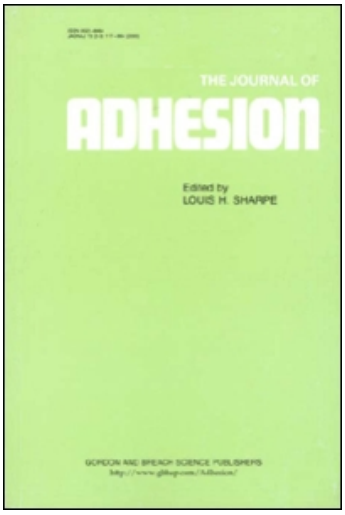

The Journal of Adhesion
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713453635

abstracts...J. The Adhesion Society of Japan

To cite this Article (1970) 'abstracts...J. The Adhesion Society of Japan', The Journal of Adhesion, 2: 4, 302 — 303
To link to this Article: DOI: 10.1080/0021846708544604
URL: http://dx.doi.org/10.1080/0021846708544604

abstracts . . . J. The Adhesion Society of Japan

(Original articles are in Japanese)

The Adhesion Society of Japan

c/o OSAKA-FU-KOGYO-SHOREI-KAN

(Industrial Research Institute of Osaka Prefecture)
Enokojima, Nishi-ku, Osaka, Japan

Setting Rate of Cyanoacrylate Adhesive Joints

(Received July 3, 1969)

Eijiro NISHI

TAOKA Dyestuff Mfg. Co. Ltd.
Juhachijyo-cho, higashiyodogawa-ku, Osaka, Japan

Abstract

The relations between bond strength and curing time, temperature and humidity were investigated using steel-steel butt joints bonded with four cyanoacrylate type adhesives and discussed kinetically.

It was found that the setting rate of these cyanoacrylate adhesives are expressed by the following relation,

$$dF/dt\,(t - t_i) = k\,(F_x - F)^2$$

where F and F_x are respectively optional and ultimate bonding strength, t and t_i are respectively curing time and induction period, and k is a rate constant.

Depending on the kind of adhesives, t_i k, and F_x vary. However, although modifiers which have no effect on the polymerization of the base monomer were admixed in the monomer, k of the modified adhesive was the same as the unmodified.

The setting rates are affected by curing temperature and humidity, especially the latter.

From these results, it is suggested that the setting rates of cyanoacrylate adhesive joints correspond with the curing, or polymerizing, rate of the base monomer.

J. ADHESION SOCY. JAPAN, 6 (No. 3), 207 (1970).

Metal-Containing Initiator Systems. Part 28. The Polymerization of Methyl Methacrylate with Metal Naphthenates.

(Received Oct. 15, 1969)

Shuzo AOKI, Seitaro MATSUMURA and Takayuki OTSU

Department of Applied Chemistry, Faculty of Engineering,
Osaka City University: Sugimoto-cho, Sumiyoshi-ku, Osaka, Japan

Abstract

Methyl methacrylate was polymerized with metal naphthenates which were obtained commercially as "Mineral turpentine solutions". Cobalt, manganese and cerium naphthenates could serve as excellent radical initiators, while calcium and zinc naphthenates did not exhibit any activities. However, the latter salts were found to increase synergistically the activity of the manganese salt. It was also found that the addition of cumene hydroperoxide to the polymerizing system containing the cobalt salt increases the polymer yield.

J. ADHESION SOCY. JAPAN, 6 (No. 1), 2 (1970).

Studies on Wood Gluing Part 4. On the Durability of PVA-Modified Urea Resin Adhesive

(Received May 6, 1969)

Teruo GOTO and Tomoyasu SAKUNO
Faculty of Agriculture, Shimane University, Matsue, Japan

Abstract

It was shown in the previous paper that the polyvinyl alcohol-modified urea resin adhesive has gap-filling properties.

In the present paper, the durability of the polyvinyl alcohol-modified urea resin adhesive is discussed. Beech sapwood was glued with polyvinyl alcohol-modified urea resin adhesive and unmodified urea resin adhesive. Glue-line thicknesses were regulated to 60- 100 microns and 320-370 microns. These glued woods were exposed for five years to a repeating cycle consisting of 2 weeks at 25°C and 33 percent relative humidity and 2 weeks at 25°C and 87 percent relative humidity.

After 1-7, 9, 12, 16, 21, 39, 51 and 63 cycles were repeated, the block shear test was carried out with respective sample blocks.

Transition of glue-joint strength and wood failure for five years is shown.

The glue-joint strength and wood failure when polyvinyl alcohol-modified urea resin adhesive was used were higher than those when the unmodified urea resin adhesive was employed.

In all cases, the glue-joint strength and wood failure increased through 4-9 cycles, and then decreased alone with exposure period.

Deterioration of polyvinyl alcohol-modified urea resin adhesive after 63 cycles was remarkably less in comparison with that of unmodified urea resin adhesive.

J. ADHESION SOCY. JAPAN, 6 (No. 2), 143 (1970).

The Bonding of Fresh Cement Mortar on Old Cement Mortar Surface

(Received November 1, 1968)

Minoru TOKUMOTO, Takao YAMASHITA, Susumu NAMBA, and Takeo SEKIYA
Resin Research Laboratory, Kanegafuchi Spinning Co. Ltd.
123- Tomobuchicho, Miyakojima, Osaka, Japan

Abstract

On bonding fresh cement mortar on old cement mortar surface, the bond strength was usually increased by precoating thermoplastic polymer emulsions on the old cement mortar.

In our experiments, an acrylic ester copolymer emulsion or polyvinyl acetate emulsion added to cement pastes were used instead of precoating the polymer emulsion. The relationships between the bond strength of cement mortars and the coating conditions of the polymer cement pastes were examined and disscussed.

The following results are obtained:

1. The bond strength was influenced by P/C (polymer cement ratio), coating quantity and open time of the coated polymer cement paste.
2. High bond strength was obtained when the surface was coated with the polymer cement paste in large quantities with low P/C and in small quantities with high P/C.
3. Acrylic ester copolymer emulsion gave greater bond strength than polyvinyl acetate emulsion.
4. The bond strength in the case of polymer cement paste was great both at room and high temperature. On the other hand, the bond strength in the case of polymer emulsion tended to be extremely small at high temperature (above 80°C), but to be great at room temperature.

J. ADHESION SOCY. JAPAN, 6 (No. 3), 201 (1970).