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HAMMER METAL FINISH

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6 Claims. (Cl. 260—21)

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This invention relates to a new and novel method for producing coating compositions for spray application. More particularly it relates to coating compositions containing aluminum or other metallic paste or powder, with or without admixture of color pigments and/or dyes, designed to produce hammered metal effects on articles coated.

Heretofore hammered metal effect coatings have been obtained by the two coat method which consists essentially of spraying the base coating containing the metallic pigments and resins followed by a spatter coat of solvent, or the method which depends upon the action of a solvent consisting of a mixture of highly volatile and slowly volatile constituents, or by the use of specially designed spraying equipment.

It is a primary object of this invention to provide a method of producing a hammered metal effect finish in a single spray application of a single coating composition without any subsequent application of splatter thinner or other materials.

A further object of the invention is to provide a method of producing a hammered metal effect finish in a single spray application which is not dependent upon specially prepared solvent mixtures.

A still further object of this invention is to provide a method of producing a hammered metal effect finish in a single spray application without resort to specially designed spraying equipment.

Other objects of the invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

Broadly stated this invention comprises a novel coating composition and articles ornamented therewith which coating composition, consisting essentially of a film forming vehicle having a metallic powder suspended therein, is rendered capable, upon the application of a single spray coat onto a smooth surface, of developing a hammered metal appearance by the inclusion therein of a minor amount of an alkyl-methacrylate polymer.

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In the preferred embodiment of my invention the said alkyl methacrylate polymer may be selected from those in which the alkyl group has less than six carbon atoms. Isobutyl methacrylate polymer is particularly preferred because of its convenience in handling. This material may be employed conveniently in the form of a 3% solution in a solvent such as toluene. The preferred amount of isobutyl-methacrylate polymer for use in the compositions has been found to be from 0.05 to 1% based on the total composition.

The addition of a high polymeric substance into the coating composition tends to interfere with proper atomization of the coating composition.

One resultant effect of interfering with proper atomization of the coating composition is an increase in particle size of material leaving the spray gun head and impinging upon the surface to be coated. Thus, the coating composition, using conventional spray equipment, is being sprayed in relatively coarse droplet form and does not, as in the case when a "spatter" gun is used, flow together or coalesce until actually on the surface coated. During this process of coalescing on the surface the flow patterns set up in the film causing migration and uneven distribution of the aluminum pigment particles result in the familiar hammered metal effect. The amount of flow and coalescing taking place will of course be limited by the setting time of the film which is primarily a function of the rate of evaporation of volatile material from the wet sprayed film.

It is a well-known fact the usefulness of certain synthetic resin polymers in coating compositions for spray application is limited by the degree of polymerization reached in the manufacture of the resin and its attendant effects on solubility, compatibility with other materials, and sprayability.

Beyond certain molecular weight ranges which will vary with the specific polymer, synthetic resin materials cannot be satisfactorily sprayed when using any reasonable amount of solvent, because of their failure to properly atomize in the spray gun head resulting in cob-webbing, trapping of air, and general lack of homogeneity in the resultant films.

In this sense sprayability appears to be a function of the size of the polymer molecules and the number of molecules in solution.

As illustrative of the manner in which the process of my invention may be carried out, reference may be had to the following examples:

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EXAMPLE 1

*One coat hammered metal effect grey
baking enamel*

	Parts
Pigment: Lampblack	5
Vehicle:	
Alkyd resin A (solids)	336
Maleic rosin ester resin (solids)	42
Butylated melamine formaldehyde con- densate resin (solids)	54
Xylol	144
Butanol	36
Toluol	362
Metallic flake: Deleafed aluminum bronze pigment	20
Alkyl methacrylate: Isobutyl methacrylate polymer	1
	1,000

The above formulation reduced four parts by volume with one part of toluene will be suitable for spray application at a viscosity of 25 to 35 seconds in a #4 Ford cup at 78° F. and when so sprayed at approximately 30-40 lbs. per square inch or 10-20 lbs. material pressure with a Binks regular type spray gun for synthetic finishes will produce the familiar hammered metal effect.

EXAMPLE 2

*One coat green hammered effect air dry synthetic
finish*

	Parts
Pigment: Medium chrome green	10
Vehicle:	
Alkyd resin A (solids)	336
Maleic rosin ester resin (solids)	42
Processed Congo copal resin (solids)	54
Xylol	144
Butanol	36
Toluol	351
Drier: 6% cobalt naphthenate	5
Metallic flake: Deleafed aluminum bronze pigment	20
Alkyl methacrylate: Isobutyl methacrylate polymer	2
	1,000

The above formulation reduced four parts by volume with one part of toluene will be suitable for spray application at a viscosity of 25 to 35 seconds in a #4 Ford cup at 78° F. and when so sprayed at approximately 30-40 lbs. per square inch or 10-20 lbs. material pressure with a Binks regular type spray gun for synthetic finishes will produce the familiar hammered effect.

It is to be understood in the formulations described under Examples 1 and 2 that since the amounts by weight of the various resin ingredients are given as solids, whereas these materials or equivalents are usually purchased or manufactured in solution form, that a portion of the solvents listed is derived from the resin solutions.

It is to be further understood that where weights of dry pigments are listed, with the exception of the finely divided metal pigment, it is customary to predisperse these pigments in a portion of one of the synthetic resin constituents of the formulation in a ball mill or other suitable device and add them to the formulation in the form of pastes. With respect to the finely divided metal, preferably in the form of metallic flake the preferred amount for use in the com-

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positions has been found to be from 0.5 to 4% based on the total composition.

Where reference is made in the examples to alkyd resin A and alkyd resin B, the following definitions are herewith given:

Alkyd resin A is a reaction product of maleic rosin ester and castor oil modified glyceryl phthalate resin.

Alkyd resin B is a pure cocoanut oil modified glyceryl phthalate.

While deleafed aluminum bronze pigment is used in the compositions of the examples, other metallic pigments as aluminum flake, etc. may be used. The amount to be used will vary depending on the desired finished pattern and those skilled in the art may readily and easily determine the proper amount.

The novelty finishes of my invention are produced with a single spray coating, however, the compositions may be applied to a surface having a previously applied and dried base coating. Such base coatings, however, form no part of the novelty finish of my invention or are they involved in the production of such finish or the pattern thereof.

Modifications in the invention in the form of various changes in the ingredients, their identity and their proportions other than as specifically described in the examples will be apparent to those skilled in the art and are included within the scope of the invention.

I therefore particularly point out and claim as my invention:

1. A coating composition adapted to produce a simulated hammered metal finish by spraying, comprising an oil modified alkyd resin vehicle, from 0.5%-4% of a finely divided metal, and from 0.05% to about 1.0% of an alkyl-methacrylate polymer soluble in said vehicle.

2. A coating composition adapted to produce a simulated hammered finish in a single spray application, comprising a pigment, an oil modified alkyd resin vehicle from 0.5%-4% of a finely divided metal, and from 0.05% to about 1.0% of isobutyl-methacrylate polymer soluble in said vehicle.

3. As an article of manufacture, a body having a smooth surface produced with an ornamental design having a simulated hammered metal finish produced by depositing thereon a sprayable mixture of from 0.5%-4% of a finely divided metal, a pigment, and an oil modified alkyd resin vehicle, such vehicle having included therein from 0.05% to about 1.0% of an alkyl-methacrylate polymer soluble in said vehicle.

4. As an article of manufacture a body having a smooth surface provided with ornamental design having a simulated hammered metal finish produced by depositing thereon a sprayable mixture of from 0.5%-4% of a finely divided metal, a pigment, and an oil modified alkyd resin vehicle, such vehicle having included therein from 0.05% to about 1.0% of an isobutyl-methacrylate polymer soluble in said vehicle.

5. A coating composition adapted to be applied by spraying having approximately the following composition:

	Parts
Lamp black pigment	5
Reaction product of maleic rosin ester and castor oil modified glyceryl phthalate resin solids	336
Maleic rosin ester resin solids	42

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	Parts
Butylated melamine formaldehyde condensate resin solids -----	54
Xylol -----	144
Butanol -----	36
Toluol -----	362
Deleafed aluminum bronze pigment ----	20
Isobutyl methacrylate polymer -----	1
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	Parts
Xylol -----	144
Butanol -----	36
Toluol -----	351
6% cobalt naphthenate -----	5
Deleafed aluminum bronze pigment ----	20
Isobutyl methacrylate polymer -----	2
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6. A coating composition adapted to be applied by spraying having approximately the following composition:

	Parts
Medium chrome green pigment -----	10
Reaction product of maleic rosin ester and castor oil modified glyceryl phthalate resin solids -----	336
Maleic rosin ester resin solids -----	42
Processed Congo copal resin solids ----	54

The following references are of record in the file of this patent:

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