

Fillers in Wood Adhesives

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Abstract

The introduction of a second component to polymers has been presented; this component is often used to modify the characteristics of the products and to acquire new polymer materials with improved properties. Composite materials have a pivotal role in industries that are now considered the most progressive worldwide. At present, synthetic adhesives based on formaldehyde such as phenol-formaldehyde (PF), urea formaldehyde (UF), and melamine formaldehyde (MF) are predominantly used for wood composite production, and these adhesives are commonly used in the wood panel industry. These adhesives have some advantages and disadvantages. The use of PF adhesives is as important as UF adhesives in the wood panel industry. However, their application is still limited because of its brittleness, brown color, high curing temperature, long curing time, and toxicity due to liberation of phenol and formaldehyde. A variety of methods have been used to improve the performance of UF and PF adhesives as well as to expand their use. These methods are widely used in the industry; they include the simple addition of fillers. Moreover, the addition of fillers could reduce shrinkage and alleviate the stress on the glue line, which improves the hardness and durability.