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DRY PHOTOGRAPHIC PROCESSING
FORMULATION

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4 Claims. (Cl. 96-66)

(Granted under Title 35, U.S. Code (1952), sec. 266)

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

This invention relates to improved dry photographic processing formulations containing therein an inert effervescent disintegrating ingredient.

An object of the invention is to formulate a dry photographic processing mix that will dissolve rapidly when the mix is placed in relatively large quantities of water. Another object is to eliminate the need for mechanical agitation or stirring of the solvent into which the dry mix has been placed for dissolution. A still further object is to develop a dry photographic processing formulation that lends itself to simplified use in mobile processing laboratories.

The use of dry photographic processing formulations has been known for some time. Generally, the dry formulation containing developer, fixer, or combined developer and fixer, as the case may be, and other dry photographic processing materials is mixed into a powder and the powder then packaged. At times, the powder is pressed into a pellet or tablet so that all ingredients will remain together. A dry powder package is especially desirable where the photographic processing agent is not stable in liquid form. Additional advantages of the dry powder package is its long and safe shelf life, its simplicity and low cost of storage, and its relative freedom from the problems of freezing and accidental breakage of glass containers.

However, the powder packages containing small amounts of processing ingredients and heretofore in use are not entirely satisfactory in that part of the processing ingredients fail to dissolve and disperse after adding the contents of the package to the solvent. Time, effort, and accessibility for mechanical agitation have been required to dissolve the powdered or pelletized processing materials in the solvent.

The improved dry photographic processing formulations of this invention overcome the aforementioned difficulty. That is, by incorporating an inert effervescent ingredient in the pellet, one can obtain rapid and complete dissolution of all the dry processing ingredients. The need for mechanical stirring or other agitation or the bubbling through of inert gas is eliminated. All of the dry processing powder dissolves and is rapidly dispersed in the solvent because of this built-in effervescent action. This type of action is especially useful in mobile processing laboratories where there is not sufficient space for agitating equipment.

Especially desirable inert effervescent ingredients for use in the invention are effervescent potassium citrate and effervescent sodium phosphate. Effervescent potassium citrate consists of a mixture of 20 parts of potassium citrate, 47.7 parts of sodium bicarbonate, 25.2 parts of tartaric acid, and 16.2 parts of citric acid; whereas effervescent sodium phosphate consists of a mixture of 20 parts of anhydrous sodium phosphate, 47.7 parts of sodium bicarbonate, 25.2 parts of citric acid, and 16.2 parts of tartaric acid.

Example 1.—A pellet package of dry developing materials is prepared from the following formulation.

Ingredient:	Parts by weight, grams
Pyrocatechin	2
Sodium hydroxide	1
Effervescent potassium citrate	3

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The above formulation dissolves rapidly in a liter of water to form a developing solution. In lieu of the effervescent potassium citrate shown, there can be used 3 grams of effervescent sodium phosphate.

Example 2.—A powder package of dry developing materials is prepared from the following formulation.

Ingredients:	Parts by weight, grams
Metol	2.0
Sodium sulfite (desiccated)	10.0
Hydroquinone	2.0
Borax	20.0
Effervescent sodium phosphate	15.0

The above formulation dissolves rapidly in a liter of water to form a developing solution. In lieu of the effervescent sodium phosphate shown, there can be used 15.0 grams of effervescent potassium citrate.

The amount of inert effervescent ingredient that can be used is easily determined by the photographic processor and will be the amount required to dissolve all the dry processing powder and disperse it in the solvent. If one wants, he can compound a tablet, pellet or powder solely with inert effervescent ingredients. This material could then be added to any processing solution just before film processing for solution agitation.

It is intended that the foregoing description be considered merely as illustrative and not as limiting the invention as hereinafter claimed.

What is claimed is:

1. A dry photographic developing formulation consisting in parts by weight of 2 parts pyrocatechin, 1 part sodium hydroxide and 3 parts taken from a mixture of 20 parts of potassium citrate, 47.7 parts of sodium bicarbonate, 25.2 parts of tartaric acid, and 16.2 parts of citric acid.

2. A dry photographic developing formulation consisting in parts by weight of 2 parts pyrocatechin, 1 part sodium hydroxide, and 3 parts taken from a mixture of 20 parts of anhydrous sodium phosphate, 47.7 parts of sodium bicarbonate, 25.2 parts citric acid, and 16.2 parts of tartaric acid.

3. A dry photographic developing formulation consisting in parts by weight of 2 parts metol, 10 parts sodium sulfite (desiccated), 2 parts hydroquinone, 20 parts borax, and 15 parts taken from a mixture of 20 parts of anhydrous sodium phosphate, 47.7 parts of sodium bicarbonate, 25.2 parts of citric acid, and 16.2 parts of tartaric acid.

4. A dry photographic developing formulation consisting in parts by weight of 2 parts metol, 10 parts sodium sulfite (desiccated), 2 parts hydroquinone, 20 parts borax, and 15 parts taken from a mixture of 20 parts of potassium citrate, 47.7 parts of sodium bicarbonate, 25.2 parts of tartaric acid and 16.2 parts of citric acid.

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