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Kelly et al.

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[54] **STAIN REMOVER**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 736,290, June 12, 1968, abandoned.

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[58] Field of Search 252/90, 91, 92, 96, 98, 104, 252/117, 118, 122, 123, 125, 134, 174, 105, 164

[56] **References Cited**

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[57] **ABSTRACT**

The stain remover is a semisolid which includes benzyl alcohol entrained in a sodium stearate matrix. The semisolid is rubbed against stained surfaces and releases the benzyl alcohol onto the surfaces as the sodium stearate matrix is worn away by friction. The benzyl alcohol eradicates the stain by solvation. It is especially effective in removing ball pen ink and will remove this type of ink even from vinyl plastic.

5 Claims, No Drawings

STAIN REMOVER

This application is a continuation-in-part of application, Ser. No. 736,290 filed June 12, 1968, and now abandoned, by the present inventors.

This invention relates to stain removers and more particularly relates to stain removers that are in a solid or semisolid form.

Solid and semisolid stain removers in the form of rods or sticks have some advantages over liquid stain removers. One advantage is that they may be easily applied to a controlled area of the surface from which the stain is to be removed even though the surface is irregular or inclined and they are retained on the inclined surfaces without excessive run off. Another advantage is that they do not spill.

Stain removers that remove stains only by bleaching the stains are available in solid form as well as in liquid form. However, this type of stain remover is not suitable for removing some types of stains. For example, this type of stain remover is not suitable for removing ball pen ink.

There are also prior art stain removers that include one or more active ingredients combined into a solid or semisolid and another separate ingredient which is a liquid such as water. For example, a solid stick of polyethylene glycol containing either a reducing addend or an acidic addend may be used to remove stains by rubbing the stick against the stained surface after water has been added to either the stained surface or the stick. The polyethylene glycol is water soluble, and also has a mild eradicating effect on some ink but not on ball pen ink. The combination of the acidic addend or reducing addend with the polyethylene glycol is not known to be effective to remove ball pen ink stains. Moreover, to remove a stain the solid portion of this type of stain remover must have water added either to it or to the stain.

Even those materials and techniques that are known in the prior art to be suitable for removing ball pen ink, such as successively applied liquid acids, grease solvents and bleaches, will not remove the ball pen ink in a satisfactory manner from some surfaces. For example, no prior art stain remover is known to be suitable for removing ball pen ink from vinyl surfaces.

Accordingly, it is an object of this invention to provide an improved stain remover composition that is in a solid or semisolid state.

It is a still further object of this invention to provide a solid or semisolid composition that is useful for removing stains of ball pen ink.

It is a still further object of this invention to provide a stain remover that is especially suitable for removing ball pen stains from vinyl surfaces.

In accordance with the above and further objects of this invention a solid or semisolid composition is provided that includes a mobile dye solvent suspended in a matrix of gelled sodium stearate. The solvents are released onto a surface when a stick formed of this composition is rubbed against the surface.

Benzyl alcohol is included as the active agent of the composition and serves as a solvent. The benzyl alcohol is especially effective in removing stains of a greasy material such as ball pen ink which resist removal by other stain removers. Moreover, this stain remover is effective in removing ball pen stains from vinyl surfaces and other surfaces of plastic. Other stain removers are not able to effectively remove ball pen stains from vinyl surfaces.

The above noted and other features of the invention will be more fully understood from the following detailed description. The following detailed description is for the purposes of illustration and does not define the scope or limits of the invention, reference being had for the latter purpose to the appended claims.

GENERAL DESCRIPTION OF THE STAIN REMOVER

The stain remover is a solid or semisolid which may be stored in containers such as jars or cans, or which may be

formed into any suitable shape such as a rod or stick. The stain remover includes a ball pen ink solvent that is suspended in a matrix of sodium stearate. The ball pen ink solvent is released onto surfaces against which the stain remover is rubbed regardless of the texture or angle of the surfaces. After being applied, the solvent is retained on the surfaces by the matrix material for sufficient time to remove ball pen stains. Moreover, it is able to iradicate ball pen stains from plastic surfaces such as vinyl surfaces. Benzyl alcohol is used as the solvent and sodium stearate as the matrix material.

The benzyl alcohol is retained within the stain remover in a matrix of sodium stearate along with other liquids that serve as gelling agents, solvents, viscosity increasing substances, and wetting agents. This suspension of liquids in the sodium stearate, is a soft solid or semisolid. It will hereinafter be referred to as a semisolid.

The semisolid requires a relatively small amount of the sodium stearate to serve as the matrix. The sodium stearate may be from 5 percent to 25 percent of the total composition by weight with the liquids making up the remainder of the composition. Compositions of the stain remover that contain less than 5 percent by weight of sodium stearate are too soft and sodium stearate in proportions greater than 25 percent of the stain remover are not completely soluble. Compositions of the stain remover that contain approximately 9 percent by weight of the sodium stearate have a consistency that is preferred for most stick type applicators.

The relative proportions of the liquids are chosen to include the maximum proportion of solvent that can be included in the composition while maintaining a consistency of the composition suitable for a stick type stain remover. Compositions of the stain remover that contain approximately from 35 to 55 percent by weight benzyl alcohol have preferred characteristics.

Broadly, the semisolid stain remover composition of the present invention consists essentially of a gelled sodium stearate matrix having entrained or dispersed therein in the range of from 35 to 55 percent by weight, based upon the total weight of the composition, of benzyl alcohol.

Preferably, the above composition for removing ball pen ink from surfaces will consist essentially of from 5 to 25 weight percent of sodium stearate, from 20 to 32 weight percent of a solubilizer for sodium stearate selected from the group consisting of 2-propanol, diethylene glycol monoethyl ether and mixtures thereof, from 3 to 7 weight percent of water, from 1 to 2 weight percent of a synthetic surfactant, and from 35 to 55 weight percent of benzyl alcohol.

The 2-propanol and the glycol ether, like the benzyl alcohol, also serve as a dye solvent in the composition. A small amount of water is included in the composition to produce a complete solution.

The amount of the synthetic organic surfactant is not critical and in general can range from about 1 percent to about 5 percent and more preferably from about 1-2 percent by weight based upon the total weight of the stain remover composition. The surfactant can be nonionic, anionic or cationic.

The nonionic synthetic detergents are as a class, well known materials, but by way of example, mention may be made particularly of the alkylene oxide condensation with higher aliphatic alcohols, alkyl phenols, carboxylic acids, amides, amines and sulphonamides. Examples of such products may be found illustrated in U.S. Pat. Nos. 1,970,578, 2,085,706, 2,205,021, 2,213,477, 3,060,124, 3,075,922, and 3,122,508.

The anionic and cationic synthetic detergents are well known, and by way of exemplification references thereto can be found in U.S. Pat. Nos. 2,941,950, 3,001,949, 3,075,922, 3,122,508, 3,192,166.

In one embodiment of the stain remover, about 10-15 percent polyethylene glycol having a molecular weight between 3,000 and 20,000 is included to give greater firmness to the stain remover. The polyethylene glycol is added while the composition is warm to facilitate obtaining a composition having a firmer body than one without polyethylene glycol. An

evaporation retarder such as about 8-12 percent propylene glycol or about 5-7 percent sorbitol may also be included if desired.

The benzyl alcohol removes stains primarily by solvation rather than by bleaching. Because the stains are removed by solvation rather than bleaching, ball pen ink is more readily removed from plastic substances such as vinyl by this stain remover. In these plastic substances the dye from the ball pen ink penetrates into the vinyl with the plasticizer. However, the benzyl alcohol is able to float the ink out of the vinyl because of its properties as a solvent.

Typical formulations for the stain remover in accordance with this invention are given below. These formulas are illustrative examples only and other compositions can readily be evolved in the light of the teachings herein.

EXAMPLE 1

	Percent by Weight
Sodium Stearate	8.95%
Benzyl alcohol	52.2%
2-propanol	2.4%
Propylene glycol	10.45%
Surfactant	
*(ALKATERGE-E)	1.50%
Deionized water	4.50%

*ALKATERGE-E is the trade name for an oil soluble surface active agent manufactured by Commercial Solvents Corporation, 260 Madison Avenue, New York New York. It is oxazoline prepared from 2-amino-2-ethyl 1-3 propanediol and oleic acid.

EXAMPLE 2

	Percent by Weight
Sodium Stearate	10.1%
Benzyl alcohol	38.0%
2-propanol	25.4%
Sorbitol	6.3%
ALKATERGE-E	1.3%
Deionized water	6.3%
Polyethylene glycol having a melting point greater than 53° C	12.6%

EXAMPLE 3

	Percent by Weight
Sodium stearate	8.9%
Benzyl alcohol	46.1%
2-propanol	19.8%
Propylene glycol	9.3%
Diethylene glycol monoethyl ether	10.7%
Sodium dodecyl benzene sulphonate	1.3%
Water	3.9%

PROCESS FOR MANUFACTURING THE STAIN REMOVER

A suitable process for manufacturing a stain remover having the formula of Example 1 is given below.

The sodium stearate is first mixed with low heat with the benzyl alcohol and the 2-propanol which serve as a solvent and solubilizer for the sodium stearate. Then, the propylene glycol is added, followed by the surfactant which also serves as an emulsifying agent. After the surfactant has been added, deionized water is added.

After the ingredients have been mixed, the temperature of the mixture is brought to 80° C. and is maintained at this temperature until the ingredients are all in solution. The solution is then poured into a container and permitted to harden. The matrix is formed by the sodium stearate as the solubility decreases on cooling. The container is in the shape of a stick or rod so that the final hardened produce is in useable form as a stick-type stain remover.

In a similar manner a stain remover having the formula of the other examples may be prepared. However, in the second

example, the polyethylene glycol is added to the mixture while warm. Upon cooling, the polyethylene glycol forms an integral part of the structure providing added support and also serves as a moisture retardant. Suitable polyethylene glycols are sold by Union Carbide and Carbon Corporation under the trademark CARBOWAY. In the third example, the diethylene glycol monoethyl ether serves as a solvent and may be added with the alcohol. It is sold by Union Carbide and Carbon Corporation under the trademark CARBITOL solvent.

Because the stain remover of this invention is in stick form it may be applied to a carefully controlled area of the surface having the stain. It may be applied regardless of the angle of the surface.

The applicator does not have to be moistened before use. It remains in useable condition for long periods of time because the active ingredients are protected by the matrix. Even though it has been stored for long periods of time, it is easily rubbed against the surface from which the stain is to be removed and is operative without excessive pressure or motion since it does not depend primarily upon abrasion for its effectiveness.

When the stain remover is rubbed against the surface, the dye solvent that is entrained therein is released into the surface. It remains for a sufficient period of time to remove the stain even though the stain may have passed beneath the surface and even though the surface may not be perfectly flat but may have some angles to it that would render stain removal by pure liquid applicators difficult. No liquids need to be applied after the use of this solid stain remover. It is effective by itself.

The stain remover will remove ball pen inks from plastic surfaces such as surfaces of vinyl in which surfaces the ball pen ink has passed to a small depth by action of the plasticizer within the plastic surface. It is believed that the solvent penetrates these surfaces and floats the ink dyes that may have passed into the surfaces.

Although an embodiment of the invention has been described with some particularity, many modifications and variations are possible therein in the light of the above teachings. It is therefore to be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A semisolid stain remover composition for removing ball pen ink from surfaces, consisting essentially of from 5 to 25 percent by weight of sodium stearate, from 20 to 32 percent by weight of a solubilizer for sodium stearate selected from the group consisting of 2-propanol, diethylene glycol monoethyl ether and mixtures thereof, from 3 to 7 percent by weight of water, from 1 to 2 percent by weight of a synthetic surfactant selected from the group consisting of anionic, nonionic and cationic surfactants, and from 35 to 55 percent by weight of benzyl alcohol.

2. The composition of claim 1 containing as an additional viscosity increasing agent about 5-7 percent by weight of sorbitol.

3. The composition of claim 1 containing as an additional constituent, about 8-12 percent by weight of propylene glycol.

4. The composition of claim 1 containing as an additional firming agent about 10-15 percent by weight of polyethylene glycol.

5. A semisolid stain remover composition according to claim 1 for removing ball pen ink from surfaces consisting essentially of:

	Percentage by weight
sodium stearate	5-25
2-propanol	30-32
water	3-7
synthetic organic surfactant	1-2
propylene glycol	8-12
benzyl alcohol	35-55

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,664,962 Dated May 23, 1972

Inventor(s) JERRY D. KELLY and FORREST E. BECK

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 21, "2-propanol 2.4%" should read
--2 propanol 22.4%--; Column 3, line 68, "hardened produce"
should read --hardened product--; and Column 4, lines 62 and 63,
"according to claim 1" should read --according to claim 3--.

Signed and sealed this 9th day of January 1973.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents