

## Synthesis and Characterization of Renewable Resource Based Green Epoxy Coating

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**Abstract :** Plant oils are a great renewable source for being a reliable starting material to access new products with a wide spectrum of structural and functional variations. Even though petroleum products might also render the same, but it would also impose a high risk factor of environmental and health hazard. Since epoxidized vegetable oils are easily available, eco-compatible, non-toxic and renewable, hence these have drawn much of the attentions in the polymer industrial sector especially for the development of eco-friendly coating materials. In this study a waterborne epoxy coating was prepared from epoxidized soyabean oil by using triethanolamine. Because of its hydrophobic nature, it was a tough and tedious task to make it hydrophilic. The hydrophobic biobased epoxy was modified into waterborne epoxy by the help of a plant based anhydride as curing agent. Physico-mechanical, chemical resistance tests and thermal analysis of the green coating material were carried out which showed good physic-mechanical, chemical resistance properties as well as environment friendly. The complete characterization of the final material was done in terms of scratch hardness, gloss test, impact resistance, adhesion and bend test.

**Keywords :** epoxidized soybean oil, waterborne, curing agent, green coating

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