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Contents Lists and Abstracts from the China Journal "Chemistry and Adhesion"

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Selection of Cosolvents for PVC/PE Binary Blends

Xu Chengwei, Le Qifa

Abstract

In this paper, the solubility of PVC/PE blends in several solvents was discussed by flow ratio (R) of thin layer chromatography, rotary viscosity of solution and scanning electron microscope photograph of blend membrane. The results showed that tetrahydrofuran-trichloroethylene-toluene ternary mixture was a good solvent for PVC/PE blends. Furthermore, the ratio of tetrahydrofuran to trichloroethylene should be in a limited range. The experimental condition of PVC/PE blending in this co-solvent was also investigated.

The Manufacturer and Storage Quality of the Stick Glue of PVA-Polyacrylic Ester Emulsion

Wu Wenfang, Li Lin, Li Zewen

Abstract

The preparation of the stick glue of a new type of PVA-polyacrylic ester emulsion from polyacrylic ester emulsion, antiseptic, moisture-preservative and polyvinyl alcohol (PVA) was introduced in this paper. The PVA is the main ingredient. The storage quality was also tested and studied. The results showed that the storage quality was increased by 0.6 times in comparison with that of the stick glue of white emulsion PVA.

Development of Modified SBS Adhesive (J-111)

Wang Zuoxian, Piao Lishun, Gu Hui

Abstract

In this article the effects of the structure of SBS and the type of tackifier on the performance of the adhesive have been discussed in detail. It is indicated that modified terpene resin and petroleum resin could improve the adhesion property of SBS-based adhesive. The chelant prepared by CaO and tertiary phenolic resin could increase resistance to heat, apparently. J-111 adhesive is of better bonding strength for metal to non-metal materials than 88# and EC1917 adhesives.

Synthesis and Application of Dimethylaminoethyl Methacrylate

Zhao Xinyi, Xie Heming

Abstract

Dimethylaminoethyl Methacrylate (DMAEMA) was prepared by the ester exchange reaction of methyl methacrylate with dimethylaminoethanol in the presence of dibutyltin maleate. The method has the advantages of shorter reaction time and higher yield, up to 92%. DMAEMA was used as reducing agent in a dental light-curing adhesive. It is indicated that the DMAEMA and camphorquinone can initiate the curing of methacrylate adhesive effectively.

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**Study on Curing Reaction of Epoxy Resin:
I. Curing Reaction on Kinetics of Pure Resin System**

Da Youxian, Hu Weiguo, Sun Mujin

Abstract

The curing reaction kinetics of epoxy resin with imidazole was investigated by an appearance of volume shrinkage. There are three stages during the whole curing process. It was found that the first stage is a fourth-order reaction and the activation energy, E_1 , is 72.22 kJ/mol; the second is a zero-order reaction and E_2 is 108.10 kJ/mol; the third is a first-order reaction and the E_3 is 69.84 kJ/mol; $E_2 > E_1 > E_3$. The third stage is the fastest reaction and the second is the slowest. Their volume shrinkages increase slightly with the reaction temperature.

Study on Morphology of PVF Surface Treated with Plasma

Liu Qian, Zhang Guanhua, Yao Yaoguang, Liu Xueshu

Abstract

The morphology of PVF surface treated with plasma in various conditions is investigated by using SEM and TEM in this paper. The research results indicate that the etched surface of PVF is deepened from non-crystalline region to crystalline region with the increase of treatment power, time and pressure.

A New Study on Color Darkening of C9 Resin

Yu Yisong, Dong Zhanzhou

Abstract

The reasons for C9-resin having poor color are analyzed by means of the polymerization mechanism. In the polymerization, indenyl is the main factor to result in the color darkening of the C9 resin. A light color resin can be obtained by low temperature polymerization.

No. 3, 1992 (SUM No. 41)**Studies of Segmental Butadieneacrylonitrile-Polyurethane Elastomer**

Li Jian-Zong, Chen Shi-Yuan, Chen Qing-Yuan

(Department of Chemistry, Hubei University,
Wuhan, The People's Republic of China)**Abstract**

A series of nitrile-polyurethane block copolymers based on hydroxyl-terminated butadieneacrylonitrile (HTBN) soft segments ($M_n = 2610$) were synthesised. The hard segments consisted of toluene diisocyanate (TDI) chain-extended with 1,4-butanediol (BDO). The physical properties of the block copolymers were studied.

KEY WORDS hydroxyl-terminated butadieneacrylonitrile; two-steps solution method; butadieneacrylonitrile-polyurethane.

A Study of Epoxy Resin for Bonding and Mending Composites and Its Adhesion Properties

Liu Xiao-Hui, Yu Jian-Fei, Sun Yu, Wang Zhi-Lu

(Institute of Petrochemistry,
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)**Abstract**

In this paper, the J-86 epoxy resin and its adhesive properties were described. The effects of diluents and curing agents on the adhesive performance and the handling techniques were discussed extensively.

KEY WORDS adhesive; epoxy resin; composite.

J-97 Foam Adhesive Tape Cured at Moderate TemperatureFu Chun-Ming, Kuang Hong, Na Wan-Cai,
Zhao Ming, Zhao Xiu-Ling, Feng Wei-Jing, Fu Gang(Institute of Petrochemistry
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)**Abstract**

In this paper, the important factors affecting the properties of foam structural adhesives were discussed. The performance and application techniques of J-97 foam adhesive tape cured at moderate

temperature (120°C) were also discussed. The overall performance of J-97 has satisfied the specifications of REDUX-212 foam adhesive tape and the specification defined in BMS 5-90E, with its heat resistance and damp-thermal ageing stability being superior to those of REDUX-212.

KEY WORDS foam adhesive tape; structural adhesive; curing; moderate temperature.

SBS Modified Asphalt as Water-Proof Materials

Li Yin; Deng Cun

(Department of Polymer Material Sciences,
Harbin Institute of Technology,
Harbin, The People's Republic of China)

Wang Chan-An

(Radiochemistry Test Centre,
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)

Studies of Hard Board Production Using Pulp Waste Liquid Modified Urea-formaldehyde Resin

Zhou Yu-Tong

(Institute of Petrochemistry,
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)

Chang Pei-Qiu

(Heilongjiang Design Research Academy of Forestry,
Harbin, The People's Republic of China)

Guo Wei

(Heilongjiang Supply and Sale Corporation,
Harbin, The People's Republic of China)

Flame-Retardative Polyurethane Foam Plastics

Ding Gui-Ying

(Harbin College of Electrical Engineering,
Harbin, The People's Republic of China)

He Zheng-Long

(The Career University of Daqing Petrochemical General Plant,
Daqing, The People's Republic of China)

A Study of Moderate Temperature Curing Promoter Using DSC

Zhao Xiu-Ling, Feng Wei-Jing

(Institute of Petrochemistry,
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)**Abstract**

The promoting effect of moderate temperature curing promoter (D) to the curing process using di-cyandiamide (DICY) and the curing process using D alone were studied by DSC. It is found that D and DICY have mutual promoting effect. Good water resistance was obtained using the D/DICY curing system, which can be adopted in structural adhesives for aircraft, space missiles and satellite construction.

KEY WORDS DSC; moderate temperature curing promoter; curing system.

Anaerobic Adhesive for Vacuum Impregnation

Mo Qing-Lan

(Guangzhou Institute of Chemistry, Academy of Sciences,
Guangzhou, The People's Republic of China)**Abstract**

One of the impregnating and sealing techniques for porosity leakage in metal articles, such as castings and sintered powder metal parts, *i.e.*, anaerobic adhesion technology for vacuum impregnating, was reviewed. A general description was given about the anaerobic compositions including (methy)acrylate monomers, redox catalyst system, inhibitors, surfactants, curing accelerators etc.. A typical anaerobic composition was illustrated.

KEY WORDS vacuum impregnating; anaerobic adhesive composition; formulation.

Preparation of Modified Starch Adhesive

Xue Yun-Lian

(Liaozhong Chemical General Plant, Shenyang,
The People's Republic of China)

No. 4, 1992 (SUM. No. 42)**Preparation and Properties of Polymer Latex Containing Carboxyl Groups**

Zhang Hong-Tao

(Department of Chemistry, Hubei University,
Wuhan, The People's Republic of China)

Yu Zhi-Wei, Gan Ming-De

(Information Institute of Science and Technology of Heilongjiang,
Harbin, The People's Republic of China)**Abstract**

In this paper, the method for the preparation of polymer latex containing carboxyl groups was introduced. The effect of carboxylic monomer on the rate of polymerisation and particle nucleation was discussed. The distributions and characteristics of carboxyl groups in the latex system were also discussed.

KEY WORDS polymer containing carboxyl groups; latex adhesive; carboxylic acid.

Preparation and Study of Graft Modified Natural Latex Pressure Sensitive Adhesive

Zheng Chang-Ren, Zhang Jun, Xie Jian-Hua, Chen You-An

(Nanjing Institute of Chemical Technology,
Nanjing, The People's Republic of China)**Abstract**

In this paper, the effects of the amounts of acrylic acid (AA), acrylic ester (AE), vinyl acetate (VAc), epoxy resin and rosin-modified resin on the properties of graft-modified natural latex pressure sensitive adhesive were studied. The results showed that optimum properties of the pressure sensitive adhesive can be obtained by selecting AE 60 phr, VAc 40 phr, AA8 phr (based on the mass of dried adhesive), epoxy resin 4 phr, rosin-modified resin 2 phr (based on the mass of latex) and other agents. Preliminary treatment of the test specimen was advantageous in increasing the adhesive strength.

KEY WORDS natural latex; acrylic ester; vinyl acetate; acrylic acid; graft modification; pressure sensitive adhesive; peel strength.

Diisocyanate Modified EAM Resin Adhesive for Orthodontics

Tang Li-Hui, Jiang Ji-Ying, Zhang Hui-Jun

(Stomatological College of the
Fourth Military Medical University,
Xi An, The People's Republic of China)

Abstract

The modified adhesive was prepared with basic components A and B and a paste composed of A and B. The bond strength of the modified adhesive (24.3 ± 3.4 MPa) is higher than that of Concise® (21.8 ± 2.7 MPa) (3M Company USA) which is widely used in clinic and considered to be superior to the similar products. The modified adhesive has been used clinically in more than 30 hospitals for two years and satisfactory results have been obtained. The data of this study also showed that the present adhesive has good adhesive performance, ease of handling and low percentage of pulling-out.

KEY WORDS orthodontics adhesive; modified EAM resin; diisocyanate.

Preparation of Core-shell Polyacrylic Emulsion-based Strippable Coating

Xing Yo-Qing, Wang Dong, Jin Qing-Gao

(Department of Polymer Material Science,
Harbin Institute of Technology, Harbin,
The People's Republic of China)

Abstract

In this paper, the synthesis of core-shell polyacrylic emulsion for use as strippable coating was reported. The effects of various factors, such as water/monomer ratio, MMA/BA ratio, the total amount of emulsifiers and their ratios on stability of the polymerisation were studied. The effects of the total amount of emulsifiers and their ratios on the particle size of polymer latex and the effects of the method of initiator addition on the adhesion of the coating were also studied.

KEY WORDS polyacrylate; emulsion; strippable coating.

Preparation of Super Water-absorbing Resin from Hydrolyzated Waste Polyacrylonitrile Fibres

Li Yin, Wang Cheng-Guo

(Department of Polymer Material Science,
Harbin Institute of Technology,
Harbin, The People's Republic of China)

Wang Chang-An

(Radiochemistry Test Centre,
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)

Recent Advances in Synthetic Method of Chlorosulfonated Polyethylene

Zhang Tong, Liu Jun-Xian

(Institute of Petrochemistry,
Heilongjiang Academy of Sciences,
Harbin, The People's Republic of China)

Approach to Improving the Adhesion of Poly(vinyl acetate) Latex

Shen Ju-Chai

(College Division, Taiyuan Institute of Machinery,
Taiyuan, The People's Republic of China)

Zhang Liang-Hua, Hu Fan-E

(Taiyuan Institute of Speciality Coatings,
Taiyuan, The People's Republic of China)

Abstract

In this paper, a method for improving the rate of adhesion and water resistance of PVAc latex by using oxidised starch was described. It is evident from experimental results that such method is effective and economic.

KEY WORDS PVAc latex; oxidised starch; rate of adhesion.

Development of Adhesive for Moist Timber

Ren Shu-Mei, Li Kao-Zhen

(Liaocheng Teacher's College of Shandong Province,
Liaocheng, The People's Republic of China)