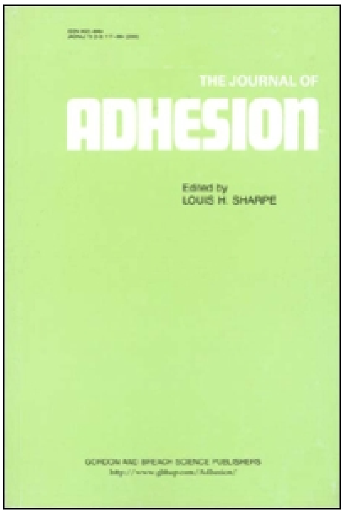
This article was downloaded by:
On: *22 January 2011*
Access details: *Access Details: Free Access*
Publisher *Taylor & Francis*
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



The Journal of Adhesion

Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713453635

Contents Lists and Abstracts from the Journal of the Adhesion Society of Japan

To cite this Article (1993) 'Contents Lists and Abstracts from the Journal of the Adhesion Society of Japan', The Journal of Adhesion, 42: 1, 125 — 130

To link to this Article: DOI: 10.1080/00218469308026576

URL: http://dx.doi.org/10.1080/00218469308026576

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

J. Adhesion, 1993, Vol. 42, pp. 125–130
Reprints available directly from the publisher
Photocopying permitted by license only

Printed in the United States of America.

Contents Lists and Abstracts from the Journal of the Adhesion Society of Japan

Journal of The Adhesion Society of Japan
Vol. 28 No. 11 1992

Contents

Original

Review

Cavitation Mechanism of Pressure-Sensitive Adhesives During Debonding Part (1) Analysis of Cavitation Condition for Probe Separation

CHENGXING ZHU

Research Laboratory, LINTEC Corporation
5-14-42, Nishiki-cho, Warabi-shi, Saitama 335 Japan

Abstract

Morphology observations were made during debonding of pressure-sensitive adhesives (PSA) on a probe tack tester similar to the Wetzel tester. Behaviors of debonding force vs. elongation were investigated as a function of tensile rate and sample thickness. Additionally, uniaxial tensile behavior of bulk PSA corresponding to large deformation was also examined. Based on these experimental results, the cavitation condition of PSA during probe separation was analyzed from a view point of the Taylor's meniscus phenomenon. An approximate equation was derived, as follows, to relate stress in the front of separating zone to void growth speed and mechanical properties of PSA.

$$\sigma = \frac{1}{k}\left[\frac{2\,\Gamma}{h} + \left(\frac{8\,a\,\Gamma\,\sigma_0}{\sqrt{3}\,(a-1)\,h}\right)^{\frac{1}{2}}\left(\frac{2\,(1+2n)\,V}{\sqrt{3}\,nh\,\dot{\epsilon}_0}\right)^{\frac{n}{2}}\right]$$

where σ is the stress in the front of separating zone, V is the void growth speed, a is a characteristic elongation ratio corresponding to the extent of the first flow stage of bulk PSA during elongation, Γ is the energy to create new PSA surface per unit area, h is the thickness of PSA, σ_0, ϵ_0 and n are mechanical parameters of PSA at the first flow stage, and k is a coefficient. Since experiment results could be well explained with the equation, it has been shown that this analysis reveals the nature of cavitation of PSA during debonding.

(Received: March 10, 1992)

Effect of Silane Coupling Agent on the Mechanical Properties of Woven Glass Fabric Reinforced Plastics

Hideki ICHIHASHI

Ube Industries Ltd.,
Nakamiyakitamachi, Hirakata, Osaka 573,
Graduate Student of Kyoto Institute of Technology,
Matsugasaki, Sakyo, Kyoto 606

Hiroyuki HAMADA, Zenichiro MAEKAWA

Faculty of Textile Science, Kyoto Institute of Technology,
Matsugasaki, Sakyo, Kyoto 606

and Nobuo IKUTA

Osaka Municipal Technical Research Institute,
Morinomiya, Joto, Osaka 532

Abstract

The effect of silane coupling agent on micro fracture of plane woven glass fabric reinforced plastics was studied. Silane coupling treatment of glass fabric was carried out with different solution in concentration. Two kinds of glass fabric were prepared. One was washed with methanol after silane treatment, to remove silane molecules which had no chemical bonding to glass surface, and the other was not washed. Knee point stress which appears on the stress-strain curve as a result of micro fracture was measured. Knee point stress was improved with silane treatment and optimum concentration was found regardless of the washing of the fabric. Removal of silane without chemical bonding increased knee point stress. This result showed the same tendency as that of interfacial transmissibility for the same series of treatment.

(Received: March 27, 1992)

Peeling Behavior of Acrylic Pressure Sensitive Adhesive

Saburo AKIYAMA and Yoshihisa KANO

Laboratory of Chemistry, Faculty of General Education,
Tokyo University of Agriculture and Technology,
3-5-8, Saiwai-cho, Fuchu-shi, Tokyo 183, Japan

Yoshiaki URAHAMA

Nitto Denko Corporation
1-1-2, Shitahozumi, Ibaraki-shi, Osaka 567, Japan

Abstract

The peeling behavior of various acrylic pressure sensitive adhesives was observed. Suggested was that the peeling behavior was influenced by the dynamic mechanical properties (*Tg, G'*) of adhesives and the interfacial interaction between adhesives and adherends.

In the stringiness experiments of acrylic acid rich copolymer, the small leaf-branch-like morphology with precise jagged type was newly observed.

This was attributed to come from strong self-cohesive force of acrylic acid group.

(Received: March 27, 1992)

Journal of The Adhesion Society of Japan
Vol. 28 No. 12 1992

Contents

Original

Technical Report

Review

Effects of Extractives on Gluability of Wood: III. Fracture Strength in Cleavage of Bonded Apitong (*Dipterocarpus* spp.) Extracted with Organic Solvents

Clemente Moredo, Jr., Tomoyasu SAKUNO and Toshinari KAWADA

Faculty of Agriculture, Tottori University
4-101, Minami, Koyama, Tottori 680 Japan

Abstract

To examine the effects of wood extractives on gluing, the fracture strength in cleavage properties of resinous apitong (*Dipterocarpus* spp.) were investigated. Apitong wood was extracted with either ethanol-benzene solution or hexane before bonding with aqueous polymer isocyanate, resorcinol formaldehyde and polyvinyl acetate emulsion adhesives. Extraction with both solvents increased the dry and wet strengths of apitong, particularly the polyvinyl acetate-bonded wood. In a separate experiment, buna

(Fagus crenata) wood was bonded with the same adhesives added with different extractives. Addition of extractives resulted into a slight decrease in fracture strength in cleavage in isocyanate- and resorcinol-bonded wood.

(Received: April 10, 1992)

Surface Modification of Polyolefins. I. Modification with Dimethylaminoethyl Methacrylate/Stearyl Methacrylate Copolymers

Yoshiaki SAKAMOTO, Hitoko ENDO, Akihiko MASUI and Motonori MITOH

Osaka Prefectural Industrial Technology Research Institute
(1-53, Enokojima 2-chome, Nishiku, Osaka, Japan)

Abstract

Surface modification of polyolefins was carried out by mixing with small amounts of a polymeric surface modifier and molding. A polymeric surface modifier was prepared by copolymerization of dimethylaminoethyl methacrylate and stearyl methacrylate. The surface properties of the molded films were studied by a contact angle measurement and ESCA. It was found that increase in the water wettability was observed in comparison with the original polyolefins and the mixture compositions of the surfaces were surprisingly different from the bulk compositions owing to surface accumulation of the modifiers, and these surface modification behaviors were dependent on molecular weight and composition of the modifiers. The molded films were enabled to bond with cyanoacrylate adhesives.

(Received: May 1, 1992)

A Study of Epoxy Primer Applied to Three Layer Polyethylene Pipe Coating Part I

Makoto TOKIZAWA, Nobukatsu WAKABAYASHI, Sadashiro AOYAGI,
Fumihiko ODA and Masao YAJIMA

Mitsubishi Kasei Corporation, Research Center
(1000, Kamoshida-cho, Midori-ku, Yokohama 227, Japan)

Abstract

In order to develop the nonsolvent type of the epoxy primer applied to a three layer polyethylene pipe coating system, some formulations of resins, hardeners, and the additives were studied from the point of the corrosion resistance.

A combination of the modified bis-heterocycloaliphatic amine, or the phenol-formaldehyde condensated amine as a hardener, and the addition of Aluminium tri-polyphosphate as an anticorrosive pigment significantly contributed to the resistance performance of a disbonding test immersed in NaCl aqueous solution and a cathodic disbonding test.

In addition, the operating service conditions of the lamination of top-layer extruded polyethylene were recognized as an important role in the corrosion resistance performance of the 3 layer coated system as a whole.

This fact suggestively explains this corrosion resistance affected by the stress due to a shrinkage in the lamination of the hot extruded polyethylene topcoat.

(Received: April 2, 1992)

Journal of The Adhesion Society of Japan
Vol. 29 No. 1 1993

Contents

Preface

Original

Note

Review

Surface Modification of Polyolefins.
II. Modification for Adhesive Bonding and Painting

Yoshiaki SAKAMOTO, Hitoko ENDO, Akihiko MASUI and Motonori MITOH

Osaka Prefectural Industrial Technology Research Institute
(1-53, Enokojima 2-chome, Nishiku, Osaka, Japan)

Abstract

In order to improve the capabilities of polyolefins for adhesive bonding and painting, the surface modification of them, by mixing with dimethylaminoethyl methacrylate/stearyl methacrylate (DM/SMA) copolymers and the modified polyolefins containing acrylic acid or maleinic anhydride was studied. The improvement was obtained by mixing with not an individual component, DM/SMA copolymer or the modified polyolefin, but both components. On the basis that surface accumulating DM/SMA copolymers adhered strongly to polyolefins containing the modified polyolefins through the intermolecular interaction between the two components on molding the mixtures, these results were discussed.

(Received: May 1, 1992)

Effect of Hydroxymethyl Group on Curing Behavior of Amine-Cured Epoxy Resin System

Keiko OHTSUKA, Kiichi HASEGAWA and Akinori FUKUDA

Osaka Municipal Technical Research Institute
(1-6-50, Morinomiya, Joto-ku Osaka, 536 Japan)

Abstract

To study about the effect of hydroxymethyl group on curing behavior of amine-cured epoxy resin system, two-nuclei type resol (OCDA) and epoxy compound having hydroxymethyl group (EOCDA) were synthesized. These two compounds were mixed with commercial epoxy resin (DGEBA) in various ratios. The mixed epoxy resins were cured with a mixture of 4,4′-diaminodiphenylmethane and *m*-phenylenediamine (molar ratio, 6:4) as a hardener. Curing behavior of epoxy resin systems with the hardener was examined by differencial scanning calorimeter and kinetic parameters of cure reaction were obtained. Viscoelastic properties of cured epoxy resins were studied by dynamic mechanical analyzer. It was found that the higher the content of hydroxymethyl group in the epoxy resin system, the lower the onset temperature and the peak temperature of cure reaction and the higher the rate constant (k) were. It was also found that the higher the content of OCDA, the lower the glass transition temperature (Tg) and the smaller the storage modulus (E') of cured resin were, and the higher the amount of EOCDA, the higher Tg and E' were. These results were concluded as follows: (1) DGEBA mixed with OCDA curved very fast with amine hardener, but the cured resin had poor heat resistance compared to cured DGEBA. (2) DGEBA mixed with EOCDA cured very fast with amine hardener and the cured resin had good heat resistance.

(Received: May 8, 1992)

The Adhesion Society of Japan may be contacted at: Koa Nipponbashi 203, 4-2-20, Nipponbashi, Naniwa-ku, Osaka 556, Japan.