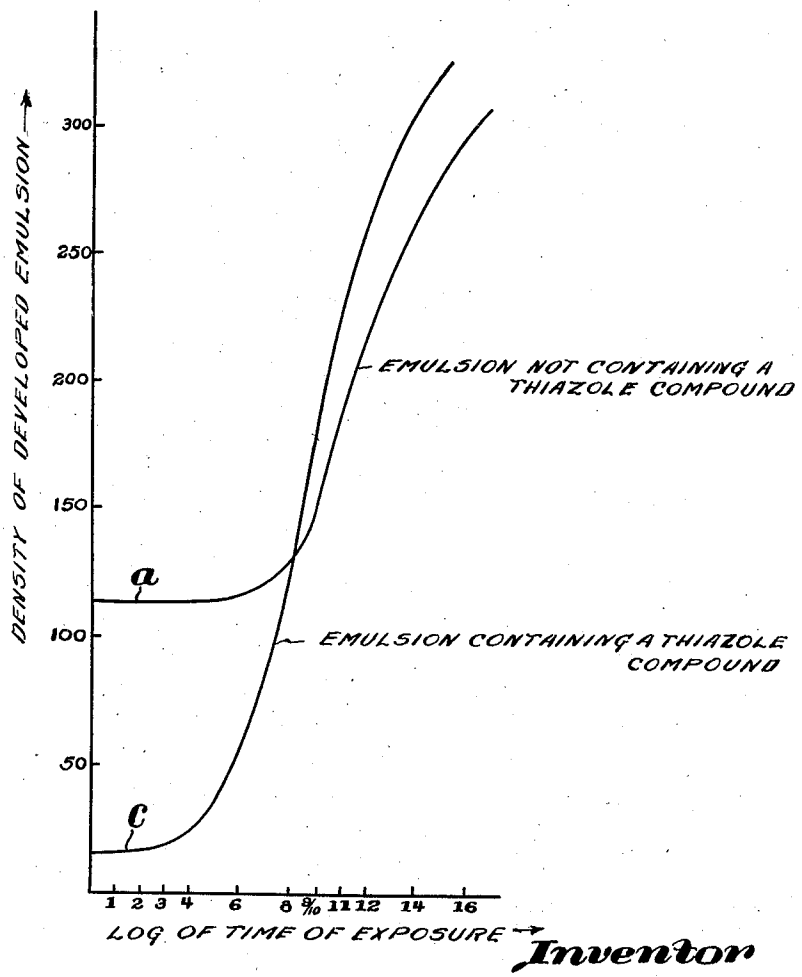
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SILVER HALIDE PHOTOGRAPHIC EMULSION AND PROCESS OF MAKING THE SAME

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UNITED STATES PATENT OFFICE.

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SILVER-HALIDE PHOTOGRAPHIC EMULSION AND PROCESS OF MAKING THE SAME.

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It is known in the manufacture of sensitive silver halide emulsions that the properties of the colloidal substance have an important influence on the photographic properties of the sensitive layer. The sensitivity of a silver halide emulsion made in the ordinary way is increased, e. g., by heating it for a certain time at a moderately high temperature. The so-called ripening-process must, however, not be pushed further than to a certain limit because of the tendency to form fog which increases in the same degree as the sensitivity. The time and temperature of ripening vary with the properties of the gelatine.

The present invention relates to the manufacture of high-speed silver halide emulsions suitable for photographic layers which are relatively free from fog by the addition of thiazole compounds to the colloidal substances used in the preparation of the emulsions.

The improvement so produced is to be seen, for example, by the following comparision, reference being made to the accompanying drawing, in which:

The single figure is a graphic representation of the properties of emulsions prepared with and without the use of thiazole compounds. Curve *a* is a curve indicating the relation of exposures to the corresponding developed densities of a photographic plate coated with a certain silver halide emulsion. Curve *c* is a curve indicating the same relationship for a plate coated with an emulsion which is prepared in exactly the same way as the emulsion corresponding to the curve *a*, but with addition of a thiazole compound.

Gelatine is worked up to a photographic emulsion by a well-known process and the emulsion is efficaciously ripened by heating at 60° C. during 60 minutes. It shows then the properties indicated by the "characteristic curve" *a* on the drawing. The vertical distances of the curves *a* and *c* from the abscissa represent the densities of the developed emulsions, while the lengths of the abscissa represent the logarithms of the times of exposure. The beginning density-value on the ordinate where the exposure value is zero represents the initial fog. The farther the nearly straight sloping part of the curve is situated to the left and the higher the densities at a given abscissa (exposure) value are, the higher is the sensitivity of the emulsion the characteristic properties of which are represented by the curve. We see from the curve *a* that the emulsion has a high sensitivity, it is true, but it has also a comparatively high degree of fog, beginning at a low value of exposure with a high value of density. To make with this gelatine a photographic emulsion without or with only a little fog, ripening must not be driven on very far, as stated; then, however, a much lower sensitivity is obtained.

When 0.125 per cent of the dyestuff "thiazole yellow" (dehydro-thio-p-toluidin sulfonic acid) (cf. Schultz-Julius, "Farbstofftabellen," 5th edition, No. 198) is added to the same gelatine before the preparation of the emulsion and when it is worked up in the same way as before, there results a photographic emulsion the properties of which are represented by the characteristic curve *c* on the drawing. This curve begins with a low value of density, that is to say, the emulsion is almost free from fog, and indicates moreover a higher sensitivity than curve *a*.

For thiazole yellow there may be substituted other thiazole compounds, e g. carboxylic acids of thiazole, the trimethylammonium derivative of dehydrothiotoluidine and thiazole compounds of 2-amino-5-oxynaphthalene-7-sulfonic acid. Instead of mixing the thiazole compound with the colloidal substance before beginning the preparation of the emulsion, it may be added to the composition during the preparation of the emulsion at any stage of the process.

What I claim and desire to secure by Letters Patent is:

1. A process of manufacturing light-sensitive silver halide photographic emulsions which comprises preparing the emulsion in presence of a thiazole compound.

2. A process of manufacturing light-sensitive silver halide photographic emulsions which comprises preparing the emulsion in presence of a thiazole derivative containing a fused ring.

3. A process of manufacturing light-sensitive silver halide photographic emulsions which comprises preparing the emulsion in presence of a benzothiazole compound.

4. A process of manufacturing light-sensitive silver halide photographic emulsions which comprises preparing the emulsions in presence of thiazole yellow.

5. A silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of a thiazole compound.

6. A. silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of a thiazole derivative containing a fused ring.

7. A sliver halide emulsion having the characteristic properties of an emulsion prepared in the presence of a benzothiazole compound.

8. A silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of thiazole yellow.

9. A photographic layer containing a silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of a thiazole compound.

10. A photographic layer containing a silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of a thiazole derivative containing a fused ring.

11. A photographic layer containing a silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of a benzothiazole compound.

12. A photographic layer containing a silver halide emulsion having the characteristic properties of an emulsion prepared in the presence of thiazole yellow.

In testimony whereof I affix my signature.

JOSEF REITSTÖTTER.