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ATOMIZED ALUMINUM-RESIN COATING COMPOSITION

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1

This invention relates to coating compositions containing finely divided aluminum and particularly to coating compositions which provide a smooth, metallic surface on drying and burnishing.

Many attempts have been made to provide coating compositions having the capacity of producing a bright metallic surface comparable in appearance to a plated metal surface. Such attempts have included the use of powdered aluminum in a liquid vehicle such as a varnish or a resin but in all such cases of which we are aware the final surface has been noticeably dull and grainy as compared to a plated surface and subsequent burnishing operations have not provided the bright metallic surface desired.

The principal object of the present invention is to provide a liquid coating composition which will be strongly adherent to metal, wood or similar surfaces and which will give a smooth and bright metallic surface on drying and burnishing.

We have found that the ultimate production of a bright, metallic surface is dependent upon a combination of factors and while we are not prepared to express a final theory as to the mechanism which brings about the surprising results of the present invention we have determined that the particle size of the finely divided aluminum is an important factor and that certain chemical compounds hereinafter identified are of importance in achieving the desired results. The usual powdered or flaked aluminum heretofore employed has a particle size which is too large for use in the practice of the present invention. Likewise there are various impurities present in such prior materials which appear to interfere with the reactions responsible for the ultimate surface which we attain. In the practice of the present invention and in the examples which follow, the finely divided aluminum consists of chemically pure atomized aluminum having a particle size from about 1 micron to about 44 microns such as aluminum powder No. 140 which is an unpolished aluminum powder manufactured and sold by the Aluminum Company of America under the trade-name Albron 140. The term "atomized aluminum" as used throughout this specification is intended to designate a chemically pure, finely divided unpolished aluminum powder having particles falling within the above particle size range and should be distinguished from aluminum powders used as pigments for paints which are designated as "polished" and

2

which contain stearic acid. We have found that this atomized aluminum ingredient in the presence of a suitable resin and a solvent therefor together with maleic anhydride and propylene oxide dries to a strongly adherent film capable of being burnished to a smooth, bright metallic surface similar in general appearance to a chromium plated surface.

The following example is given as a preferred embodiment of the present invention but it will be understood that various changes may be made in the relative amounts of the ingredients and that likewise equivalent materials may be substituted or added.

Example

	Parts by weight
Tripolymer of vinyl chloride, vinyl acetate and maleic acid (Vinylite VMCH)	8–17
Atomized aluminum	50–75
Propylene oxide	.03–.05
Ketone base solvent	Balance to 100

The Vinylite VMCH is a tripolymer of vinyl chloride, vinyl acetate and maleic acid manufactured and sold by Carbide & Carbon Chemicals Corporation. The ketone base solvent may be selected from a number of suitable materials characterized by their ability to provide a solvent action for the Vinylite resin. The following ketone base solvents may be used either alone or in admixture:

Acetone
Methyl ethyl ketone
Diethyl ketone
Methyl n-ketone
Methyl isobutyl ketone
Methyl n-amyl ketone

In combining the various ingredients set forth above, the atomized aluminum is thoroughly mixed with the ketone base solvent. Then the Vinylite resin is added. The mixture is stirred until a uniform suspension is obtained. Then the propylene oxide is added.

In using the composition of the present invention to provide a bright metal surface the coating composition is applied by brushing, spraying or dipping and then allowed to dry, thus forming an adherent coating. After a suitable drying period, the coating is sanded and burnished by use of a burnishing pad or wheel and during this operation the surface undergoes a surprising change to a very smooth and bright metallic surface.

The coating composition of the present in-

vention is adapted for use both on non-porous surfaces such as metals and porous surfaces such as wood, wall board, plaster and the like. Where the coating composition is to be used on porous surfaces it is better to use a somewhat larger proportion of Vinylite resin and ketone base solvent. The optimum proportions to be used in any particular case are easily determined by trial but in general the amounts will fall within the ranges indicated.

While we have described the above invention by reference to a specific example it is to be understood that we do not intend to limit our invention to the specific example given since equivalent materials in varying amounts may be employed within the scope of the invention as defined in the following claims.

Having thus described our invention, we claim:

1. A liquid coating composition capable of providing a smooth metallic surface on drying and burnishing comprising in admixture a synthetic resin consisting of a tripolymer of vinyl chloride, vinyl acetate and maleic acid; finely divided, unpolished aluminum powder consisting of particles of aluminum coming within the size range from about 1 micron to about 44 microns; an

aliphatic ketone base solvent for the resin and a relatively small amount of propylene oxide.

2. The composition of claim 1 further characterized by the fact that the aliphatic ketone base solvent is acetone.

3. The composition of claim 1 further characterized by the fact that the aliphatic ketone base solvent is methyl ethyl ketone.

4. The composition of claim 1 further characterized by the fact that the aliphatic ketone base solvent is diethyl ketone.

5. The composition of claim 1 further characterized by the fact that the aliphatic ketone base solvent is methyl n-ketone.

6. The composition of claim 1 further characterized by the fact that the aliphatic ketone base solvent is methyl isobutyl ketone.

References Cited in the file of this patent

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