Accepted Manuscript

Studies on the structural changes during curing of epoxy and its blend with CTBN

Kavita Srivastava, Ashwani Kumar Rathore, Deepak Srivastava

PII: S1386-1425(17)30532-2

DOI: doi: 10.1016/j.saa.2017.06.066

Reference: SAA 15282

To appear in: Spectrochimica Acta Part A: Molecular and Biomolecular

Spectroscopy

Received date: 26 December 2016

Revised date: 6 June 2017 Accepted date: 30 June 2017

Please cite this article as: Kavita Srivastava, Ashwani Kumar Rathore, Deepak Srivastava, Studies on the structural changes during curing of epoxy and its blend with CTBN, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* (2017), doi: 10.1016/j.saa.2017.06.066

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

Studies on the Structural Changes during Curing of Epoxy and it's Blend with CTBN

Kavita Srivastava¹, Ashwani Kumar Rathore² and Deepak Srivastava³

¹Department of Chemistry, V.S.S.D. College, Nawab Ganj, Kanpur – 208 002 (U.P.), India.

² School of Chemical Technology – Department of Chemical Engineering

³ School of Chemical Technology – Department of Plastic Technology

H. B. Technical University (Formerly H. B. Technological Institute)

Kanpur – 208 002 (U.P.), India.

Abstract

Cashew nut shell liquid (CNSL), an agricultural renewable resource material, produces natural phenolic distillates such as cardanol. Cardanol condenses with formaldehyde at the ortho- and para-position of the phenolic ring under acidic or alkaline condition to yield a series of polymers of novolac- or resol-type phenolic resins. These phenolic resins may further be modified by epoxidation with epichlorohydrin to duplicate the performance of such phenolic-type novolacs (CFN). The structural changes during curing of blend samples of epoxy and carboxyl terminated poly (butadiene-co-acrylonitrile) (CTBN) were studies by Fourier-transform infrared (FTIR) spectrophotometer. The epoxy samples were synthesozed by biomass material, cardanol. Blend sample was prepared by physical mixing of CTBN ranging between 0-20 weight percent CTBN liquid rubber into cardanol-based epoxidized novolac (CEN) resin. The FTIR spectrum of uncured blend sample clearly indicated that there appeared a band in the region of 3200-3500 cm⁻¹ which might be due to the presence of phenolic hydroxyl group and -OH group of the opened epoxide. Pure epoxy resin showed peaks near 856 cm⁻¹ which might be due to oxirane functionality of the epoxidized novolac resin. Both epoxy and it's blend sample was cured with polyamine. The cure temperature of *CEN* resin was found to be decreased by the incorporation of CTBN. The decomposition behaviour was also studied by thermogravimetric analyser (TGA). Two-step decomposition behavior was observed in both epoxy and it's blend samples.

Download English Version:

https://daneshyari.com/en/article/5139532

Download Persian Version:

https://daneshyari.com/article/5139532

<u>Daneshyari.com</u>