


Mokuzai Gakkaishi  JWRS
The Japan Wood Research Society

[Available Issues](#) | [Japanese](#) >> [Publisher Site](#)

Author: [ADVANCED](#) | Volume Page
Keyword: |



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1880-7577

PRINT ISSN : 0021-4795

Mokuzai Gakkaishi

Vol. 55 (2009) , No. 5 p.293-298

[\[PDF \(939K\)\]](#) [\[References\]](#)

Effect of Postcure Conditions on the Dynamic Mechanical Behavior of Water-Based Polymer-Isocyanate Adhesive for Wood II. Investigation of a polyvinyl alcohol solution and polymeric diphenylmethane diisocyanate model

[Nan Ling](#)¹⁾, [Naruhito Hori](#)¹⁾ and [Akio Takemura](#)¹⁾

1) Graduate School of Agricultural and Life Sciences, The University of Tokyo

(Received June 16, 2008)

(Accepted December 24, 2008)

Abstract: In order to understand the effect of the heat treatment on the dynamic viscoelastic behavior of water based polymer-isocyanate adhesive for wood (API adhesive), we investigated the most simplified model of the adhesive between polyvinyl alcohol (PVOH) solution and polymeric diphenylmethane diisocyanate (pMDI). Fourier transform infrared spectroscopy (FT-IR) was performed for estimating the residual isocyanate groups (NCO) and isocyanate derivatives to elucidate the reaction mechanism under the heat treatment conditions. The results are summarized as follows : (1) From DMA, a decrease of the storage modulus (E') appeared around 170°C in the sample heated below 140°C. When the treatment temperature exceeded 140°C, the samples exhibited a rapid increase in E' in the high temperature region, with a correspondingly significant chemical structure change. These results correspond with those of API adhesive. (2) The different chemical products and tendency of E' of API adhesive as compared to the PVOH-pMDI model after 2 hours of heat treatment indicates that the adding of styrene-butadiene copolymer latex (SBR) may affect progress of reaction of residual isocyanate.

Keywords: [water based](#), [isocyanate adhesive](#), [heat treatment](#), [dynamic mechanical analysis](#)

To cite this article:

Nan Ling, Naruhito Hori and Akio Takemura: Mokuzai Gakkaishi Vol. 55, No. 5, 293-298 (2009) .

doi:10.2488/jwrs.55.293

JOI JST.JSTAGE/jwrs/55.293

Copyright (c) 2009 by The Japan Wood Research Society



[Japan Science and Technology Information Aggregator, Electronic](#)

