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E. I. DU PONT DE NEMOURS & COMPANY
KREBS PIGMENTS DEPARTMENT
256 VANDERPOOL STREET
NEWARK, NEW JERSEY

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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

PTMSA → BN PRIOR ART SEARCH

Period Covered: JANUARY 1, 1945 - FEBRUARY 28, 1945.

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NEWARK PLANT

PIGMENT COLOR RESEARCH REPORT

Final Report

PTMSA ⟶ BN PRIOR ART SEARCH

JANUARY 1, 1945 - FEBRUARY 28, 1945.

SUBMITTED BY: D. B. Killian D B Killian 3/14/45 DATE SUBMITTED: 2/28/45

APPROVED BY: J. H. Cooper J H Cooper 3/14/45 DATE ISSUED: 3/14/45

INTRODUCTION:

The various isomeric toluidine sulfonic acids have been known for many years. A number of azo combinations derived from these amines have been in commerce for the past half century or longer. Perhaps the best known of these are Orange R (I.C.#161), o-toluidine-p-sulfonic acid coupled to beta naphthol and Lithol Rubine (I.C.#163), para-toluidine meta sulfonic acid coupled to beta-oxy-naphthoic acid.

Recently a process has been developed at Newark for preparation of a red pigment based on the azo dye derived from p-toluidine-m-sulfonic acid and beta-naphthol (PTMSA → BN), tinctorially similar to the well known Lake Red C colors. The usual azo coupling procedures (e.g. the methods used for preparation of Lithol Reds, such as RT-364-D or RT-283-D) applied to this combination invariably result in orange pigments similar tinctorially to the well known Persian Orange (sulfanilic acid → beta-naphthol). Until recently, the PTMSA → BN combinations had been considered at Newark to be inherently orange in shade.

Since PTMSA is one of the cheapest first components available for azo pigment preparation, and since the new PTMSA → BN color appears to have ink properties very close to those of the Lake Red C pigments, this product is of definite interest as a relatively cheap red in the price range of Lithol Reds. The specific combination of most value is the barium pigment, rosinated or unrosinated. A prior art search has been made in the general and patent literature covering the PTMSA → BN azo combination from the years 1880-1943, inclusive.

SOURCES SEARCHED:

1. Schultz, Farbstoff - Tabellen, 7th Ed.
2. Society of Dyers & Colourists Colour Index, F.M.Rowe, 1st Ed. 1924
3. Beilstein - Prager - Jacobsen, Organische Chemie, 4th Ed. (through 1920).
   System Nos. 2120, 2153, 2202
4. Friedländer, Fortschritte der Teerfarben Fabrikation, 1877-1940
   o-amino sulfonsäure
   p-amido azo toluol sulfonsäure
   p-toluidine sulfonsäure (o, and m)
   beta naphthol
5. Chemisches Zentrallblat
   (a) Sachs Register : 1897-1939
   amino toluol sulfonsäure
   Toluol sulfonsäure azo naphthol
   Farblacke
   (b) Formula Indexes: 1922-1939
   $C_7H_9O_3NS$
   $C_{17}H_{14}O_4N_2S$

6. Chemical Abstracts, 1907-1943
   4-amino toluene-3-sulfonic acid
   1-methyl-4-amino-benzene-3-sulfonic acid
   4-amino-1-methyl-benzene-3-sulfonic acid
   4-methyl-aniline-2-sulfonic acid
   1-amino-4-methyl-benzene-2-sulfonic acid
   para-toluidine-meta-sulfonic acid
   beta naphthol

7. Newark Patent Folders
   631
   631.131(a)
   631.131(aa)
   631.131(BE)
   631.131(CA)

   641
   641.0
   641.00
   641.02
   641.1
   641.10
   641.122
   651.4
   653.14

8. Jackson Laboratory Patent References:
   p-toluidine-3-sulfonic acid.
   4-amino-toluene-3-sulfonic acid

No disclosure of the PTMSA → BN azo combination has been found.

SUMMARY AND CONCLUSIONS:

1. The azo combination derived from diazotized para-toluidine-meta-sulfonic acid (4-amino-toluene-3-sulfonic acid) coupled with beta-naphthol has not been disclosed in the literature.

2. A process has been developed at Newark for the preparation of the barium pigment of PTMSA → BN as a red color similar tinctorially to Lake Red C pigments. This new pigment is of interest as a relatively cheap red in the cost range of Lithol reds, and better than the latter in ink properties.

3. To the best of our knowledge, no PTMSA → BN pigment has ever been marketed in this country.

4. The PTMSA → BN combination appears patentable as a new form of matter, and also the process for preparation of its precipitated alkaline, alkaline earth, and heavy metal pigments.