PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Manufacture of Chlorites.

We, FARBENFABRIKEN BAYER, of Leverkusen-Bayerwerk, Germany, a Company recognised under German law, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to the manufacture of chlorites.

It is known to prepare chlorites by reduction of chlorine dioxide. However, considerable difficulties are encountered on carrying out this reduction on a technical scale, for instance by means of sodium peroxide, metals or metallic oxides or metallic hydroxides, such as manganese oxide, or lead oxide, or organic compounds such as methanol or formaldehyde. Either the use of certain reducing agents, for instance peroxides such as sodium peroxide, is practically impossible for economic reasons, or else it is not possible to avoid the formation of chloride by too high a reduction of the chlorine dioxide if the reaction is to be carried out with economically advantageous concentrations of the solution. Furthermore, the previously known processes often result in the formation of mixtures of chloride, chlorite and chlorate which cannot be separated without difficulties.

According to the process of the present invention chlorine dioxide is reduced by means of aqueous arsenious acid in the presence of an alkali metal hydroxide or alkaline earth metal oxide or hydroxide, care being taken that the arsenious acid is not used in excess. By means of the process of the invention, chlorites are obtained in good yields, while the oxidation brought about by the chlorine dioxide simultaneously results in the formation of arsenates, which owing to their various possible uses are of greater technical importance than is the arsenic used as starting material. A major part of the arsenates precipitates on formation and a further part can be precipitated by further concentration of the solution by evaporation. The remainder of the arsenates can be removed quantitatively from the chlorite solution by the addition of a suitable precipitating agent, for example, a soluble calcium compound. Thus it is possible to obtain chlorites in good purity.

When carrying out the process of the invention the arsenate obtained as a by-product may be reduced to arsenious acid, preferably by means of sulphur dioxide, the arsenious acid thus formed being used again for the process.

EXAMPLE 1.

A mixture of gas consisting of 93.2 kg. of chlorine dioxide diluted with 125 m^3 of air is introduced in a uniform current into a receiver containing 1,100 litres of water and provided with a cooler, an agitator and a gas distributing device. A solution of 75 kg. of arsenic and 150 kg. of sodium hydroxide (100%) in 750 litres of water is run in with vigorous stirring so that any yellow coloration due to chlorine dioxide disappears. During this reaction the temperature is kept at +15°C. 110.7 kg. of sodium chlorite, corresponding to a yield of 88.5% of the theoretical, are obtained by this reaction. 70-80% of the sodium arsenate precipitates from the solution of sodium chlorite and sodium arsenate obtained. The solution is further concentrated by evaporation until 95% or more in all of the sodium arsenate has been precipitated.

EXAMPLE 2.

Into 1,000 litres of an aqueous solution containing 424 kg. of trisodium arsenate (Na_3AsO_4 . 12 H_2O) obtained according to Example 1, a vigorous stream of sulphur

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dioxide is introduced until the reduction of the arsenate to arsenic is complete. Analysis shows a yield of 99.1%. The arsenic, which is precipitated in the form of crystals, is filtered off in a quantity of 80.5 kg. and is re-introduced into the process described in Example 1. The mother liquor containing arsenic (18.5 kg.) is added to another batch of sodium arsenate to be reduced.

What we claim is:—

1. A process of producing chlorites from chlorine dioxide, wherein the chlorine dioxide is reduced by means of aqueous arsenious acid in the presence of an alkali metal hydroxide or alkaline earth metal oxide or hydroxide, while avoiding an excess of arsenious acid.

2. A process as claimed in Claim 1, in which the arsenate formed is reduced to arsenious acid, preferably by means of sulphur dioxide, and the arsenious acid thus obtained is re-introduced into the process.

3. A process of producing chlorites from chlorine dioxide substantially as described with reference to the examples.

4. Chlorites whenever produced from chlorine dioxide by the process claimed in any one of the preceding claims.

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