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PAINT INSPECTION

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5 Claims. (Cl. 117—66)

This invention has to do with the determination of the quality of a painted or lacquered coating as regards its covering an undercoat.

One of the most difficult production problems regarding lacquer finish concerns the detection and repair of thin spots, particularly on edges and crease lines. Detection of thin finish requires a far more rigid visual inspection under strong lights than can be expected of the average production inspector for a continuous day's work.

The thin spots may occur as a result of insufficient paint or lacquer having been applied in the first place, or they may occur as a result of paint or lacquer being removed to such an extent in one or more places during wet sanding or other conventional smoothing operations as to produce painted or lacquered portions that are dangerously thin. Thin spots caused by sanding operations may be greater in those applications requiring higher standards of smoothness for the finished paint job. For example, in the automotive field higher priced cars at times may require an excess amount of wet sanding in order to reduce "orange peel" to a minimum, whereas manufacturers of lower priced cars consider "orange peel" as part of their standard quality and make no attempt to sand it out.

The present invention is concerned with the inspection of the finish in order to determine whether or not there are any thin spots. If thin spots are present the finish can then be observed and repaired before the product leaves the factory. Our invention comprises the formation of the undercoat, primer, or ground coat with a small amount of a fluorescent or luminescent material, and the inspection of the finished surface under light which includes components of the correct wave length to produce luminescence or fluorescence of the undercoating. Fluorescent materials are not visible under ordinary sunlight or Mazda type lamps and are radio-active only when excited by direct exposure to carbon-arc, mercury vapor or argon-gas types of ultra-violet light.

The fluorescent or luminescent materials should have no deteriorating effect on the paint or lacquer and should be safe, economical, and potent enough to require only small quantities. These factors should be taken into account in selecting the fluorescent material.

Zinc sulphide is illustrative of a fluorescent material that has been used in carrying out the invention. The fluorescent material is ground to lacquer pigment texture and reduced to spraying consistency with lacquer thinner. A typical formula consists of 14% pigment, 19% vehicle, and 67% volatile. The ratio is 19 ounces of pigment by weight per gallon. Tests indicate that about 4 ounces per gallon of this mixture will fluoresce brilliantly regardless of the opaque qualities of the lacquer pigment of standard car colors.

As illustrative of test procedure a wheel shield was sprayed with a mixture of 4 ounces of Shetland Gray mixed with 10 c.c. of zinc sulphide to form the undercoat. Over this undercoat was formed a heavy coat (double lap) of regular Shetland gray lacquer. The baked panel was intentionally sanded thin at the edges and at two points in the center of the panel. The thin spots in the center of the panel were not visible under strong Mazda lamps at a distance of five feet. The thin edges were not even visible at a distance of six inches. When the panel was exposed to ultra-violet filtered light the thin areas and thin edges fluoresced brilliantly and could be detected instantly.

The test procedure was repeated using standard black lacquer as a vehicle instead of Shetland gray. The results were the same as in the previous example except that the brilliance of the fluorescent material was about 30% less due to the opaqueness of the black lacquer pigment.

Various changes may be made in the embodiment of our invention disclosed herein without departing from the principles of our invention and we do not intend to limit the patent granted for our invention except as necessitated by the prior art.

We claim:

1. The method of determining the quality of a painted or lacquered surface which includes applying an undercoat containing a fluorescent material, applying a coating to be tested over said undercoat, and inspecting the finished coating under ultra-violet light whereby any thin portions in the coating to be tested are readily visible.

2. The method of determining the presence of thin spots in a painted or lacquered surface which includes applying an undercoat containing a small amount of a fluorescent material, covering the undercoat with a layer of paint or lacquer, and subjecting the composite coating to the action of ultraviolet light whereby any thin

spots in the covering layer of paint or lacquer are readily visible due to the excitation of the fluorescent material in the undercoat.

3. The method of determining the presence of thin spots in a painted or lacquered surface which includes applying a ground coat containing a small amount of zinc sulphide, applying to the ground coating one or more layers of paint or lacquer, and subjecting the composite coating to the action of ultra-violet light whereby any thin spots in the exterior paint or lacquer are readily visible due to the excitation of the fluorescent material in the ground coat.

4. The method of painting or lacquering and determining the presence or lack of thin spots therein which includes applying an undercoat containing a fluorescent material, applying one or more layers of paint or lacquer to the undercoat, subjecting the paint or lacquer coating to conventional sanding or smoothing operations, and inspecting the coating under ultra-violet light whereby any thin spots in the paint or lacquer are readily visible due to the excitation of the fluorescent material in the undercoating.

5. The method of determining the presence of thin spots in a painted or lacquered surface which includes, applying a ground coat containing a fluorescent material, covering said ground coat with a coating of paint or lacquer, and subjecting the lacquered surface to light rays which activate the fluorescent material whereby any thin spots in the lacquered coating are readily visible.

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