

- [54] **LIQUID FABRIC WALL COVER**
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- [22] Filed: **May 10, 1973**
- [21] Appl. No.: **359,043**

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Related U.S. Application Data

- [63] Continuation of Ser. No. 172,353, Aug. 12, 1971, abandoned.

- [52] **U.S. Cl.**..... **260/8**; 117/111; 260/17.4 CL ST; 260/29.6 R MM; 260/29.7 R; 106/124; 106/161

- [51] **Int. Cl.**..... **C08d 7/08**; C08f 45/16

- [58] **Field of Search**...260/17 R, 17.4 ST., 17.4 CL; 260/29.6 R, 29.6 MM, 8; 177/26, 117/27, 111, 260/29.7 R

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[57]

ABSTRACT

Decorative fabric-like surface coating is applied by hand-operated paint roller. Composition applied is a viscous mache including a fibrous textile mass, water activatable thickening agent, latex adhesive, and water in relative amounts which provide a viscosity suitable for roller application. A water softener or a wetting agent may be included to assure proper viscosity.

9 Claims, No Drawings

LIQUID FABRIC WALL COVER

This is a continuation of application Ser. No. 172,353, filed Aug. 12, 1971 and now abandoned.

This invention relates to decorative surface coatings. More particularly, this invention relates to a decorative surface coating made with textile fibers and which produces a fabric-like appearance when applied with a roller to a surface.

Until recently the application of a fabric-like surface coating necessitated the use of pre-manufactured wallpaper, cloth, vinyl, or similar materials in roll or sheet form which were thereafter applied to the desired surface. An alternative was the spray application of electrostatically charged fibers to achieve the fabric appearance in a surface coating. These products and methods require in some cases specialized equipment and generally a good measure of experience and skill in their application to the surface in order to obtain an aesthetically pleasing result. In most cases, visible joints or seams exist. Also where the surface is of an irregular configuration cutting, fitting and gluing may be involved. In these prior methods of applications there was difficulty in matching patterns and in general trimming wastes resulted.

More recently a commercial product has been marketed which included a fibrous textile mass, thickening agent, and adhesive which was designed to be mixed with water at the job site and applied directly onto the selected surface. While this product eliminated many of the difficulties of the prior art products and methods described above, the commercial product herein referred to was of such a nature and consistency that it had to be applied to the surface by troweling or similar technique. Again a relatively high degree of experience and skill was required to obtain a pleasing result so that the product did not lend itself to widespread use by the do-it-yourselfer.

The present invention provides a composition which may be applied to a desired surface with an ordinary hand-operated paint roller to produce a fabric-like surface coating. The composition, when ready for application, is of such a nature and consistency that it may be easily spread uniformly over the surface with the roller functioning very much like a roller on cookie or pie dough. No substantial prior skill or experience is needed by the person doing the application so that the invention finds widespread acceptance by the general public. In effect the composition provides an alternative type of surface covering to those who would otherwise apply the usual paint-type materials to the walls of their home with a paint roller.

More specifically, it has been found that the previous commercial compositions available for application to form a fabric-like covering did not have a suitable viscosity which permitted application to the surface by a roller. Surprisingly it was discovered that by reducing the proportion of water added to the other components of the composition a consistency suitable for roller application could be achieved. The consistency or viscosity of the composition, hereinafter also referred to as a mache, is critical in making possible the roller mode of application. In this regard the proper selection of the essential components of the composition and their relative proportions are necessary to obtain the requisite consistency.

In the preferred embodiment the composition of this invention employs the following essential components

which are blended together prior to surface application in relative amounts effective to permit substantially even spreading thereof over the surface selected by a hand-operated paint roller. The amounts of the components are selected from the following relative proportions shown:

10	Fibrous Textile Mass	} 1-2 lbs. having a volume of .075-0.24 cubic feet, said thickening agent being 5-20% by weight thereof 50-400 grams (100% solids basis) 3.7-4.7 quarts
	Water Activatable Thickening Agent	
	Latex Adhesive	
	Water	

15 The above components will now be discussed in detail.

Fibrous Textile Mass

This component is primarily responsible for the desired fabric-like appearance and includes textile fibers which may be either natural or synthetic. The fiber or combination of fibers may be of various compositions and lengths provided that all fibers selected are not more than about three-fourths of an inch in length. If the length substantially exceeds this limitation, roller application of the composition would not be feasible. Normally the majority of the fibers in the textile mass are usually about 1-3 mm. in length. It will be appreciated that this length of fiber produces a flocculent appearance. In addition the normal composition will include a minority of the total of the fibers of a length of about one-fourth to three-fourths inches. Typical synthetic fibers which may be used are rayon, nylon, acrylic fibers, polyester fibers, and the like. Natural fibers include such materials as silk, cotton, and wool. In addition, textile fibers suitable for use in the present composition may be variously colored or metalized to provide pleasing and decorative effects in the finished surface coating.

Water Activatable Thickening Agent

The thickening agent employed is of the type conventionally added to an aqueous medium to cause a gelling or thickening of the solution. The thickening agent serves to form a cohesive mass of the textile fibers, i.e., it serves as a binder, and also functions to cause adhesion between the fibrous mass and the surface which receives the composition. In general any thickening agent is contemplated which will preferably function so that 1% by weight solution thereof in water at 25° C. will give a viscosity of 2,500 to 10,000 centipoises. Typical examples of water activatable thickening agents of this type are the water soluble cellulose gums such as:

- 55 Carboxy methyl cellulose-sodium salt
- Hydroxy propylcellulose
- Hydroxy ethylcellulose
- Hydroxy propylmethylcellulose

60 Equally useful are those natural gums and resins which are water soluble and form a thickened gel-like mass in water such as gum arabic, gum tragacanth, and gum dammar. Such materials consist largely of carbohydrates and are classified as hydrophilic colloids. Examples of other water soluble or water swellable thickening agents are also of a colloidal nature, for instance albumin and colloidal silica.

65 As indicated above, the proportions of the components of the present composition are critical in achiev-

ing proper viscosity suitable for roller application. It has been found that the components including the textile mass, thickening agent or binder, latex adhesive, and water and other optional ingredients which may be included should be in relative amounts so that a viscous mache is formed therefrom having a cone penetration range of 250 to 320 penetrometer reading (millimeters penetration) as per ASTM D-217-68. Only where the viscosity is in the foregoing range can the viscous mache be spread uniformly with a hand-operated roller to form a decorative coating. For convenience the proportions of the remaining components to be described herein will be based upon a composite unit of textile mass and thickening agent which together weight 1-2 lbs. and have a volume of 0.075-0.24 cubic feet. The thickening agent should constitute 5-20% by weight of this 1-2 lb. unit. Where larger or smaller quantities of coating composition are desired, it is simply only a matter of reducing proportionately all of the components so that the same relative proportions are the same. The following ingredients and amounts are based upon the 1-2 lb. standard unit of textile mass and thickening agent.

Latex Adhesive

On a 100 percent solids basis the latex adhesive should be combined in an amount of about 50-400 grams. The latex adhesive is critical in achieving the desired viscosity or consistency for roller application and also serves to provide good adhesion of the composition to the surface to be covered as well as the promotion of water resistance and longevity of the finished job. Any latex resin is contemplated for this component of the composition. Common synthetic latexes which may be used are styrene-butadiene, polystyrene, polyvinyl chloride, polyvinylidene chloride, polyvinyl alcohol, and polyvinyl urethane. Preferably the latex selected is an acrylic resin. Copolymers of methylmethacrylate and ethylmethacrylate are especially preferred. For convenience, the latex resin may be used in the form of a water emulsion to facilitate its uniform blending with the other components. To this end a portion of the permitted water content described below may be added as part of the latex emulsion.

The amount of water utilized is 3.7-4.7 quarts based upon the standard unit of 1-2 lbs. of textile mass and thickening agent.

The foregoing are the essential components of the composition. Optionally the 1-2 lbs. of textile mass and thickening agent can include non-textile material to enhance and vary the decorative appearance of the end product surface coating. For example, inorganic particles such as mica, asbestos, vermiculite, silica, and perlite, may be included. Non-ferrous metals in powder or flake form can be utilized for variations in the appearance of the surface coating. The metals may also be in strip form such as anodized aluminum strips. As will be illustrated in the examples hereinafter, silver coated mica and flakes of metalized polyester film produce an attractive appearance when added as optional materials to the textile mass. Whether or not these optional decorative additives are employed, the standard unit of textile fibers and thickening agent with or without the additive is 1-2 lbs. in which the thickening agent constitutes 5-20% by weight thereof.

Optional Components

Small amounts of various materials such as waterproofing agents and fire retardants may be included. In view of the textile nature of the surface coating it may be desirable to include in the formulation a compound of the type which is conventionally used to prevent the growth of parasitic fungi which may be stain producing. If used, such a compound (referred to as a mildewcide) will generally amount to about 0.5-1.5% by weight of the 1-2 lbs. of textile mass and thickening agent. Compounds most widely used for this purpose include cresols, phenols, benzoic acid, formaldehyde and organic derivatives or salts of copper, zinc, and mercury. The mildewcide is conveniently added for purposes of blending with the other components as part of the latex emulsion. Specific examples of mildewcide are:

Sodium benzoate
Sodium salt of pentachlorophenol
Sodium salt of 2,4,5 trichlorophenol
Sodium salt of o-phenylphenol

Water Softener or Wetting Agent

As repeatedly emphasized, the viscosity or consistency of the composition is paramount in being able to successfully apply it by roller to a surface. In this regard the chemical composition of the water used in the formulation may bear upon the ultimate viscosity of the blended mass. As is known, the hardness of water varies from one location to another and with some types of water, difficulty may be encountered in achieving a proper viscosity even though the proportions of components described herein are faithfully followed.

Another aspect of this invention is the discovery that if a conventional water softener or wetting agent is included in the formulation a proper viscosity of the mass suitable for roller application will be assured. Preferably, the selected water softener or wetting agent is added to the appropriate proportion of water to be used and will constitute about 0.25-0.67 weight percent of the total water content of the mass applied to the surface (10-25 g. per gallon of water).

Any water softener is contemplated for this purpose. Water softeners generally lower the degree of hardness of water and include a variety of compounds such as soda, trisodium phosphate, sodium metaphosphate, sodium tetraphosphate, and zeolites. Such materials soften water by either removing calcium and magnesium ions from the water or by sequestering these ions into a form which does not exhibit their usual properties.

Instead of a water softener, any wetting agent can be employed in the amount indicated. Wetting agents are compounds that cause water to penetrate more easily into, or spread over the surface of, another material. Such materials include soaps, detergents, and surface active agents. They operate generally by reducing surface tension or interfacial tension. Specific examples of water softeners and wetting agents preferred for use herein are:

Borax
Potassium Tripolyphosphate
Sodium Carbonate
Sodium Hexametaphosphate
(EDTA) Na₄ or (EDTA) Ca (Na)₂
Alkyl Phenoxy Polyethoxyethanol (Triton X-100)

Other typical surfactants which may be used are available under the trademark "IGEPAL" and are also non-ionic surfactants similar to the alkyl phenoxy polyethoxyethanol noted above and commercially available as Triton X-100. Another commercial series of suitable surfactants are available under the trademark "NOPCO" and comprises sulfonated diesters useful as wetting agents.

A typical procedure for practicing the present invention will now be given.

1. The required amount of tapwater is measured into a container;

2. The appropriate amount of wetting agent or water softener, if desired, is stirred into the water;

3. The fibrous textile mass and thickening agent are added to the water solution and any lumps broken up;

4. The latex adhesive containing a portion of the requisite water as an emulsion is added slowly and mixed and kneaded to obtain a complete coating of all fibers;

5. The mixed material is allowed to sit uncovered for 30 minutes so that all fibers become thoroughly wetted; and,

6. Just prior to application, mixing is again accomplished to break up any remaining lumps and to blend them into the mixture.

The surface is previously prepared in a manner similar to the preparation for painting or wallpapering. The viscous mache mass is applied by taking a small handful such as an amount equal in size to a small orange and placed on the surface. Using a conventional paint roller, preferably a small 3 inch short nap mohair roller with a plastic or phenolic core, each handful of mass is rolled out as thin as possible, but still hiding the old surface. Employing this invention, the composition will roll out fairly easily and requires little pressure. The result is an aesthetically pleasing fabric-like surface. After drying conventional clear plastic coatings may be applied for added waterproofing.

Typical examples of a textile mass and thickening agent which will provide different appearances on the surface are given below. These formulations when added to an appropriate amount of water and latex adhesive will generally provide coverage of 32 square feet on a flat substrate.

TYPE A

	Weight	%
White Cotton Floc	540 g.	77%
Sky Blue Polypropylene Yarn	30 g.	4.3%
Purple Polypropylene Yarn	30 g.	4.3%
Sodium Salt		
Carboxymethylcellulose	100 g.	14.4%
	700 g.	100.0%

TYPE B

White Cotton Floc	250 g.	31%
White Cotton Roving	150 g.	19%
Silver Coated Mica	280 g.	34%
Silver Metalized Polyester Film	30 g.	4%
Sodium Salt		
Carboxymethylcellulose	100 g.	12%
	810 g.	100%

TYPE C

White Cotton Floc	480 g.	71%
Gold Fibrillated Polypropylene	50 g.	7%
Yellow Fibrillated Polypropylene	50 g.	7%
Sodium Salt		
Carboxymethylcellulose	100 g.	15%
	680 g.	100%

10 We claim:

1. A composition for application to a surface with a roller to produce a fabric-like surface coating, said composition consisting essentially of the following components blended together in relative amounts effective to permit substantially even spreading thereof over the surface by a hand-operated paint roller, relative amounts of said components being selected from the following relative proportions:

Fibrous Textile Mass	1-2 lbs. having a volume of .075-0.24 cubic feet, said thickening agent being 5-20% by weight thereof
Water	
Soluble or Swellable Thickening Agent	
Latex Adhesive	50-400 grams (100% solids basis)
Water	3.7-4.7 quarts

25 wherein the majority of the fibers in said textile mass are about 1-3 mm. in length and have a flocculent appearance, and a minority of the fibers in said textile mass are one-fourth to three-fourths inches in length, further provided that all fibers in said mass are not more than three-fourths inches in length, said thickening agent being selected from water soluble, hydrophilic, colloidal cellulose and natural gums, albumin and colloidal silica and said latex adhesive being selected from styrene-butadiene, polystyrene, polyvinyl chloride, polyvinylidene chloride, polyvinyl alcohol, polyvinyl urethane, copolymers of methylmethacrylate and ethylmethacrylate latexes.

30 2. A composition in accordance with claim 1 wherein the 1-2 lbs. of said textile mass and thickening agent includes non-textile materials to enhance and vary its decorative appearance.

35 3. A composition in accordance with claim 2 wherein said non-textile materials are selected from inorganic particles and non-ferrous metals.

40 4. A composition in accordance with claim 1 wherein said composition includes a mildewcide in an amount of about 0.5-1.5% weight of said textile mass and thickening agent.

45 5. A composition in accordance with claim 1 wherein said thickening agent is of such a nature that a 1% by weight aqueous solution at 25° C. gives a viscosity of 2,500-10,000 centipoises.

50 6. A composition in accordance with claim 1 and including a water softener or wetting agent in an amount of about 0.25-0.67% by weight of the water content.

55 7. A composition in accordance with claim 1 wherein said latex adhesive is an acrylic resin.

60 8. A method for applying a decorative fabric-like coating to a preselected surface comprising: blending a fibrous textile mass, water, and a binder and an adhesive for forming a cohesive layer of said fibrous textile mass and adhering it to said preselected surface, said textile mass, binder, adhesive, and water being in relative amounts for forming a viscous mache thereof having a cone penetration range of 250-320 penetration reading (millimeters penetration) as per ASTM D217-68, and spreading said viscous mache over said preselected surface.

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lected surface with a hand-operated roller to form a decorative coating thereon.

9. A method for applying a decorative fabric-like coating in accordance with claim 8 wherein the viscous mache has a composition consisting essentially of the following components blended together in relative amounts effective to permit substantially even spreading thereof over the surface by a hand-operated paint roller, relative amounts of said components being selected from the following relative proportions:

Fibrous Textile Mass	1-2 lbs. having a volume of .075-0.24 cubic feet, said thickening agent being 5-20% by weight thereof
Water Soluble or Swellable Thickening Agent	
Latex Adhesive	50-400 grams (100% solids basis)
Water	3.7-4.7 quarts

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wherein the majority of the fibers in said textile mass are about 1-3 mm. in length and have a flocculent appearance, and a minority of the fibers in said textile mass are one-fourth to three-fourths inches in length, further provided that all fibers in said mass are not more than three-fourths inches in length, said thickening agent being selected from water soluble, hydrophilic colloidal cellulose and natural gums, albumin and colloidal silica and said latex adhesive being selected from styrene-butadiene, polystyrene, polyvinyl chloride, polyvinylidene chloride, polyvinyl alcohol, polyvinyl urethane, copolymers of methylmethacrylate and ethylmethacrylate latexes.

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