

ALIEN PROPERTY CUSTODIAN

METHOD FOR CARRYING OUT BASE EXCHANGING PROCESSES

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vested in the Alien Property Custodian

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It is known to use base exchanging materials (zeolites, permutites) for producing salts by exchange reactions. This process has been extensively used for producing nitrate of sodium by reaction between nitrate of lime and chloride of sodium, sea water being utilized as source of chloride of sodium. In this way it has been possible to utilize advantageously the lower contents of chloride of sodium in the sea water, the zeolite causing the necessary increase of concentration which makes the process practically useful.

In all processes of this kind previously known it is presumed that the zeolite after each treatment with a solution of a salt is washed with pure water, for instance by introducing between the consecutive salt solutions layers of pure water, which prevent the solutions from being mixed.

It has now been found that such washing or introducing of layers of pure water is not necessary. The inventor has found that when a uniform passage of the salt solutions and a correct size of granules in the zeolite is secured, the mixing which takes place between consecutive salt solutions is relatively unimportant, even when the specific weights are very different. Mixing does not take place to a degree which causes detrimental impurity of the different solutions.

Example

A system comprising four tubes containing a zeolite layer of 2.8 m thickness and 5.5 cm² cross section was treated with sea water for producing sodium zeolite. Then nitrate of lime was intro-

duced without having a layer of pure water between the solutions of nitrate and the sea water.

After this system had been in use for some time and stable conditions had been obtained, it was found that 500 ml of nitrate of lime solution containing 216 g Ca(NO₃)₂ after having passed the system had been increased to 682 ml containing the total amount of nitrogen introduced less approximately 4% representing the losses in the process. From this volume of liquid, 682 ml, there is obtained by evaporation and crystallization 100 g nitrate of sodium. The mother lye containing mainly nitrate of lime and nitrate of sodium was returned to the process.

The crystallized nitrate of sodium contained 5% chloride of sodium. By recrystallization, pure nitrate of sodium may be produced without difficulty.

By carrying out the process in this manner the same is very much simplified, as the means necessary for introducing the layer of water, such as valves, tubes and tanks, may be omitted, whereby the plan is considerably simplified and cheaper. One also obtains an increase in capacity of production, as the time and the space necessary for the layer of water are omitted.

The drawback that the product obtained by the first crystallization contains an amount of chloride is of no importance, when the product is to be used as fertilizer. In case a pure salt is desired, this may be obtained by a simple re-crystallization process.

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