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KREBS PIGMENTS DEPARTMENT

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NEWARK, NEW JERSEY

NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

CATION EXCHANGE METHOD FOR PREPARING HETEROPOLY ACIDS

Period Covered

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NEWARK PLANT

PIGMENT COLOR RESEARCH REPORT

Final Report

CATION EXCHANGE METHOD FOR PREPARING HETEROPOLY ACIDS

AUGUST 1950 - SEPTEMBER 1950

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INTRODUCTION:

This report covers an investigation of the cation exchange method for preparing heteropoly acids as applied to the phosphotungstic and silico molybdic acids used in the precipitation of basic dyes.

SUMMARY AND CONCLUSIONS:

Basic dye pigments were prepared in the laboratory from heteropoly acids made according to the procedure outlined in a du Pont owned patent (U.S. 2,503,991). Two colors were studied, RT-612-D (PTMA of Rhodamine 5GDN) and BT-264-D (SMA of Victoria Blue).

The alkali metal salt solutions were contacted with an Amberlite Resin prepared for operation in the hydrogen cycle. The effluents were then used to precipitate the dye in the usual manner. In general, fair tinctorial matches to control were obtained and although, in some cases, lower yields in addition to poorer lightfastness resulted, it is believed that these deficiencies could be corrected by further study of the proper variables.

It may be concluded that the cation exchange method can be satisfactorily employed in place of the acid addition step in manufacturing PTMA type pigments. However, since no improvement is to be had from this process, studies have been discontinued.

DISCUSSION OF RESULTS:

Amberlite IR-100, a synthetic resin manufactured by the Resinous Products and Chemical Company was used as the cation exchanger.

The resin, which averages 14-35 mesh in size, is packed in a column and brought to a clean acidic condition before use by up-washing with water. Regeneration is accomplished by passage down of 2-3% H_2SO_4 , after which the resin is given a second up-washing with water. The influent solution of alkali metal oxides is allowed to pass down through the bed at a constant rate and the effluent containing the heteropoly acids is then struck into the dye under the particular conditions required.

In the case of RT-612-D, yields were somewhat lower and light-fastness was poorer than control. The exchange process gave slightly better results with BT-264-D, wherein the only short-coming was light-fastness. Variables such as resin concentration, time of passage and temperature of effluent were studied to some extent and it is believed that if additional studies were conducted, a product satisfactory in all respects would be obtained.

EXPERIMENTAL DETAILS:

Lab. N.B. 1374 - pages 41-56, 65-68.