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FIXING AGENT AND PROCESS FOR FIXING COLLOID RELIEFS

X25555

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This invention relates to a new process for fixing silver salt emulsions and to new solutions for use in said process, and the invention is particularly directed to the fixing of colloid reliefs.

It is an object of the present invention to provide a new process for fixing colloid reliefs, and particularly for removing the developed silver and silver salts from colloid reliefs such as are used in the production of dichroic images.

Another object of the invention is to provide a new agent for removing silver salts from colloid reliefs which will not bleach or otherwise disadvantageously affect the dichroic dyes and stains used in the production of light-polarizing images.

A further object is to provide a process in which by a single step the colloid reliefs used in the production of dichroic images may be simultaneously fixed and imbibed with the printing solution.

A still further object is to provide new fixing solutions for silver salt emulsions, particularly new fixing solutions which are adapted for use with colloid reliefs.

Other objects and advantages will in part be apparent and in part be pointed out in the course of the following detailed description of one or more embodiments of the invention, which are given as illustrative examples and are not to be construed as limiting the scope of the invention.

It has been proposed to produce light-polarizing images by printing upon a sheet of suitably molecularly oriented plastic material such as polyvinyl alcohol with a dichroic dye or stain. The preferred dichroic stain for use in the production of black and white prints is a water solution of iodine and an iodide, and the preferred manner of applying the stain to the sheet is by means of conventional photographic colloid reliefs such as the type known as gelatin "wash-off" reliefs. These reliefs comprise initially gelatin emulsions of photosensitive silver salts, and it is necessary at some stage in their preparation for printing to remove these salts. In conventional photographic practice this is accomplished by means of a water solution of "hypo" (sodium thiosulphate), but this treatment is disadvantageous in the production of dichroic images by reason of the fact that hypo solution tends to bleach the dyes and stains used in their production. Furthermore, it is difficult to remove all traces of hypo from the fixed reliefs, even by very thorough washing, and if any amount remains it may result in a spotty print.

In accordance with the present invention, it has been discovered that the disadvantages attendant upon hypoing the reliefs used in the production of dichroic images are avoided by using for the fixing bath substantially the same iodine-iodide solution which is used for the printing of the images. Such solutions may be described more generally as containing tri-iodide ions, and may be formed by dissolving the desired proportions of iodine and at least one soluble iodide salt in water. The proportions and concentrations thereof may vary substantially, and it is to be understood that any such solution which contains tri-iodide ions and will produce a tri-iodide ion stain on the oriented plastic material is suitable for the purpose of the invention, and is to be construed as coming within the scope thereof.

For the purposes of illustration, the following formula is given as an example of a solution with which satisfactory results have been obtained, but it is to be understood that said solution is not to be construed as in any way critical or as limiting the scope of the invention.

Water	cc.	1,000
Ammonium iodide	gm.	50
Iodine	gm.	.5

It should be understood that the relative amounts of the above ingredients are not critical. In general the range of any one ingredient is limited only to the amount which is soluble or to the amount which will cause another ingredient to begin to precipitate from the solution, and in general the more concentrated the solution, the less time is required for the fixing operation.

In the practice of the process of the invention, the photosensitive relief is first exposed to light through the negative or other image desired to be reproduced, and is then developed, bleached, and washed to remove the soft gelatin in the unexposed areas. These steps are all according to conventional photographic practice, and when they are completed the product will be a positive reproduction in relief of the original negative, and it will be relatively dark in color.

The next step is to imbibe the relief in a tri-iodide solution such as that given above. When the relief is immersed therein it changes color virtually immediately to cream, this result being caused by the formation of silver iodide in the relief. After it has been allowed to soak for a short while, however, the cream color gradually changes until the relief becomes transparent, this result being caused by the gradual dissolving of the silver iodide in the solution, probably attended by the formation of a complex, soluble silver salt. The treatment should be continued until the color

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