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PHOTOGRAPHIC PROCESSING METHOD

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ABSTRACT OF THE DISCLOSURE

A black and white silver halide photographic film is processed by first forming a transparent, acid inactive developer overcoating layer on the surface of the film. An image exposure is then made through the layer onto the film, and the overcoated film then immersed in alkaline water.

This invention relates in general to a photographic processing method and in particular to a method of processing black and white silver halide photographic films.

BACKGROUND OF THE INVENTION

It has always been a goal in photographic processing to overcoat photographic films with a transparent inert layer that contains developer or both developer and fixer. Such an overcoating could then be activated by the immersion of the film in alkaline water, or in alkaline fixer. Conceivably, the alkaline solution could be applied by a web to make a virtually dry system. The experimental difficulty lies in applying the overcoating to the film. If the overcoating is applied out of a water solution, then during its application the film will become wet, dyes and sensitizers in the emulsion will be disturbed, and the processing ingredients in the overcoating will imbibe into the emulsion. Such a procedure invariably leads to a loss of film sensitivity.

SUMMARY OF THE INVENTION

The general object of this invention is to provide a simple method of processing a photographic film. A particular object of the invention is to provide such a method involving the application of a developer overcoating to the surface of the photographic film.

According to this invention, there is provided a simple method of processing a photographic film. The method involves first forming a transparent, acid inactive developer overcoating layer on the surface of a silver halide photographic film. An image exposure is then made through the layer onto the film. Then the overcoated film is immersed in alkaline water.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Two grams of 1-phenyl-3 pyrazolidone, 5 grams of hydroquinone, 20 grams of cellulose acetate hydrogen phthalate, and 5 grams of polyethylene glycol are solubilized in 200 milliliters of ethylene glycol monomethyl ether. The solution is then coated onto the surface of a commercialy available photographic film such as Eastman Kodak RAR490. After drying, a transparent, acid inactive, developer overcoating layer of about 0.1 to 0.5 mil in thickness is formed on the surface of the film. An image exposure is then made through the layer onto the film. The overcoated film is then immersed in alkaline water 0.1 molar in sodium carbonate to set the pH at 10.2 and 0.1 molar in sodium sulfite to increase speed and density of the developed image by stabilizing the developers. After processing for 3 minutes at 68 degrees

F., the film is fixed, washed, and dried by conventional means.

Instead of processing the developer type overcoated film in alkaline water as above, an alkaline-fixer solution may be used including 50 milliliters of alpha-thioglycerol as the organic fixer and 0.1 molar in sodium carbonate with sufficient potassium hydroxide to readjust the pH to 10.2.

In the embodiment set forth, other developers such as elon and hydroquinone may be used instead of 1 phenyl-3 pyrazolidone and hydroquinone. The amounts of the developer ingredients used is dependent on the type of film being developed.

Similarly, instead of cellulose acetate hydrogen phthalate as the organic resin binder, other transparent polymers may be used that can be coated out of a non-aqueous solvent and that are soluble only in alkaline water. Such binders include polyvinyl hydrogen phthalate, acrylic resin, polymethacrylic acid and copolymers of acrylic acid, which resist the absorption of water from the air during storage and resist being drawn into the gelatin emulsion during coating.

Also included in the overcoating layer is a plasticizer such as polyethylene glycol, triphenyl phosphate, and dibutyl phthalate.

The non-aqueous solvent used must be capable of dissolving the developer ingredients, organic resin binder, and plasticizer and must be compatible with the underlying photographic film. Suitable solvents include ethylene glycol monomethyl ether and ethylene glycol monoethyl ether.

As the photographic film, any of the commercially available black and white silver halide films may be used.

While there has been described what is at present considered to be the preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention.

What is claimed is:

1. Method of processing a black and white silver halide photographic film consisting of

(A) dissolving a developer, an organic resin selected from group consisting of cellulose acetate hydrogen phthalate, polyvinyl hydrogen phthalate, acrylic resin, polymethacrylic acid and copolymers of acrylic acid, and a plasticizer selected from the group consisting of polyethylene glycol, triphenyl phosphate, and dibutyl phthalate in a nonaqueous solvent selected from the group consisting of ethylene glycol, monomethyl ether and ethylene glycol monoethyl ether,

(B) coating the solution onto the surface of the photographic film to form after drying, a transparent, acid inactive developer overcoating layer on the surface of the film,

(C) making an image exposure through the layer onto the film, and

(D) immersing the overcoated film in alkaline water.

2. Method according to claim 1 wherein the overcoating layer is coated out of a solution of 1-phenyl-3 pyrazolidone, hydroquinone and cellulose acetate hydrogen phthalate in ethylene glycol monomethyl ether.

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