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HOT WATER-SOLUBLE PAINT

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates generally to cold water-insoluble, hot water-soluble paint which is particularly suitable for coating windows for "blackout" purposes.

The present war, which frequently necessitates that large areas be "blacked out" at night so that lights from residences and buildings cannot be seen from the air, has created a demand for an inexpensive paint or coating which may be easily applied to window panes and like surfaces and left thereon for such periods as may be required without deterioration, and which subsequently may be readily removed with very little effort. This same type of paint or coating may also have a number of other uses such as for temporarily darkening rooms so that they may be used as photographic developing rooms, as rooms to show motion pictures or slides in, and for other purposes.

Accordingly, the primary object of this invention is to provide a coating or paint composition, suitable for the above-mentioned purposes, which may be made from readily available, inexpensive ingredients, which is cold water-insoluble so as to be durable and weather-resistant, and which is hot water-soluble so as to be easily removable when desired.

Certain other objects will, in part, be obvious, and will in part appear hereinafter.

For a more complete understanding of the nature and scope of the invention, reference may be had to the following detailed description thereof setting forth, by way of illustration, certain specific compositions and methods of compounding the same.

The base or main component of the paint compositions of the invention is a dilute gelatin solution to which a minute amount of a preservative, such as mercuric chloride, may be added. In addition to the gelatin solution, the paint composition includes a small amount of a wetting or emulsifying agent. The ammonium soaps such as ammonium oleate, ammonium palmitate, and ammonium stearate, have been found to serve satisfactorily as the wetting or emulsifying agents. There should also be included in the paint compositions of the invention a small amount of a basic reagent such as ammonia water.

Any suitable pigment may be added to the foregoing ingredients in the proper amounts. The pigment may be lampblack for "blackout" paint, fluorescent minerals for temporary signs illuminated with ultraviolet light, or phosphorescent materials which glow in the dark. Also, the pigment may be selected on the basis of the color of illumination used in a room. For example, if orange or red colored electric lamps or bulbs are used, a green pigment may be selected for the "blackout" paint. The wavelength of light emitted from the orange or red lamps will be completely absorbed by the green pigment. A number of similar combinations will be suggested and occur to those skilled in the art.

As illustrative of the invention, the following specific compositions and methods of preparing the same, are given:

(1) A gelatin base solution, containing about 0.5% by weight of gelatin, is prepared by dissolving the gelatin in hot water having a temperature of about 190° F. To this gelatin solution may be added a minute amount of a preservative, for example, 1:10,000 mercuric chloride.

(2) From 0.25% to 1% by weight of a wetting or emulsifying agent, which decomposes to an acid when the paint is dry, is added to the gelatin solution. The wetting or emulsifying agent may be one of the ammonium soaps. Ammonium oleate has been found to serve very satisfactorily.

(3) From 1% to 2% of a basic reagent, such as strong ammonia water (27%), is added to the mixture. The ammonia serves to raise the pH and prevents jelling at too high temperatures.

(4) Suitable pigment in the amount of 10% is added and thoroughly mixed into the composition.

(5) After all of the ingredients have been added, the composition is run through an homogenizer or colloid mill.

It will be understood that the particular sequence of adding and mixing the ingredients outlined above may be varied so long as the desired composition is obtained.

To apply the paint to window panes or other surfaces, the paint is warmed just enough to liquefy any gelid condition, and is then either brushed or sprayed onto the surfaces to be painted. To remove, the paint is simply washed with hot water, above 120° F.

It is known, from actual tests, that the paint will last at least several months in service, outdoors, in winter weather, without visible deterioration. The tests indicate that the paint will remain in good condition for much longer periods.

It is believed to be a new principle in paints of the type to which this invention is directed, which are cold water-insoluble and hot water-soluble, to use a wetting or emulsifying agent which de-

composes to an acid when dry to help incorporate the pigment, together with the use of the basic reagent, ammonium hydroxide, to keep the gelatin base soft before application. The acid furnished by the emulsifying agent after decomposition hardens the gelatin and gives it added strength as a film.

Since certain changes and modifications may be made in the foregoing compositions and methods of preparing the same without departing from the scope of the invention, it is intended that all matter contained in the above description shall be given a construction as broad as is consistent with the state of the prior art.

What is claimed as new is:

1. A cold water-insoluble, hot water-soluble paint comprising: from 87.0 to 88.75% by weight of a 0.5% water solution of gelatin preserved by the addition of a minute amount of mercuric chloride; from 0.25 to 1.0% by weight of an ammonium soap; from 1.0 to 2.0% by weight of strong ammonia water (about 27%); and about 10% by weight of desired pigment.

2. A cold water-insoluble, hot water-soluble paint comprising essentially a dilute solution of gelatin in water as a major constituent, a small amount of ammonium soap, said amount being sufficient for the ammonium soap to serve as an emulsifying agent and thereafter on drying of the paint for the ammonium soap to decompose into an acid which serves to harden the paint in a film, a small amount of ammonia water sufficient to prevent gelation of the gelatin, and sufficient pigment to render the paint opaque.

3. A cold water-insoluble, hot water-soluble paint comprising essentially a dilute solution of gelatin in water as a major constituent, a small amount of ammonium oleate, said amount being sufficient for the ammonium oleate to serve as an emulsifying agent and thereafter on drying of the paint for the ammonium oleate to decompose into an acid which serves to harden the paint in a film, a small amount of ammonia water sufficient to prevent gelation of the gelatin, and sufficient pigment to render the paint opaque.

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