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MAT FILM FOR WRITING

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ABSTRACT OF THE DISCLOSURE

A mat layer comprising a fine powder of fused alumina and cellulose acetate resin on a plastic film is excellent in writing and erasing properties.

The present invention relates to a mat film for writing. More particularly, it relates to obtaining a mat film suitable for drafting by arranging a mat layer on a plastic film as a support.

A mat film for drafting using polyester film, polyvinyl chloride film, or polycarbonate film as a support is usually employed, one having arranged a mat layer containing a matting agent such as glass powder, silica powder, clay powder, and titanium oxide on a plastic film as a support. However, there are many cases in which original drafting has to be corrected or one portion of drafting is rubbed out with an eraser and reused. The mat layer must be so rigid that it can be smoothly written by a hard pencil of 7 to 9H; in case of writing by a hard pencil (7, 8 and 9H), the mat layer should not become dented nor rubbing marks lie thereon as they are in conventional film. And the mat layer must not peel off even is case of rubbing out with an eraser and the same place must be smooth for writing.

The conventional mat film has had the defect that the mat layer and carbon of pencil are poor in adaptability and, when written places are lightly rubbed by fingers, they are contaminated by carbon; conventional mat film has been so unsatisfactory in workability that thick writing cannot be obtained for carbon does not adhere to the mat.

The present invention provides a mat film for recording having a mat layer comprising fine powder of fused alumina and cellulose acetate resin on a plastic film support.

Herein, as fine divided powder of fused alumina, for example, there is used fine powder of fused alumina grinding stone. One which contains above 75% of Al_2O_3 and, in addition, SiO_2, Fe_2O_3 and TiO_2 and is below 20 microns in particle size is preferable; one which contains above 90% of Al_2O_3, below 5.0% of TiO_2, below 0.3% of SiO_2 and above 0.1% of Fe_2O_3, is above 3.85 in specific gravity and below 14μ in maximum particle size (average particle size about 5μ) is particularly preferable.

The mat layer is formed by dispersing cellulose acetate and the above fine powder in an organic solvent such as tetrachloroethane, methylene chloride, methanol, acetone, methyl ethyl ketone, ethylene chloride, cyclohexanone, methyl acetate, ethyl acetate, dioxane, nitromethane, dimethylformamide, acetic acid, and formic acid, coating the resulting dispersion on a film support and thereafter drying it to remove the solvent. Such formation of mat layer may be carried out by any conventional method.

Therefore, the organic solvent is selected depending upon the solubility of cellulose acetate and the amount of solvent used is not particularly limited.

The relationship between the quantities of the finely divided alumina powder and cellulose acetate is preferably 1 to 15 parts, by weight, of powder per 10 parts, by weight of binder. The amount of binder in solution is preferably 4 to 11 parts, by weight, per 100 parts, by weight, of solution.

The cellulose acetate may be either cellulose diacetate or cellulose triacetate, and these acetates are used as a binder for the fine powder; if the amount of acetate used is too little, the mat layer tends to become brittle. The drying temperature of the organic solvent may be above its boiling point and the higher the temperature is, the shorter the drying time is. As a film support a plastic film such as polyvinyl chloride resin, polycarbonate resin, polyester resin, etc., is employed.

It is indispensable that the mat layer of the present invention contain fine powder of fused alumina grinding stone and cellulose acetate; however, of course, it can contain other additions.

In the present invention, the mat layer does not become dented by writing pressure even in the case of using a hard pencil of 7 to 9H; therefore, rubbing marks do not occur thereon even in case of rubbing out by an eraser since the layer is high in hardness. Also, the adhesion of pencil carbon to the mat layer is so excellent that it can be thick and clearly written even by light touch. Furthermore, it is not stained even by rubbing a written place, so a clear and correct writing can be obtained. That an erasure does not remain is advantageous in that, in case of applying the mat to a diazofilm, a printing thickness is even. With a mat layer of cellulose acetate resin mixed with other matting agents, for example, glass powder, silica powder, etc., or with another mat layer of synthetic resin other than cellulose acetate resin, for example, polyester, acrylic acid-butadiene-styrene copolymer, polyvinyl acetate, etc., mixed with fused alumina grinding fine powder, satisfactory results could not be obtained. The above-mentioned remarkable effects were obtained only in case of mixing a fused alumina grinding fine powder in cellulose acetate resin.

EXAMPLE 1

A mixture of 25 parts of nitro cellulose (RS ½"), 2.5 parts of Ester Resin #20 (manufactured by Toyobo Co., Ltd.), 50 parts of ethylene chloride and 45 parts of methyl ethyl ketone was undercoated on a polyester film of 100μ in thickness and, after drying at 80° C. for 5 minutes, a dispersion of 10 g. of diacetyl cellulose resin (acetylation value 55.5, polymerization degree 180), 30 g. of methylene chloride, 10 g. of methanol and 5 g. of a fine powder of fused alumina for grinding, WA (white Alundum) grain was coated thereon and, after drying, a mat layer of 10μ in thickness was coated thereon.

The writing property and erasing property of this surface were excellent.

EXAMPLE 2

A mixed solution of 205 parts of Ester Resin #20, 45 parts of methylene chloride and 50 parts of methyl ethyl ketone was undercoated on a polyvinyl chloride film of 200μ in thickness and, after drying at 80° C. for 5 minutes, a dispersion of 12 g. of tri-acetyl cellulose resin (acetylation value 60.8, polymerization degree 370), 30

g. of methylene chloride, 50 g. of ethylene tetrachloride, 7 g. of methanol and 7 g. of fine powder of fused alumina for grinding A (Alundum) grain was coated thereon and, after drying, a mat layer of 12μ in thickness was coated thereon. The writing property and erasing property of this surface were excellent.

What is claimed is:

1. A mat film for writing having a mat layer comprising a cellulose acetate resin and a fine powder of fused alumina on a plastic film support.

2. The mat film of claim **1** wherein said fine powder of fused alumina contains at least 75% Al_2O_3 and has a maximum particle size below 20 microns.

3. The mat film of claim **1** wherein said fine powder of fused alumina contains at least 90% Al_2O_3, less than 5.0 TiO_2, less than 0.3% SiO_2 and above 0.1% Fe_2O_3 and wherein the specific gravity is above 3.85 and wherein the maximum particle size is less than 14 microns.

4. The mat film of claim **1** wherein the weight ratio in said mat layer of said fine powder to said cellulose acetate resin varies from 1:10 to 15:10.

5. The mat film of claim **1** wherein the cellulose acetate is cellulose diacetate or cellulose triacetate.

6. The mat film of claim **1** wherein the plastic support comprises a polyvinyl chloride resin, a polycarbonate resin, or a polyester resin.

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