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PROCESS OF PRODUCING FAST DYEINGS

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The present invention relates to a method of preparing azo-dyestuffs, to a process of dyeing materials by means of azo-dyestuffs and to the dyed material obtained thereby.

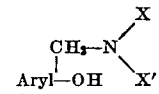
Under the name ice-colors there has become known a group of azo-dyestuffs which on account of their good fastness properties are used in practice to a great extent. Thereby the material to be dyed is not dyed with the finished dyestuff, but the dyestuff is produced from the components in or on the goods. The azo-components which are at present mostly applied for the production of ice-colors are derivatives of ortho-hydroxycarboxylic acids, as for instance, the arylamides of 2.3-hydroxynaphthoic acid, 2.3-hydroxycarbazole carboxylic acid and a series of other acids of this kind; besides, a number of other hydroxyaryl compounds capable of forming ortho-hydroxyazo-dyestuffs, as for instance, betanaphthol, can be used. As diazo-components all aromatic amines which are free from groups lending solubility in water are suitable.

The azo-components used in the known processes contain no groups imparting solubility in water and, therefore, have to be dissolved with the aid of aqueous caustic alkalies so as to form the so-called grounding bath, an excess of caustic alkali being in most cases necessary. The application of alkaline grounding baths involves many disadvantages. Thus, so-called alkali binding agents as, for instance, aluminium sulfate, zinc sulfate or magnesium sulfate must be added to the diazo-baths in order to prevent that the alkali having entered the developing bath with the grounded material does not decompose the diazo-compound.

The alkaline grounding baths also involved disadvantages in the production of ice-colors on materials which are affected by the action of alkalies, particularly caustic alkalies. Materials sensitive to alkalies are, for instance, animal fibers, such as wool or silk. The same behavior show fibers produced from hardened casein, for instance, the so-called casein artificial fiber. Fabrics from regenerated cellulose, such as viscose artificial silk, cuprammonium silk and foils from regenerated cellulose, show the tendency of swelling or shrinking, when being treated with alkaline liquids.

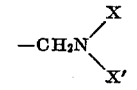
For these reasons it has been tried in the application of ice-colors for dyeing materials sensitive to the action of alkalies to reduce the amount of alkali or to replace partly or wholly the alkali by less alkaline substances or to reduce its action by the addition of certain compounds, for instance, colloidal substances. However, the processes proposed have, in general, not proved to be of practical value, since their application appears to be too complicated and a damage of the fiber by the action of alkali could not be entirely avoided.

Now, we have found that these difficulties can be avoided by using for grounding the material azo-components of the following general formula:

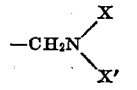


wherein the aryl radical may contain further substituents, X stands for alkyl, cycloalkyl or hydroxyalkyl, X' for hydrogen, alkyl, cycloalkyl or hydroxyalkyl, with the proviso that if X and X' are alkyl groups, these radicals may be connected to a ring system.

On account of the presence of the group



these compounds are soluble in dilute acids so that the grounding bath can be rendered acid, damages caused by the action of alkali thus being avoided. When the material impregnated with these compounds is treated with diazo-components suitable for the production of ice-colors, coupling occurs with exchange of the group



for the radical of the diazo-component and there are formed on the fiber the same water-insoluble azo-dyestuffs which are obtainable by the hitherto usual ice-color method.

The azo-components used in the present invention may be prepared in a manner analogous to known methods described, for instance, in German Patents Nos. 89,979, 90,907, 90,908 or in "Annalen der Chemie," volume 344, page 281, for instance, by condensing a hydroxyaryl compound with formaldehyde and a primary or secondary amine. It is also possible to transform the hydroxyaryl compounds by means of formaldehyde into the corresponding methylol compounds (see Neber, "Angewandte Chemie" 1937, page 411) and to cause these compounds to react with the primary or secondary amines. According to another method the chloromethyl group is introduced into the hydroxyaryl compounds for instance, by the process described in "Angewandte Chemie" 1937, page 411, and the chloromethyl compounds thus obtained are then condensed with the primary or secondary amines.

As parent materials all hydroxyaryl compounds

may be used which are capable of forming ortho-hydroxyazo-dyestuffs with a diazo-component, for instance, para-cresol, ortho-xylenol, beta-naphthol, 2-hydroxycarbazole, 3-hydroxydiphenylene-sulfide as well as the carboxylic acid derivatives or sulfonic acid derivatives of these compounds in which the effect of rendering the product soluble in water caused by the carboxylic acid group or the sulfonic acid group is compensated by blocking with a suitable radical. Derivatives of this kind are, for instance, hydroxyarylcarboxylic acid arylamides or hydroxyarylsulfonic acid dialkylamides.

As diazo-components may be used diazotizable aromatic amines usually applied in the production of ice-colors, which do not contain groups rendering the product soluble in water.

The new process is most analogous to the methods usually applied in dyeing and printing with ice-colors, however, with the fundamental difference, that the solutions of the azo-component are not alkaline, but acid. For the preparation of said solutions there are suitable all organic and inorganic acids as well as the acid salts thereof, as far as they are capable of forming soluble salts with the azo-components. With a good success there may be used, for instance, hydrochloric acid, sulfuric acid, bisulfates, phosphoric acid and the acid salts thereof, acetic acid, tartaric acid, formic acid, oxalic acid, lactic acid and many other acids as well as mixtures thereof. The strength and the amount of the acid salt-forming agents may be varied within wide limits. The usual textile adjuvants, such as, for instance, wetting, dispersing and penetrating agents, may, of course, be added to the acid solutions of the azo-component.

The special advantage of the new process resides in the fact that the grounding baths may be prepared with comparatively small amounts of acids having a mild action, such as, for instance, acetic acid.

The temperature during the grounding operation may vary within wide limits according to the material to be dyed and the dyeing method or apparatus applied. It is, for instance, advantageous to work at a temperature of 20° C. to 30° C. when dyeing piece goods on the foulard, however, to apply a somewhat higher temperature when dyeing yarn in the tub.

According to the present invention fibers and textile fabrics therefrom sensitive to alkalies may be dyed with ice-colors, without being treated with alkalies. This is of importance, for instance, for animal fibers, such as silk and wool, since the contents of alkali in the grounding baths produced the above-mentioned difficulties. Casein artificial fiber which is especially sensitive to the action of alkalies, mineral acids and temperatures above 80° C. may thus be dyed, for instance, under mild conditions from a feebly acetic acid bath at 40° C. to 50° C. Yarns and fabrics which have the tendency of swelling or shrinking such as, for instance, loosely woven cotton fabrics or materials from viscose artificial silk show this property in the acid grounding baths no longer or only to a small extent which is of no importance in practice. In many cases the new process has certain advantages over the known process when applied in the dyeing of cotton. For instance, in dyeing piece goods according to the present invention shades of better depth and clearness are frequently obtained than is the case when the method hitherto known is applied.

The new process can also be conducted on various mixtures of the above-named textile materials as well as on many other kinds of fibers.

The process can be applied to the material, for instance, in the form of loose material, rovings, yarn and piece goods. It is also suitable for dyeing a great number of materials in the form of foils, plates or bands made, for instance, from regenerated cellulose or vulcanised fiber.

The application of the developing baths containing the diazo-compound is simplified, since it is not necessary to add any alkali binding agents. It is advantageous to use feebly mineral acid diazo-solutions or diazo-solutions containing an organic acid which are obtainable by neutralizing the diazo-solutions prepared in the usual manner with a salt of a weak acid, for instance sodium acetate, or by wholly or partly removing the excess of mineral acid by addition of agents having a feebly alkaline action such as, for instance, bicarbonate, calcium carbonate or magnesium oxide.

The following examples serve to illustrate the invention but they are not intended to limit it thereto:

1. Cotton piece goods are grounded on the foulard with a solution containing per liter

1 - omega - dimethylaminomethyl - 2 - hydroxynaphthalene - 3 - carbonylaminobenzene	grams 15
Acetic acid of 50 per cent strength	cc 30

The material is then dried and passed through a diazo-solution prepared as usual from 3.4 grams of 1 - amino - 2 - methoxy - 4 - nitrobenzene and neutralized by means of sodium acetate.

After rinsing and soaping as usual, a bluish-red dyeing is obtained.

If 1 - (1' - omega - dimethylaminomethyl - 2' - hydroxynaphthalene - 3' - carbonyl) - amino - 3-nitrobenzene is used instead of 1 - omega-di - methylaminomethyl - 2 - hydroxynaphthalene - 3-carbonylaminobenzene, and the 1 - amino - 2 - methoxy-4-nitrobenzene is replaced by 1-amino-2-methyl-5-nitrobenzene, a red dyeing is obtained.

2. A bleached woollen fabric (woollen piece goods) is grounded with a solution containing per liter

2 - (1' - omega - dimethylamino - 2' - hydroxynaphthalene - 3' - carbonyl) - aminonaphthalene	grams 15
Formic acid of 90 per cent strength	cc 20
Sulfuric acid	cc 5

After intermediately drying the material, the dyestuff is developed as usual by means of a diazo-solution prepared from 1-amino-2-methyl-5-chlorobenzene and worked up.

A yellowish-red dyeing is thus obtained.

3. By grounding a fabric from artificial silk staple fiber with a solution, acid with formic acid, of 1-omega-piperidylmethyl - 2 - hydroxynaphthalene-3-carbonylaminobenzene and developing the dyestuff by means of a diazo-solution from 1-amino-4-methyl-2-nitrobenzene, the procedure being analogous to that described in Example 1, a red dyeing is obtained.

A dyeing having the same shade is also obtained if instead of 1-omega-piperidylmethyl-2-hydroxynaphthalene - 3 - carbonylaminobenzene there is used 1-omega-diethylaminomethyl-2-hydroxynaphthalene-3-carbonylaminobenzene.

4. Piece goods from a mixture of viscose arti-

ficial silk and wool are grounded in the tub with a solution containing per liter

1 - omega - dimethylaminomethyl - 2 - hydroxynaphthalene - 3 - carbonylaminobenzene ____ grams__ 10
Acetic acid of 50 per cent strength____cc__ 10
Sulfuric acid (1:1) ____ cc__ 1.25

The material is then intermediately dried and the dyestuff is developed by means of a diazo-solution prepared from 3.4 grams of 1-amino-2-methoxy-4-nitrobenzene and neutralized with sodium acetate; the after-treatment is as usual.

An even red dyeing is obtained.

5. Loose casein artificial fibers are grounded for half an hour at a temperature which does not exceed 50° C. with a solution containing per liter

1 - omega - dimethylaminomethyl - 2 - hydroxynaphthalene - 3 - carbonylaminobenzene ____ grams__ 3
Acetic acid of 50 per cent strength____do____ 6

The excess of the grounding solution is removed by centrifuging and the dyestuff is developed at room temperature with a diazo-solution prepared in the usual manner from 1-amino-2-methyl-4-chlorobenzene which contains per liter 2 grams of the base and has been rendered neutral with sodium bicarbonate. After rinsing with cold and lukewarm water, the material is soaped for 15 minutes at about 40° C. with a solution containing per liter 3 grams of Marseilles soap.

A clear red dyeing is thus obtained.

When using instead of the diazo-solution prepared from 1-amino-2-methyl-4-chlorobenzene and neutralized by means of sodium bicarbonate, a diazo-solution prepared from 1-amino-2-methoxy-4-nitrobenzene and neutralized by means of sodium acetate and proceeding otherwise as indicated above, a bluish red dyeing is obtained.

6. Bleached vulcanized fiber having a thickness of 0.5 mm. is immersed for 6 hours in a solution containing per liter

1 - omega - dimethylaminomethyl - 2 - hydroxynaphthalene - 3 -carbonylaminobenzene ____ grams__ 4.5
Acetic acid of 50 per cent strength__do____ 10

The material is then rinsed with water for a short time and the sheet thus treated is developed for 2 hours in a diazo-solution prepared in the usual manner from 1-amino-4-nitrobenzene and neutralized by means of sodium acetate, which contains per liter 2.5 grams of the base. The dyeing thus obtained is thoroughly rinsed with water and dried.

A red vulcanized fiber is thus obtained which has been dyed throughout.

7. A plate made from vulcanized fiber, having a thickness of 5 mm., is immersed for 12 hours in a solution containing per liter

1-(1' - omega - diethylaminomethyl - 2' - hydroxynaphthalene - 3' - carbonyl) - amino-2 - methylbenzene ____ grams__ 5
Acetic acid of 50 per cent strength____do____ 10

After having thoroughly rinsed the material, the dyestuff is developed for 5 hours by the action of a diazo-solution prepared in the usual manner from 1-amino-2-methyl-5-chlorobenzene and neutralized by means of sodium acetate, which contains per liter 2 grams of the base. The material is then well rinsed with water and dried.

A red plate from vulcanised fiber is thus obtained, which has been well dyed in the grain.

When using instead of a diazo-solution obtained from 1-amino-2-methyl-5-chlorobenzene a diazo-solution prepared from 1-amino-2.5-dichlorobenzene and proceeding otherwise as indicated above, a scarlet vulcanized fiber is obtained.

8. Loose casein artificial fibers are grounded for half an hour at a temperature which does not exceed 50° C. with a solution containing per liter

1 - omega - hydroxyethylaminomethyl - 2 - hydroxynaphthalene - 3 - carbonylaminobenzene ____ grams__ 3
Acetic acid of 50 per cent strength____do____ 6

The material is centrifuged and the dyestuff is developed at room temperature by means of a diazo-solution prepared in the usual manner from 1-amino-2-methoxy-4-nitrobenzene and neutralized with sodium acetate, which contains per liter 2 grams of the base. After rinsing and soaping at about 40° C., an intense bluish-red dyeing is obtained.

When using instead of the casein artificial fiber a yarn consisting of natural silk, and dyeing in the manner described above, a silk yarn dyed in the same shade is obtained.

9. Wool yarn is grounded for one hour at 50° C.–55° C. with a solution containing per liter

1 - (1' - omega - methylaminomethyl - 2' - hydroxynaphthalene - 3' - carbonyl) - amino - 2 - methylbenzene ____ grams__ 2
Formic acid of 90 per cent strength____do____ 5

The material is rinsed and centrifuged and the dyestuff is developed by means of a diazo-solution prepared in the usual manner and neutralized with sodium acetate containing per liter 1 gram of 1-amino-2-nitrobenzene. After rinsing and soaping, a red dyeing is obtained.

When using instead of the diazo-solution prepared from 1-amino-2-nitrobenzene a diazo-solution obtained from 1-aminoanthraquinone and proceeding as indicated above, a covered red dyeing is obtained.

10. A yarn consisting of a mixture of wool and staple fiber from viscose is grounded for half an hour at 60° C. to 70° C. with a solution containing per liter

1 - (1' - omega - ethylaminomethyl - 2' - hydroxynaphthalene - 3' - carbonyl) - amino - 2 - methylbenzene ____ grams__ 2
Acetic acid of 50 per cent strength____cc__ 10

The material is allowed to stand for further half an hour at a temperature between 35° C. and 45° C., the excess of the grounding bath is removed and the dyestuff is developed with a diazo-solution prepared in the usual manner from 1-amino-2-nitrobenzene and neutralized with sodium acetate. After rinsing, soaping and drying a bluish-red dyeing is obtained.

11. Woollen piece goods are grounded on the foulard with a solution containing per liter

1 - omega - dimethylaminomethyl -2-hydroxynaphthalene - 6-carbonylaminobenzene ____ grams__ 15
Acetic acid of 50 per cent strength____do__ 30

The material is then dried and the dyestuff is de-

veloped by means of a diazo-solution prepared in the usual manner from 1-amino-2.5-dichlorobenzene and neutralized with sodium acetate, which contains per liter 1.6 grams of the base. The goods are then rinsed and soaped.

A yellowish orange dyeing is thus obtained.

When using instead of the woollen piece goods piece goods consisting of a mixture of wool and artificial silk staple fiber and proceeding in the manner indicated above, an even dyed mixed fabric of the same shade is obtained.

12. Piece goods from artificial silk staple fiber are grounded in a manner analogous to that described in Example 11 with a solution of 1-omega-piperidinomethyl-2-hydroxy-7-di-(n)-butylaminosulfonylnaphthalene and the dyestuff is developed by the action of the diazo-solution prepared from 4.4'-diamino-3.3'-dimethoxy-diphenyl.

After rinsing and soaping a reddish blue dyeing is obtained.

When using instead of the diazo-solution prepared from 4.4'-diamino-3.3'-dimethoxydiphenyl a diazo-solution from 4-amino-2.5-dimethoxy-2'.6'-dichloro-4'-nitroazobenzene and proceeding otherwise in the manner indicated above, a reddish dark blue dyeing is obtained.

13. Cotton piece goods are grounded in a manner analogous to that described in Example 11 with a solution of 1-omega-dimethylaminomethyl-2-hydroxy-6-di-(n)-butylaminosulfonylnaphthalene and after drying, the dyestuff is developed by means of the diazo-solution from 1-amino-4-benzoylamino-2-chloro-5-methoxybenzene. After rinsing and soaping a red dyeing is obtained.

The same dyeing is also obtained when using instead of 1-omega-dimethylaminomethyl-2-hydroxy-6-di-(n)-butylaminosulfonylnaphthalene the 1-omega-diethylaminomethyl-2-hydroxy-6-di-(n)-butylaminosulfonylnaphthalene.

14. A foil from regenerated cellulose is immersed for half an hour at ordinary temperature in a solution containing per liter

1-omega-piperidinomethyl-2-hydroxynaphthalene-6-sulfonyl-N-methylaminobenzene ____grams__	5
Acetic acid of 50 per cent strength____cc__	8

The material is rinsed for a short time and the dyestuff is developed by means of a feebly formic acid diazo-solution prepared in the usual manner and containing per liter 2.6 grams of 1-amino-2-ethylsulfonyl-5-trifluoromethylbenzene.

The material is thoroughly rinsed with water and a bright golden-yellow foil is obtained.

By replacing in the above example the 1-amino-2-ethylsulfonyl-5-trifluoromethylbenzene by 1-amino-2.5-dichlorobenzene, a reddish orange foil is obtained.

15. Loose casein artificial fiber is grounded for one hour at 40° C. to 45° C. with a solution containing per liter

1-omega-dimethylaminomethyl-2-hydroxy-carbazole ____grams__	3
Acetic acid of 50 per cent strength____cc__	6

The material is centrifuged and the dyestuff is developed by means of a diazo-solution prepared in the usual manner from 1-amino-3-methyl-4-nitrilo-6-chlorobenzene and neutralized with sodium acetate, which contains per liter 1.7 grams of the base.

The material is then rinsed with lukewarm water and soaped.

A yellowish-brown dyeing is obtained.

When using instead of the two components indicated above, 1-omega-diethylaminomethyl-2-hydroxynaphthalene and the diazo-compound prepared from 1-amino-2-methoxy-5-diethylaminosulfonyl-benzene and proceeding in the manner indicated above, a yellowish orange dyeing is obtained.

16. Silk yarn is grounded for half an hour at about 50° C. with a solution containing per liter

1-(2'-omega-dimethylaminomethyl-1'-hydroxynaphthalene-4'-sulfonyl)-N-ethylamino-2-methylbenzene ____grams__	5
Acetic acid of 50 per cent strength____do__	25

The material is centrifuged and the dyestuff is developed by means of a diazo-solution prepared in the usual manner from 1-amino-2-phenoxy-5-chlorobenzene and neutralized with sodium acetate, which contains per liter 2 grams of the base. The material is then rinsed and soaped.

A yellowish scarlet dyeing is thus obtained.

When using instead of the two components indicated above, 2-omega-piperidinomethyl-1-hydroxy-5-diethylaminosulfonylnaphthalene and the diazo-compound prepared from 1-amino-2-methoxy-4-nitrobenzene, a reddish dark brown dyeing is obtained.

17. Woollen piece goods are grounded with a solution containing per liter

1-omega-piperidinomethyl-2-hydroxynaphthalene-7-sulfonyl-N-methylaminobenzene ____grams__	20
Acetic acid of 50 per cent strength____cc__	50
The reaction product from 20 mols of ethylene oxide and 1 mol of octodecyl-alcohol ____grams__	5

The material is then dried and printed with a printing paste of the following composition:

The diazonium chloride-zinc chloride double salt from 1-amino-2-(4'-chloro-phenoxy)-5-chlorobenzene ____grams__	18
Acetic acid of 50 per cent strength__do____	10
Starch-tragacanth thickening____do____	500
Water____do____	472
	1000

After drying, the material thus treated is passed through a bath having a temperature of 60° C.–70° C. and containing per liter 1 gram of calcined sodium carbonate. The material is then rinsed and soaped.

A scarlet print is thus obtained.

18. Piece goods from cuprammonium silk are printed with a printing paste of the following composition:

1-(1'-omega-piperidinomethyl-2'-hydroxynaphthalene-3'-carbonyl)-2-methoxybenzene ____grams__	20
Acetic acid of 50 per cent strength___cc__	50
Starch-tragacanth thickening____grams__	500
Water____do____	430
	1000

After printing the material is dried and the dyestuff is developed in a bath containing per liter

The diazonium chloride-zinc chloride double salt from 1-amino-2.5-dichlorobenzene grams__ 7

The reaction product from 20 mols of ethylene oxide and 1 mol of octodecyl-alcohol grams__ 1

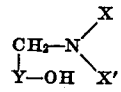
After rinsing and soaping a printing pattern of a clear scarlet shade is obtained.

The following table illustrates the shades of a number of other dyeings obtainable according to the present invention:

	Azo-component	Diazo-component	Material	Shade
1	1-omega-dimethylaminomethyl-2-hydroxy-5-methylbenzene.	1-amino-2.5-dichlorobenzene	Wool, viscose artificial silk.	Yellowish brown.
2	1-omega-piperidinomethyl-2-hydroxy-5-methylbenzene-3-carbonylaminobenzene.	1-amino-2-methyl-4-nitrobenzene.	Wool, foil from regenerated cellulose.	Do.
3	1-omega-diethylaminomethyl-2-hydroxy-4.5-dimethylbenzene.	1-amino-2-(4'-chlorophenoxy)-5-chlorobenzene.	Casein artificial fiber, vulcanized fiber.	Do.
4	1-omega-dicyclohexylaminomethyl-2-hydroxy-4.5-dimethylbenzene.	1-amino-2-methoxy-5-benzylsulfonylbenzene.	Artificial silk staple fiber, casein articial fiber.	Do.
5	1-omega-dimethylaminomethyl-2-hydroxynaphthalene.	1-amino-3-methyl-4-nitrilo-6-chlorobenzene.	Wool, silk	Golden-orange.
6	do	1-amino-4-chloro-2-trifluoromethylbenzene.	Casein artificial fiber, silk.	Do.
7	1-omega-(1'-hydroxybutane-4'-amino)-methyl-2-hydroxynaphthalene.	1-amino-3-chlorobenzene	Vulcanized fiber, casein artificial fiber.	Orange.
8	1-omega-N-ethyl-cyclohexylaminomethyl-2-hydroxynaphthalene.	1-amino-2-phenylsulfonylbenzene.	Foil from regenerated cellulose, cotton.	Do.
9	1-omega-isopropylamino-methyl-6-bromo-2-hydroxynaphthalene.	1-amino-2-methyl-3-chlorobenzene.	Viscose artificial silk	Reddish orange.
10	1-omega-dimethylaminomethyl-2-hydroxy-3-benzoylaminonaphthalene.	1-amino-2-nitro-4-chlorobenzene.	Cuprammonium silk, silk.	Bluish red.
11	1-omega-diethylaminomethyl-2-hydroxy-5.8-dichloronaphthalene.	1-amino-4-ethoxy-2-nitrobenzene.	Silk	Red.
12	1-omega-methylaminomethyl-6-methoxy-2-hydroxynaphthalene-3-carbonylaminobenzene.	1-amino-2.5-dichlorobenzene	Cotton, artificial silk staple fiber, animalized artificial silk staple fiber, wool.	Bluish red.
13	1-omega-ethylaminomethyl-6-methoxy-2-hydroxynaphthalene-3-carbonylaminobenzene.	1-amino-4-benzoylamino-2.5-diethoxybenzene.	Viscose artificial silk	Greenish blue.
14	1-omega-(iso)-butylaminomethyl-2-hydroxynaphthalene-3-carbonylaminobenzene.	1-amino-2.5-dimethoxy-4-nitrilobenzene.	Wool, silk, viscose artificial silk.	Bordeaux.
15	1-omega-diethylaminomethyl-2-hydroxynaphthalene-6-carbonylaminobenzene.	1-amino-2methyl-5-chlorobenzene.	Viscose artificial silk, wool.	Reddish orange.
16	1-(1'-omega-di-(n)-butylaminomethyl-2'-hydroxynaphthalene-3'-carbonyl)-amino-2-methylbenzene.	1-amino-3-chlorobenzene	Mixture of wool and artificial silk staple fiber, vulcanized fiber.	Yellowish orange.
17	1-(1'-omega-hydroxyethylaminomethyl-2'-hydroxynaphthalene-3'-carbonyl)-amino-3-nitrobenzene.	1-amino-2-methyl-5-nitrobenzene.	Foil from regenerated cellulose, wool.	Bluish red.
18	1-(1'-omega-dihydroxyethylaminomethyl-2'-hydroxy-naphthalene-3'-carbonyl)-amino-2-methyl-4-chlorobenzene.	1-amino-2-methyl-4-chlorobenzene.	Artificial silk staple fiber, cotton.	Red.
19	1-(1'-omega-dimethylaminomethyl-6'-bromo-2'-hydroxynaphthalene-3'-carbonyl)-amino-2-methoxybenzene.	do	Cotton, artificial silk staple fiber, animalized artificial silk staple fiber, wool, silk.	Bluish red.
20	1-(1'-omega-dimethylaminomethyl-6'-bromo-2'-hydroxynaphthalene-3'-carbonyl)-amino-2-methoxybenzene.	1-amino-4-methyl-2-nitrobenzene.	Wool, casein artificial fiber.	Red.
21	1-omega-dicyclohexylaminomethyl-2-hydroxy-carbazole.	1-amino-5-trifluoromethyl-2-ethylsulfonylbenzene.	Viscose artificial silk, casein artificial fiber.	Brownish orange.
22	1-(1'-omega-ethylaminomethyl-2'-hydroxycarbazole-3'-carbonyl)-amino-2-methoxybenzene.	1-amino-2-methoxy-4-nitrobenzene.	Cotton, wool, vulcanized fiber.	Reddish-brown.
23	1-(1'-omega-dimethylaminomethyl-2'-hydroxycarbazole-3'-carbonyl)-amino-4-chlorobenzene.	1-amino-3-methyl-4-nitrilo-6-chlorobenzene.	Wool, viscose artificial silk, foil from regenerated cellulose.	Do.
24	1-(4'-omega-dimethylaminomethyl-3'-hydroxydiphenyleneoxide-2'-carbonyl)-amino-2.5-dimethoxybenzene.	1-amino-2.5-dichlorobenzene	Cotton, viscose artificial silk, animalized artificial silk staple fiber, wool.	Yellowish brown.
25	1-(4'-omega-piperidinomethyl-3'-hydroxydiphenyleneoxide-2'-carbonyl)-amino-2.5-dimethoxybenzene.	4-amino-2.3'-dimethylazobenzene.	Artificial silk staple fiber, casein artificial fiber, foil from regenerated cellulose.	Deep brown.
26	1-(4'-omega-dimethylaminomethyl-3'-hydroxydiphenylenesulfide-2'-carbonyl)-amino-2-ethylbenzene.	1-amino-2-methoxy-4-nitrobenzene.	Wool, casein artificial fiber.	Do.
27	1-(2'-omega-diethylaminomethyl-1'-hydroxynaphthalene-4'-sulfonyl)-N-ethylamino-2-methylbenzene.	1-amino-2.5-dimethoxy-4-nitrilobenzene.	Wool, casein artificial fiber.	Wine-red.
28	do	1-amino-2-(4'-methoxyphenoxy)-5-chlorobenzene.	Silk, foil from regenerated cellulose.	Yellowish scarlet.
29	2-omega-piperidinomethyl-1-hydroxy-5-diethylaminosulfonyl-naphthalene.	4.4'-diamino-3.3'-dimethoxydiphenyl.	Viscose artificial silk, silk.	Currant.
30	2-omega-(1'.2'.3'.4'-tetrahydronaphthalene-2'-amino)-methyl-1-hydroxy-5-diethylaminosulfonyl-naphthalene.	4-amino-2.5-dimethoxy-2'.6'-dichloro-4'-nitro-azobenzene	Cotton, mixture from cotton and viscose artificial silk.	Reddish black.
31	2-omega-dimethylaminomethyl-1-hydroxy-5-diethylaminosulfonyl-naphthalene.	1-amino-2.5-dichlorobenzene	Vulcanized fiber, foil from regenerated cellulose.	Copper-like.
32	2-omega-dimethylaminomethyl-1-hydroxy-5-diethylaminosulfonyl-naphthalene.	1-amino-4-benzoylamino-2-chloro-5-methoxybenzene.	Silk, artificial silk staple fiber.	Garnet.
33	1-omega-piperidinomethyl-2-hydroxy-6-di-(n)-butylamino-sulfonyl-naphthalene.	1-amino-2-methoxy-5-diethylaminosulfonyl-benzene.	Wool, artificial silk staple fiber, cotton.	Yellowish scarlet.
34	do	1-amino-2-methyl-4-chlorobenzene.	Vulcanized fiber, foil from regenerated cellulose.	Yellowish orange.
35	1-omega-diethylaminomethyl-2-hydroxynaphthalene-6-sulfonyl-N-methyl-aminobenzene.	1-amino-2-ethyl-sulfonyl-5-trifluoromethyl-benzene.	Mixture from wool and artificial silk staple fiber, silk.	Golden orange.
36	1-omega-tetrahydroquinolinomethyl-2-hydroxynaphthalene-6-sulfonyl-N-methyl-aminobenzene.	1-amino-2-methoxy-4-nitrobenzene.	Viscose artificial silk, silk.	Bluish red.
37	1-omega-dimethylaminomethyl-2-hydroxy-7-di-(n)-butylaminosulfonyl-naphthalene.	1-amino-2-phenoxy-5-chlorobenzene.	Cotton, wool	Reddish orange.
38	do	1-amino-2.5-dichlorobenzene	Cotton, foil from regenerated cellulose.	Yellowish orange.
39	1-omega-piperidinomethyl-2-hydroxynaphthalene-7-sulfonyl-N-methyl-aminobenzene.	1-amino-2.5-dimethoxy-4-nitrilobenzene.	Silk, casein artificial fiber.	Bluish red.
40	1-omega-dimethylaminomethyl-2-hydroxy-8-acetylamino-5-(2'-nitrophenylazo)-naphthalene.	1-amino-2-methoxy-4-nitrobenzene.	Cotton, silk, viscose artificial silk.	Brownish black.

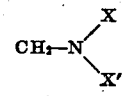
We claim:

1. A process of producing fast dyeings which comprises applying to the material to be dyed an acid solution of an hydroxyaryl compound capable of being coupled in ortho-position to the hydroxyl group which contains a basic group as a substituent in the position at which the coupling takes place and corresponds with the following general formula:



wherein Y means a member of the group consisting of radicals of the benzene, naphthalene, carbazole, diphenylene oxide and diphenylene sulfide series, X stands for a member of the group consisting of alkyl, cycloalkyl and hydroxy-alkyl, X' for a member of the group consisting of hydrogen, alkyl, cycloalkyl and hydroxyalkyl, with the proviso that if X and X' are alkyl groups, these radicals may be connected to form a ring system, and then developing the dyestuff on the material with a diazo-compound suitable for the production of ice colors.

2. A process of producing fast dyeings which comprises applying to the material to be dyed an acid solution of an ortho-hydroxycarboxylic acid arylide containing a



group as a substituent in the position at which the coupling takes place, X being a member of the group consisting of alkyl, cycloalkyl and hydroxy-alkyl, X' being a member of the group consisting of hydrogen, alkyl, cycloalkyl and hydroxy-alkyl, with the proviso that, if X and X' are alkyl groups, these radicals may be connected to form a ring system, and then developing the dyestuff on the material with a diazo-compound suitable for the production of ice colors.

3. A process of producing fast dyeings which comprises applying to the material to be dyed an acid solution of 1-(1'-omega-dimethylamino-methyl - 2' - hydroxynaphthalene-3'-carbonyl) - amino-2-methyl-4-chlorobenzene, and developing the dyestuff on the material with the diazo-compound from 1-amino-2-methyl-4-chlorobenzene.

4. A process of producing fast dyeings which comprises applying to the material to be dyed an acid solution of 1-omega-dimethyl-amino-methyl-2-hydroxynaphthalene-3-carbonylamino-benzene, and developing the dyestuff on the material with the diazocompound from 1-amino-2-chloro-5-trifluoromethylbenzene.

5. A process of producing fast dyeings which comprises applying to the material to be dyed an acid solution of 1-omega-dimethylamino-methyl-2-hydroxynaphthalene - 3 - carbonylaminobenzene, and developing the dyestuff on the material with the diazo-compound from 1-amino-2-methoxy-4-nitrobenzene.

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