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TRANSLATION

METHOD OF PRODUCING NITRIC ACID

By

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BY: Ye. A. Kazakova, N. S. Trifonova and I. M. Zelichenok

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METHOD OF PRODUCING NITRIC ACID

Ye. A. Kazakova, N. S. Trifonova and I. M. Zelichenok

A method is known for enriching weak nitrous gases, which contain nitrogen oxide, oxygen and other gases with the use of solid sorbents to be found in the fluidized state. However, in accordance with this method not much nitric acid is formed, and for obtaining nitric acid from the oxides of nitrogen formed there are necessary a number of other technological processes with complicated apparatus setups.

For the purpose of simplifying the technological process and lowering the cost of the product there is proposed a method in accordance with which into an adsorber steam is passed and separated out by desorption under a vacuum with a temperature of 80 to 120°C with blowing through by air nitric acid in the vapor phase.

The method is accomplished in the following fashion.

A gaseous mixture containing nitrogen oxide, oxygen, and other gases (nitrogen, carbon dioxide, water vapor, and inert gases which are difficult to take up by adsorbents) is directed into an adsorption apparatus working under atmospheric pressure with fluidized layers of silica gel. The water necessary for the process can be introduced either into the adsorber in the form of steam or into the reclaimed adsorbent. Preliminary introduction of moisture into the adsorbent,

besides, prevents the formation of electrostatic electricity in the fluidizing of the adsorbent.

The desorption is accomplished under a vacuum with the heating of the saturated adsorbent up to the temperature of 80 to 120°C with the blowing of air through the latter, as a result of which there is separated out the nitric acid in the vapor phase.

As an adsorbent one may use adsorbents which assure the occurring of the process of physical adsorption, for example, silica gel, porous glass, etc.

The method proposed makes it possible to obtain nitric acid with a concentration of 50 to 70%.

For the purpose of intensifying the process, the adsorption and synthesis are carried out under a pressure of up to 10 kg/cm².

Object of invention

1. A method of obtaining nitric acid from a gaseous mixture, which contains nitrogen oxide, oxygen and other gases by the method of cooling the mixture and passing it through an adsorber with fluidized layers of adsorbent, for example, silica gel, which is distinguished by the fact that for the purpose of lowering the cost and simplifying the technological process steam is passed into the adsorbent and separated out by desorption under a vacuum at a temperature of 80 to 120°C with the blowing through by air nitric acid in the vapor phase.

2. A method in accordance with paragraph No. 1, which is distinguished by the fact that for the purpose of intensifying the process, the adsorption and synthesis are accomplished under pressure up to 10 kg/cm².