

# UNITED STATES PATENT OFFICE.

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## BROWN MORDANT DYE.

SPECIFICATION forming part of Letters Patent No. 767,070, dated August 9, 1904.

Application filed June 16, 1904. Serial No. 212,795. (No specimens.)

*To all whom it may concern:*

Be it known that I, AUGUST LEOPOLD LASKA, doctor of philosophy, chemist, a resident of 5 Gerberstrasse, Offenbach-on-the-Main, Grand Duchy of Hesse, German Empire, have invented new and useful Improvements in Brown Mordant Dyes, of which the following is a specification.

In the application for Letters Patent filed on my behalf on the 13th day of April, 1904, Serial No. 202,909, there are described mordant dyes which result from coupling sulfo-conjugated diazonaphthalenes with m-oxydiphenylamin. My further investigations have led to the discovery that still more valuable dyestuffs are obtained by combining the sulfonic acids of heteronuclear diazonaphthols with m-oxydiphenylamin. These dyestuffs yield on wool when dyed in an acid-bath orange to violet shades, which turn into reddish brown to brownish violet on a subsequent treatment with chromium compounds acting as oxidizing agents and which are distinguished by a prominent fastness to light, milling, and potting. In order to enable a most easy course of the formation of the dyestuff, it is advisable to carry out the combination of the diazo-naphthol-sulfonic acid with the m-oxydiphenylamin in a weakly-acid solution.

The following examples may illustrate the manner in which my invention is best carried out: Diazotize 59.65 parts of 2.5-amidonaphthol-7-sulfonic acid by means of one hundred and twenty-five parts of hydrochloric acid of 20° Baumé and nineteen parts of sodium nitrite. At 15° centigrade run into the suspension of the diazo compound a solution of forty-nine parts of m-oxydiphenylamin in 69.5 parts of sodium lye of 36° Baumé and three hundred parts of water, then add one hundred and thirty-six parts of sodium acetate. As soon as no more diazo compound is indicated by a test portion neutralize with soda, heat the whole on to about 70° centigrade, salt out, and dry. The dyestuff thus obtained forms a brownish-black powder, dissolving in water a yellowish brown

and in concentrated sulfuric acid with a violet color. The aqueous solution is rendered somewhat darker on adding sodium lye. On adding hydrochloric acid the dyestuff separates as a reddish-brown precipitate.

In the following table I shall describe the tinctorial properties of some coloring-matters obtainable by the above process, viz:

Dyestuff from m-oxydiphenylamin, combined in an acid solution with the diazo compound from—	Dyes wool—	
	From an acid-bath.	On subsequently treating with a chromium agent.
2.5-amidonaphthol-7-sulfonic acid.	Reddish brown...	Dark brown.
2.8-amidonaphthol-6-sulfonic acid.	Orange.....	Dark reddish brown.
1.5-amidonaphthol-6-sulfonic acid.	Yellowish brown.	Yellowish dark brown.
2.8-amidonaphthol-3-6-disulfonic acid.	Reddish brown...	Dark reddish brown.
1.8-amidonaphthol-3-6-disulfonic acid.	Reddish violet...	Brownish violet.

Now, what I claim, and desire to secure by Letters Patent, is the following:

1. The process of making mordant-dyeing monoazo dyes consisting in combining in an acid solution m-oxydiphenylamin with the sulfonic acids of heteronuclear diazonaphthols, substantially as described.

2. As new articles the coloring-matters which result from combining the sulfonic acids of heteronuclear diazonaphthols in an acid solution with m-oxydiphenylamin which form blackish-brown powders, dissolve in sulfuric acid to a violet in water to a yellowish-brown to brownish-violet solution, from which hydrochloric acid precipitates the dyestuff and which yield on wool on dyeing from an acid-bath orange to violet shades, being converted into reddish brown to brownish violet on subsequently treating with chromium compounds acting as oxidizing agents, substantially as described.

3. As new articles the coloring-matters, which result from combining the sulfonic acids of heteronuclear beta-diazo-alphanaphthol, which form blackish-brown powders, dissolve in concentrated sulfuric acid to a

violet, in water to a brownish solution, from  
which hydrochloric acid precipitates the dye-  
stuff which dye on wool from an acid-bath  
orange to reddish-brown shades being con-  
5 verted into a dark brown on subsequently  
treating with chromium compounds acting as  
oxidizing agents, substantially as described.

In testimony that I claim the foregoing as

my invention I have signed my name, in pres-  
ence of two witnesses, this 4th day of June, 10  
1904.

AUGUST LEOPOLD LASKA

Witnesses:

EVA SATTLER,  
ASKERO STANDHARDT.