the material web will be discussed.

Based on industrial humidification systems, known failure patterns and a consideration of the overall process, these findings will be transferred to the practice of coating line manufacturers and operators.