

## **Modification by Methylation of Lignin from Industry Byproduct and Its Use as Thermosetting Resin**

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Lignin is a versatile natural polymer which is source to many products as oils, carbon fibers, methanol and polymeric resins. Otherwise, it is still considered a byproduct and a waste material from the paper industry and the newer biorefineries, which usually burn this material to produce energy. Its use can be a viable alternative as replacement of phenol in phenol-formaldehyde resins because its availability in the nature, similar chemical structure and cost. A modification route for a commercial ammonium lignosulfonate sample, employing previous studies with lignin methylation has been investigated. Two reaction methods were considered and a novel alternative way more adequate for this material was also developed. It was used a weight relationship between the reagents and successive evaporations at low temperature for 48h under atmospheric pressure and under vacuum. It was replaced an amount of 30 wt% of a novolac commercial resin by lignin. The alternative methodology overcame the difficulty of water removal from products and produced a material with improved thermal resistance.

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