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3-METHYLSULFONAMIDO-4-AMINO DIMETHYL ANILINE PHOTOGRAPHIC DEVELOPER

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2 Claims. (Cl. 95—88)

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This invention relates to photographic developers and more particularly to photographic developers for color photography.

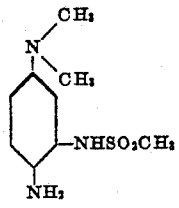
It is known that photographic developers of the p-phenylene diamine type are valuable compounds for producing fine grain black-and-white photographic images and also that these compounds, especially when they contain alkyl substituents on one of the nitrogen atoms are useful as developers in producing colored photographic images.

Developing agents of the p-phenylene diamine type having a lower fatty acid acyl amino group such as an acetylamino group on the phenylene ring are described in Hanson U. S. Patent 2,350,109, granted May 30, 1944. While these developing agents are suitable for producing colored images by coupling with color-forming compounds, they are of rather low solubility in the developing solution.

It is therefore an object of the present invention to provide a new class of photographic developing agents of the p-phenylene diamine type. A further object is to provide developing agents of the p-phenylene diamine type which are of sufficient solubility in the developing solution to enable the production of dye images upon color development, having the required density.

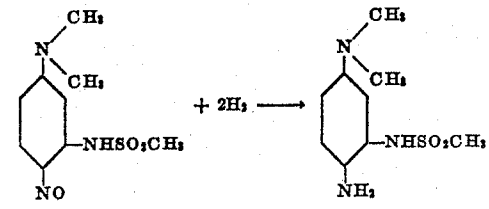
These objects are accomplished by the present invention by the use as developing agents of 3 - methylsulfonamido - 4-amino-dialkylaniline compounds.

Developing agents which may be used according to my invention are 3-methylsulfonamido-4-amino-dimethylaniline, 3-methylsulfonamido-4-amino-diethylaniline, etc. A typical compound, 3 - methylsulfonamido-4-amino-dimethylaniline has the following structure:



This compound was prepared by reduction of the nitroso compound according to the following reaction:

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The nitroso compound (7 grams) was suspended in alcohol and reduced with Raney nickel catalyst and hydrogen at room temperature. The filtered solution was treated with 2.8 grams of sulfuric acid in 2 cc. of water, stirred and cooled in ice. The crystalline sulfate was filtered from the deep purple solution, washed with alcohol, ether and dried. The yield was 5.5 grams (69%). It was a grayish powder, readily soluble in water.

The corresponding diethyl compound may be prepared by treating the diethylaminonitroso compound in a similar manner.

When used for the formation of colored photographic images, the developers of my invention may be used in conjunction with any well-known coupler compounds such as those described in Fischer U. S. Patent 1,102,028, granted June 30, 1914, Mannes and Godowsky U. S. Patent 2,108,602, granted February 15, 1938, or Mannes, Godowsky and Peterson U. S. Patent 2,115,394, granted April 26, 1938, and 2,126,337, granted August 9, 1938.

The developers of my invention produce magneta to red dyes with phenolic hydroxyl couplers, such as 2,4-dichloro-α-naphthol. These dyes are of the azine class.

The following example illustrates a developing solution which may be used according to my invention

	(a)	
3 - methylsulfonamido - 4-amino-dimethyl-aniline	grams	1
Sodium sulfite	do	0.5
Sodium carbonate	do	20
Potassium bromide	do	1
Water to 1 liter		
	(b)	
Coupler (2,4-dichloro-α-naphthol)	do	2
Sodium hydroxide (10% solution)	cc	10

For use, *b* is added to *a*.

The developing agents described in the present application may be used to form photographic images by development of exposed silver halide contained in the usual gelatin carrier or in carriers such as collodion, water-permeable cellulose ester or water-permeable synthetic resins. My developing agents may be used with photographic films containing the coupler in the emulsion layer as described in Mannes and Godowsky U. S. Patent 2,304,940, granted December 15, 1942, or Jelley and Vittum U. S. Patent 2,322,027, granted June 15, 1943.

It will be understood that the examples included herein are illustrative only and that my invention is to be taken as limited only by the scope of the appended claims.

What I claim is:

1. A photographic developing solution comprising as the developing agent 3-methylsulfonamido-4-amino-dimethyl aniline.

2. A developing solution for producing a colored photographic image comprising 3-methylsulfonamido-4-amino-dimethyl aniline and a compound which couples with the development of said developing agent to form a colored image upon photographic development.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,163,166	Wilmanns et al.	June 30, 1939
2,350,109	Hanson	May 30, 1944
2,414,491	Tulagin	Jan. 21, 1947