

## Newly Developed Epoxy-Polyol and Epoxy- Polyurethane from Renewable Resources

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**Abstract :** Bio-polyols are important components in polyurethane industries. The preliminary studies into the synthesis of bio-polyol products (epoxy-polyol and epoxy-polyurethanes) from *Jatropha curcas* were investigated. The reactions were followed by both infrared and nuclear magnetic resonance. Physico-chemical characterisation of the samples for iodine value (IV), acid value (AV), saponification value (SV) and hydroxyl value (HV) were carried out. Thermal transitions of the products were studied by heating 5 mg of the sample from 20°C to 800°C and then cooling down to -500°C on a differential scanning calorimeter (DSC). The preparation of epoxy-polyol and polyurethane from *Jatropha curcas* oil was smooth and efficient. Results of film and solubility properties revealed that coatings of *Jatropha curcas* epoxy-polyurethanes performed better with increased loading of toluylene 2, 4-diisocyanate (TDI) up to 2 wt% while their solvent resistance decreased beyond a TDI loading of 1.2 wt%. DSC analysis shows the epoxy-polyurethane to be less stable compared to the epoxy-polyol.

**Keywords :** synthesis, epoxy-polyol, epoxy-polyurethane, *jatropha curcas* oil

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