Phosphate From Raw Materials Extraction To Obtain Phosphoric Acid

Zakirova Sadokat Erkinaliyevna[1], Najmiddinov Rixcitilla Yunusali's son[2] , Nodirov Alisher Avazovich[3]
Namangan davs technique 1st year university master's student [1] , Namangan state technique Associate Professor [2] , Namangan State University pedagogy Associate Professor of the Institute [3]

Abstract
This in the article extraction to obtain phosphoric acid process scientific basics , raw materials, chemical reactions , technological stages and ecological-economic aspects wide analysis It is made from phosphorites. using sulfuric acid phosphate acid to take modern technologies , extraction mechanism and cleaning methods illuminated. Also , waste reduce , phosphogypsum again work and resource economical technologies current to grow opportunities scientific basically studied.
Keywords: Phosphoric acid, extraction , phosphorite , sulfuric acid, D2EHPA, TBP, phosphogypsum , technology , ecology , innovation.
Introduction. Phosphate acids chemistry industry main from products one is considered. They are used in mineral fertilizers , food , metallurgy , and other many on the networks wide Phosphate acid to take two main method available : thermal and extraction. Extraction method , that is wet process , economic efficiency and distinguished by its simplicity This is in the article extraction phosphate acid to take chemical and technological aspects deep analysis will be done.
Literature Description: Phosphate acids – phosphorus oxide water effect or phosphorites decomposition by acids as a result removable are compounds. Thermal in a way phosphorus in the air burned , harvested which is P_4O_{10} oxide reacts with water enters. Extraction in a way and natural phosphorites sulfuric acid treatment is given. Reaction as a result harvest was in solution phosphate acid and gypsum ($CaSO_4 \cdot 2H_2O$) is present will be. Extraction phosphate acid advantage that is , it is raw material as directly phosphorite uses and less energy spends.
Practical Part. Extraction to obtain phosphoric acid process following chemical equation based on passes :
$Ca_5(PO_4)_3F + 5H_2SO_4 + 10H_2O \rightarrow 3H_3PO_4 + 5CaSO_4 \cdot 2H_2O + HF$
Harvest was solution in the composition main product – phosphate with acid iron , aluminum , magnesium , fluorine and other mixtures will be. Such from the solution to obtain pure H_3PO_4 for extraction process is applied. Extraction — liquid phases between of substances to the distribution based physicochemical is a process. Extraction in the process used main extractants —di-2-ethylhydroxyethylphosphonic acid (D2EHPA) and tributyl phosphate (TBP). These substances organic in solutions interphase distribution ability high are , they are using phosphate acid juicy from the solution organic to phase The process is carried out main stages : extraction , scrubbing , and stripping (re- separation). Optimal result to take pH around 1–2 , temperature 25–35°C , phases ratio and from 1:1 to 1:3 is selected.Extraction phosphate acid working in the release harvest to be main waste is phosphogypsum. Phosphogypsum in the composition fluorine, heavy metals and radionuclides existence because of the environment for dangerous. Therefore , it should be recycled. work or construction materials as use according to research take The process is underway. economic efficiency high , because raw material cheap , energy expense less and product size big.Last in years extraction ion-exchange , membrane-based, in the production of phosphoric acid filtering , and plasma cleaning methods such as innovative technologies current are being done. These acid content through impurities level reduce waste reduce and precious elements (e.g. uranium , cesium , neodymium) restoration opportunity there is.

Conclusion. Extraction to obtain phosphoric acid method chemistry in the industry the most effective and economic in terms of acceptable This is method through high good quality phosphate acid is also useful additional products to take possible. The process in improvement energy economical , ecological clean technologies current to grow current from tasks is one.

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