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METHOD OF INSTALLING VINYL WALL COVERINGS AND REMOVING SMEARED ADHESIVE FROM THE FRONT SURFACES THEREOF

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ABSTRACT OF THE DISCLOSURE

Smeared adhesive residues, particularly those of white casein type adhesives, are readily removed from vinyl sheeting, wall coverings, and the like, by washing with a dilute solution of hydroxy acid, preferably citric acid. Tartaric acid, glycollic acid, other related acids, and their common salts, such as sodium citrate, sodium tartrate, etc., can be used.

This application is a continuation-in-part of Ser. No. 565,692, filed July 18, 1966, now abandoned.

BACKGROUND AND PRIOR ART

The present invention relates to chemical cleaning, particularly to chemical cleaning material, and more particularly to cleaning material and method of application, for eradicating the usual adhesives, particularly casein type adhesives as utilized in applying vinyl coverings. Harsh acids, such as phosphoric acid or sulfurous acids and their salts are known as in U.S. Pat. No. 3,160,468 but they are not desirable for the present purposes. See also U.S. Pat. No. 2,428,804.

During the processes involved in the installation of vinyl covering material, for example, vinyl wall coverings, casein based adhesives commonly are employed. Even with careful application, a certain amount of the adhesive as coated on the back of the covering material often is inadvertently smeared on the front surface of the material. Experience has shown that, prior to this invention, this smeared adhesive cannot be removed completely, even by vigorous water rinsing or through the use of any conventional cleaning agents or solutions. The prior art cleaning agents and solutions tend to cause the adhesive residue to spread rather than come off the covering material.

Citric and tartaric acids have been used in non-analogous compositions and along with other agents, e.g. to clean eggs, as in U.S. Pat. No. 3,211,659, or in textile treating agents as in U.S. 3,083,166.

One object of this invention is to provide an aqueous cleanser or smear eradicator suitable for most of the usual casein or casein-latex types of adhesive normally employed in installation of vinyl resin type wall covering materials. A related object is to devise an improved method of using such cleanser. The active agent is a small amount of citric or analogous acids or salts thereof. The solvent can be pure water, or in some cases, water containing an alcohol such as methanol or ethanol, in small proportions. Where needed, the solution can contain one or more mild, non-alkaline detergents or scouring materials having mild abrasive but non-scratching characteristics, but these usually are not required.

Other objects of the invention are to provide an adhesive eradicator which can be distributed and marketed either as a dry material or as a concentrated solution, which can be easily mixed with water or aqueous liquid immediately prior to use. This invention makes it possible to eradicate essentially all adhesive residue, including

dried residue, on the exposed surface of the covering material. The appearance of installed vinyl coverings is thus improved by simple and harmless removal of the adhesive residue from its exposed surface.

The eradicator of this invention can be easily applied by hand and will not stain or otherwise adversely affect the vinyl or other usual surfaces or furnishings which may be exposed thereto. It is not limited to cleansings of vinyl surfaces. This material can reduce craftsman time and effort in the installation and clean-up of vinyl coverings, such as vinyl wall covering.

The present invention provides a means and method for removing the adhesive residues, as above described, using dilute solutions of alpha hydroxy acids of 2 to 6 carbon atoms, e.g. citric, without stain or other adverse effects on the vinyl or other similar covering material, or to finishings commonly used with or found near such covering material.

DESCRIPTION OF PREFERRED EMBODIMENT

The adhesive eradicator of this invention is based on the discovery by this inventor that low molecular weight hydroxy organic acids, such as citric acid of a proper concentration, will eradicate the residue of all known currently formulated vinyl covering adhesives. In light of this discovery, experimentation has shown that an aqueous citric acid solution of as low as 1.0% concentration is satisfactory for many applications. However, a 2.5% aqueous solution of citric acid has been found to be economically optimum in removing all known vinyl adhesive residues.

Various diluting agents may be used with the citric acid, including alcohols and dilute acetic acid solutions. However, plain water is quite satisfactory and leaves no residue upon drying. Other diluting agents, while satisfactory, may leave residues due to extraneous ingredients therein, or may adversely affect the vinyl surface, thus requiring a water rinse to remove such residues.

The exact nature of the chemical process or reaction which occurs between the hydroxy acid, of which citric acid is typical, and the adhesive usually of casein base, to accomplish eradication of the adhesive smears on the surface of covering material, such as vinyl wall coverings, is not known. The majority of the adhesives used at the present time for vinyl wall covering are of white casein type glues, particularly a series of adhesives made by Borden Corporation. The precise formulation of these adhesives is not known in detail but basic ingredients such as latex and/or casein are believed to be essentially the same for all or nearly all the commercial vinyl adhesives on the market. Since the exact formulation of these adhesives is not presently known, a determination of the chemical reaction cannot be determined. However, tests have proven that aqueous citric acid solutions, of the concentration set forth above, and similar solutions of tartaric acid consistently cause the adhesive residue of most casein and latex type glues to disappear.

Since anhydrous citric acid dissolves readily in water to concentrations of up to about 60%, several means of packaging citric acid for commercial use are available. These include (1) a measured amount of the citric acid compressed into a tablet for on-site mixing with a prescribed amount of water or other suitable diluting agent; (2) a dry powder which must be measured with a prescribed amount of diluting agent; (3) a highly concentrated solution of citric acid and water which must be diluted to the desired concentration; and (4) the recommended more dilute concentration for application packaged for immediate use.

By way of example, a usable citric acid solution having a concentration of 2.5% may be provided as follows: 3.4 oz. anhydrous citric acid per 1 gallon of water, with

one gallon of water weighing 8.35 lb. or 133 oz., the concentration would be 3.4 oz./136.4 oz. or 2.5%. This is very satisfactory for cleaning the glue off most finished surfaces.

Again, by way of example, packaging in more concentrated form for commercial use may be as follows: 1 lb. citric acid per 1 quart of solution (16 oz. acid+25 oz. water by weight makes a quart). The concentration of this solution is thus 16 oz./41 oz. or about 39%. *Dilution* of this concentrate in the ratio of 16 parts water to 1 part concentrated solution will yield a usable solution of about 2.5% acid.

For application of the adhesive eradicator of this invention for the removal of adhesive residue from the surface of vinyl wall coverings, for example, and with the acid solution concentrated as set forth immediately above, the following sequence of operations can be followed:

(1) Add one cup of solution concentrate to one gallon of water. For mixing smaller quantities, dilute one part of this concentrate with 16 parts water.

(2) Immediately after application of the vinyl covering to the wall, rinse the adhesive from the surface and seam areas of the vinyl covering in known manner with clean rinse water.

(3) After the fabric has dried and the white adhesive residue typical of casein derivatives appears, apply the diluted solution described above to the affected areas with a sponge or sponge mop, working it well into any embossing of the material. A second application of the dilute acid may be required if the adhesive has been allowed to dry for a long period of time. For best results the diluted solution should be used within 24 hours after the application of the vinyl to the wall. Where convenient, earlier cleaning is somewhat easier, with most glues.

(4) Final rinse the dilute acid treated surface with clean water, when desired, to prevent any side sheen.

Since citric acid reacts with some metals during prolonged exposure, it is recommended that the inventive solution be contained in plastic or other corrosion resistent containers.

While specific examples above have all referred to dilute solutions of citric acid, similar solutions of tartaric acid, mixtures of tartaric with citric, etc., may be used. In fact, all the common alpha hydroxy acids, i.e. malic, lactic, citric, glycollic and tartaric acids, and mixtures of any two or more of these, are useful in dilute aqueous solutions, of about 1% to 5% concentration, for purposes of this invention. The combination of hydroxyl and carboxyl groups appears to be particularly efficacious. Citric acid which has three carboxyl groups and tartaric acid, which has two hydroxyl and two carboxyl groups, are presently preferred, both because they are readily dissolved in water and are effective to remove smeared adhesive which has at least partially set.

It has thus been shown that the present invention provides a novel adhesive remover eradicator, particularly adapted for removing most adhesive residues from vinyl sheet materials, such as those designed for floors, walls, furniture and other surfaces. There is merit also in the simple methods of packaging and applying the cleaning solution to contaminated surfaces. As already noted, it is very desirable in some cases to use an auxiliary cleanser such as a mild detergent or a non-abrasive scouring agent such as talc, borax, and the like.

Although particular concentrations, diluting agents, packaging methods, and sequence of application have been set forth by way of examples, modifications and changes will become apparent to those skilled in the art. For example, these ingredients may be combined with conventional detergents and soaps for many purposes. It is intended to cover in the appended claims all such

modifications and changes as would be apparent to those skilled in the art and such as would come within the true spirit and scope of the invention.

What is claimed is:

1. A method for removing adhesive residues of casein and/or latex type glues from the surface of vinyl covered objects comprising the steps of: applying a solution having a concentration of alpha hydroxy acid selected from the group which consists of malic, lactic, citric, glycollic and tartaric acids, of at least 1.0% and not more than 5.0% by weight to a vinyl surface having dried adhesive residue thereon, and drying the applied solution.

2. The method defined in claim 1, wherein the solvent is water and which includes the step of working the applied solution into the embossing of the vinyl where such embossings appear.

3. The method defined in claim 1, as applied to residues which have hardened over extended periods of time which includes the step of applying a second application of the solution to the vinyl surface.

4. The method defined in claim 1, additionally including the step of applying clean water rinse after the solution has dried.

5. The method defined in claim 1, which includes the step of first preparing a concentrated aqueous solution by mixing acid into water and thereafter diluting with more water to obtain a solution with the required amount of solvent to form the desired acid concentration.

6. The method defined in claim 5, wherein the first and concentrated solution contains about 10% to about 50% citric acid by weight.

7. A method as defined in claim 5 in which tartaric acid is employed as the main acidic ingredient.

8. A method for installing vinyl wall covering material and for removing adhesive which becomes smeared on the front surface of the material, comprising the steps of: applying vinyl covering material to a wall surface utilizing a suitable casein base adhesive, rinsing the surface and seam areas of the applied material with clean water immediately after application of the material to remove most of any smeared adhesive, allowing the material to dry sufficiently such that a visible adhesive residue appears, and thereafter applying as an adhesive eradicator comprising an aqueous solvent containing at least one alpha hydroxy acid selected from the group which consists of malic, lactic, citric, glycollic and tartaric acid, said eradicator having a concentration of at least 1.0% by weight of acid, to the exposed surface, and seams of the installed material.

9. The method defined in claim 8 additionally including the step of working the adhesive eradicator into depressed portions of embossed areas of the material.

10. The method defined in claim 8 additionally including the step of applying a second application of the adhesive eradicator to the surface and seam areas of the material in instances where the adhesive has been allowed to dry an excessively long period of time before application of the adhesive eradicator.

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