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PII: S0143-7496(17)30123-9
DOI: http://dx.doi.org/10.1016/j.ijadhadh.2017.06.021
Reference: JAAD2034

To appear in: *International Journal of Adhesion and Adhesives*

Received date: 22 March 2017
Accepted date: 22 June 2017

Cite this article as: Pau Gallart-Sirvent, Anlong Li, Kaichang Li, Gemma Villorbina and Ramon Canela-Garayoa, Preparation of pressure-sensitive adhesives from tung oil *via* Diels-Alder reaction, *International Journal of Adhesion and Adhesives,* http://dx.doi.org/10.1016/j.ijadhadh.2017.06.021

Preparation of pressure-sensitive adhesives from tung oil *via* Diels-Alder reaction

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ABSTRACT: In this study, tung oil was polymerized with a dimaleimide (4,4'-methylene-bis(*N*-phenylmaleimide) (MPMI) and two diacrylates (poly(propylene glycol) diacrylate (PPGDA) and bisphenol A glycerolate diacrylate (BPAGDA) *via* Diels-Alder reaction (DA reaction) to prepare pressure-sensitive adhesives (PSAs). On the one hand, the polymer of tung oil and MPMI was readily prepared however it was too rigid to serve as a PSA. On the other hand, the polymerization of tung oil with PPGDA or BPAGDA resulted in PSAs with peel strengths ranging from 0.1 to 0.2 $N \cdot cm^{-1}$ and loop tacks ranging from 0.4 to 0.5 N. Nevertheless, tung oil reacted readily with acrylic acid to form adducts (TOAA) with lower content of