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[54] **PAPER COATING COMPOSITION**
8 Claims, No Drawings

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ABSTRACT: A method for detecting coating transfer from a coated film which involves incorporating a fluorescent, ultraviolet light-detachable material in the coating, applying the coating to one surface of the film and subsequently scanning a surface of the film to detect the presence of the fluorescent material.

PAPER COATING COMPOSITION

This invention relates to detection of the transfer of coating compositions.

In one of its more specific aspects, this invention relates to silicone coating compositions used for coating release paper.

In the manufacture of coated surfaces, and in particular of certain types of papers, one of the surfaces of the paper is coated for a specific purpose, for example, to facilitate the implantation of an image in a subsequent printing process. Since such paper is generally stored in rolls in which the coated surface is brought into contact with the noncoated, or matte, surface of the sheet, it frequently happens that on extended storage some of the coating of the coated surface adheres to the noncoated surface. Upon the unwinding of the roll, a defective coated surface results. Such transfer is difficult to detect and frequently considerable amounts of paper are processed before the transfer is determined. The method of this invention is directed to the solution of that problem.

According to the method of this invention there is provided a process for detecting coating transfer from a coated film which comprises coating one surface of the film with a composition comprising a fluorescent, ultraviolet light-detectable material and subsequently scanning a surface of the film with ultraviolet light detection means to detect the presence of the fluorescent material.

In one of its embodiments, this invention contemplates the coating of one surface of the film and the scanning of the surface of the film from which transfer is made to detect transfer by nonuniformity of the residual coating.

In another of its embodiments, this invention contemplates scanning the surface of the film to which transfer is made to detect the presence of the fluorescent material.

Accordingly, it is an object of this invention to provide a method for insuring the production of a surface-processable paper.

It is another object of this invention to provide a method of eliminating the processing of defectively coated paper.

These and other objects of this invention will become apparent from the following description.

The method of this invention applies to all types of paper which are surface coated on at least one surface and is similarly applicable to paper coated on two surfaces.

The method of this invention also applies to all types of paper to which an extraneous material is applied, whether such extraneous material acts as a coating or is incorporated in the body of the paper, the presence or uniformity of which material it is desired to determine. One such coating to which the method of this invention is particularly applicable is a silicone coating applied in the form of a solution.

The method of this invention similarly applies to all conventional methods of coating papers, however conducted, which do not destroy the effect of the fluorescent compounds upon their addition to the coating solution or in the application of the solution to the paper. The method of this invention contemplates the addition of any of the conventional fluorescent compounds detectable by light, or related means, to the coatings employed. Such fluorescent compounds include fluorescein, riboflavin, anthracene, rhodamine B and Tinopal*

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Trademark SFG, available from the Geigy Chemical Corporation.

While this invention is explained in the terms of coating compounds, it is, as mentioned above, applicable to any extraneous materials which are applied to paper.

One, or more, of the detectable fluorescent compounds is incorporated in the coating by direct addition thereto in amounts from about 0.001 to about 0.003 percent by weight of either the coating itself or of the finished solution. Incorporation can be made under any conditions which promote uniform dispersal of the fluorescent component in the final solution. The application of the fluorescent compound-containing solution to the paper is made in the usual manner.

In the application of this invention, a fluorescent composition detecting means, such as an ultraviolet light source, is positioned to scan that surface of the paper to which the coating containing the fluorescent composition can be expected to be transferred and such transfer determined. Alternately, the detecting means can be positioned to scan the original coated surface and adapted to respond to the irregularity of the fluorescent composition on the surface. There can be interrelated with the detecting means any number of systems which respond to the presence or to the lack of the fluorescent material; for example, such a system can emit a detectable alarm indicating the location of the surface concerned, and can be adapted to imprint on the surface of the paper at that point to which the detection means responds.

One can select a light source of a wide range in conjunction with the nature of the fluorescent material employed. Similarly, one can select an ultraviolet-active agent differing from those optical brighteners which are sometimes added to whiten paper. The detector response is then adjusted to the particular wave length emitted by the fluorescent material whose presence requires detection.

In one application of the method of this invention, a silicone-coated release paper was prepared employing an organopolysiloxane well known in the art in which an ultraviolet tracer material, Tinopal SFG, was incorporated to the extent of about 0.002 weight percent of the finished solution. Coating of the paper and curing techniques were conventional and the coating was subsequently monitored on a continuous basis.

The paper was put through a Scan-A-Web unit, a unit equipped with ultraviolet light having a wave length of 2,537 A and available from Kensington Scientific Corporation, Oakland California, the matte surface being oriented to the light source. Release of the fluorescent component to the matte side of the paper was easily detected visually.

It will be appreciated that the method of this invention can be employed to determine not only coating transfer but also uniformity of coating, both upon application of the coating and after curing and storage. It will be further evident that the method of this invention can be employed in applying any solutions of any nature to any films on which uniformity of deposition or retention is desired to be determined.

I claim:

1. A method for detecting the transfer of a coating from a coated surface of a film which comprises incorporating in the coating a fluorescent, ultraviolet light-detectable material and scanning a surface of the film with ultraviolet light means to detect the presence of the fluorescent material.

2. The method of claim 1 in which the coated surface is scanned to detect transfer by nonuniformity of the coating.

3. The method of claim 1 in which the surface to which transfer is made is scanned to detect the presence of the coating.

4. The method of claim 1 in which the fluorescent compound is incorporated in the coating in an amount from about 0.001 to about 0.003 percent by weight of the coating.

5. The method of claim 1 in which the ultraviolet light detection means is adapted to indicate that portion of the film at which transfer of the coating is detected.

6. The method of claim 1 in which the coating is applied to a sheet of paper, the transfer being made to the matte surface of the paper.

7. The method of claim 1 in which the coating comprises silicone applied to the surface of a paper in the form of a solution.

8. The method of claim 1 in which a fluorescent, ultraviolet light-detectable material is incorporated in a silicone solution applied as a coating to the surface of the paper.