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PREVENTING THE AGING OF PRINTING-OUT PAPER COATINGS

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The present invention relates to sensitized silver-halide emulsion coatings and, in particular, to printing-out paper emulsions and a method for preventing the deterioration of the same during storage.

Printing-out paper consists of a sensitized silver-halide emulsion coated on a baryta impregnated paper base. In the case of slower papers, silver chloride is used while the higher speed papers are coated with a silver chlorobromide emulsion.

A serious problem encountered in the production of the above described coatings is their tendency toward deterioration during storage. This deterioration arises as a consequence of the said coatings being stored in the form of rolls. When so stored, the emulsion side of the coating is in contact with the back side which condition causes a yellowing of the paper.

It is, therefore, the purpose of the present invention to provide a method for preventing the deterioration or aging of printing-out paper coatings during storage.

It has been found that the shelf life of printing-out paper coatings, when stored in roll form, may be extended by coating the back side of said printing-out paper coatings with an aqueous solution of sodium metaborate ($NaBO_2.2H_2O$). The quantity of sodium metaborate may vary considerably, a range of from 5 grams to 25 grams per liter of H_2O being satisfactory for our purpose. A critical factor in this process is the alkalinity of the sodium metaborate solution which must be maintained at a pH of no less than 10. The adjustment of the proper pH can be accomplished by the addition of a dilute alkali such as dilute sodium hydroxide to the sodium metaborate solution.

The aforesaid back coating may be applied simultaneously with the emulsion coating, prior to the emulsion coating, or after the emulsion coating. The preferred method would be after the emulsion coating and prior to winding the coated web onto rolls.

If desired, the sodium metaborate coating solution may contain a water soluble colloid such as polyacrylamide or carboxy methyl cellulose.

As an alternative method, print-out emulsions may be stabilized by the insertion of an interleaving paper layer treated with borax or sodium metaborate. Due to the lower cost of borax, the interleaving paper layer preferentially contains this particular substance.

The invention is illustrated in greater detail by the following example but is not restricted thereo.

Example I

150 grams of sodium metaborate ($NaBO_2.2H_2O$) are dissolved in 10 liters of distilled or de-ionized water. To the resulting solution is then added 10 cc. normal sodium hydroxide at which point the pH should be no less than 10. The back side of a print-out paper is coated uniformly with the above composition, as by a roll applicator, dip coating or air knifing or by any other coating procedures known to the art, and dried. It was found that the resulting paper, when rolled up and stored, did not deteriorate upon aging.

We claim:

1. A print-out paper in roll form comprising a paper base having a silver-halide emulsion coating on the front face thereof, the back face of the paper base being substantially free of said emulsion and at least one of the outer surfaces of the emulsion coating and said paper base being in contact with a layer comprising a boron compound selected from the class consisting of sodium metaborate and borax, said layer substantially preventing contact between the back face of the paper base and the emulsion coating on the front face thereof in said roll.

2. A print-out paper in roll form as recited in claim 1 wherein said layer comprises a coating on said back face face of said paper base.

3. A print-out paper in roll form as recited in claim 1 wherein said layer comprises a separate sheet of paper treated with said boron compound and interleaved in said roll.

4. The method of improving the aging stability of a roll of print-out paper of the type comprising a paper base having the front face thereof coated with a silver-halide emulsion and the back face thereof free of said emulsion which method comprises coating said back face with a solution of sodium metaborate wherein the concentration of sodium metaborate ranges from 5 to 25 grams per liter and said solution has a pH of at least 10 and thereafter forming the paper into a roll whereby contact between said emulsion on the front face and the paper proper of the back face in the roll is substantially prevented.

References Cited in the file of this patent

UNITED STATES PATENTS

2,448,525 Glick ---------- Sept. 7, 1948