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DETERMINATION OF EFFECTS OF CHEMICAL ADDITIVES ON GYPSE BINDER FROM INDUSTRIAL WASTE PHOSPHOGYPSUM

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ABSTRACT
The article discusses the methods of obtaining gypsum binder from industrial waste, the physical and mechanical properties of industrial waste phosphogypsum. They are different. It is planned to create a wide range of opportunities for the creation of building materials from industrial waste in the future, as well as to compare their advantages and disadvantages.

KEYWORDS: industrial waste, phosphogypsum, gypsum binder, strength, gypsum, portland cement.

INTRODUCTION

Phosphogypsum wastes in the production of large quantities of phosphorus fertilizers. It is processed into sulfuric acid and cement but to date such process technology Due to the complexity it is still practiced in the CIS countries At present, 100 million tons of phosphogypsum are produced in the Republic accumulated and its formation continues. Tashkent Much simpler and less energy at the Institute of Chemical Technology a new technology for the production of consumable sulfuric acid and cement developed. [1] On the eve of the introduction of this technology in practice The first laboratory research on the processing of phosphogypsum to obtain air-curing binders was conducted in 1933-1935. P.P. Budnikov and other researchers have shown that building gypsum can be obtained but they developed such gypsum on an industrial scale for two reasons those who think that it is not expedient to issue, that is, first of all,phosphate acid containing phosphogypsum is the biting time of the finished product secondly, the mechanical properties of construction phosphogypsum are very low level, and can only be used as an additive to construction gypsum. Phosphogypsum controls the formation of crystals in a mixture of water -is obtained by autoclaving with the addition of carboxylmethylcellulose. [2]

PHOSPHOGYPSUM-BASED BINDER PHOSPHOGYPSUM

Plaster industrial waste used to make binders. In conjunction with the main manufactured product the amount of phosphogypsum coming from each ton of phosphorite processed or from 1.4 tons to 1.6 tons compared to apatite. In other words in other words, a wagon phosphorite plant that processes phosphate raw materials or 1.5 wagon phosphogypsum in the form of phosphogypsum from the factory territory, taking apatite it has to be removed, and to carry and store it requires a lot of money to spend a lot of money economically. In addition, to meet sanitary requirements, clean water to monitor and protect the lives of living beings, i.e. waste Phosphogypsum, fluorine compounds, neutralization of unwashed sulfuric acid, phosphoric acid requires additional funding. [3] The gypsum crystals in phosphogypsum are not the same, some of them ions in the lattice, while the calcium ion Al3 +, Fe3 + and rare earth elements. that is why such artificial gypsum is called phosphogypsum. This situation is based on simple technology properties of gypsum binders derived from phosphogypsum worsens. However, it is specially designed, which is listed below the quality is the same as that of phosphogypsum by dehydration based on methods ready to be made from natural raw materials binder can be obtained. These methods include:

1. Loss of soluble form of P2O5 by washing in water.
2. Neutralization of free phosphoric acid with lime.
3. Lime milk to precipitate N3RO4 in the form of fluorine or chlorine apatite treatment of phosphogypsum with the addition of fluorine or chlorine.
4. Heat treatment of phosphogypsum at a temperature of 120-150 degrees, then dehydration in a mixture of sulfuric acid and phosphoric acid. The concentration of H2SO4 in this mixture increases by 0.5% by weight mass ratio H3PO4: H2SO4 is less than one. In the resulting product phosphoric acid content up to 0.3% and CaF2 content up to 0.02% decreased. The gypsum obtained in this way is close to the properties of natural gypsum.

5. Gypsum in phosphogypsum with some residual acid and additives
Sufficient lime or calcium hydroxide is added to raise the pH above 7. Then burn the aluminum to reduce the pH to 7 treated with sulfate. [4]
6. Phosphogypsum is treated under the influence of heat. The result is calcium sulfate in the form of heat-treated products lime, or calcareous cement, or trivalent ferrous sulphate, or their mixed with water. The calcium sulphate is then hydrated until it is double aqueous, the compounds are insoluble in water. Again under the influence of heat semi-aqueous calcium sulphate is formed. 7. 60-900 single or step hydroseparation process of phosphogypsum
Pure CaSO4 • 2H2O crystals are formed as a result of Phosphogypsum treatment using one of the methods listed above after construction gypsum and ultra-strong gypsum, lime gypsum binder, phosphohydride cement, etc. in the air hardening binders are formed.
In addition, quality natural aqueous gypsum from processed phosphogypsum can also be used instead. [5] Institute of General Inorganic Chemistry of the Academy of Sciences of the Republic of Armenia From phosphogypsum developed in collaboration with VNIIStrom (Russia) The method of production of technical gypsum phosphogypsum under pressure based on dehydration. The resulting a - half-molecule aqueous gypsum filtered, then rinsed and dried in hot water (see diagram).

Phosphogypsum α- technological scheme of conversion to semi-hydrate.

Phosphogypsum
↓
Transporter
↓
Repulpator
↓
Pump
↓
Accumulating capacity
↓
Intermediate capacity
↓
Special capacity
↓
Autoclave
↓
Pipeline
↓
Heat exchanger
↓
Vacuum filter
↓
Drying drum
↓
Receiver bunker
↓
Mill
↓
Pneumatic pump
↓
Finished goods warehouse
↓

Phosphorus ores from different deposits have their own mineralogical structure and on the physical and chemical properties of the compounds and, depending on the quantity differs from each other and has two main types - phosphorus, such as apatite and phosphorite divided into ores.

Chemical composition of phosphogypsum (in%).

Test sample	Almalyk phosphogypsy	Voskresensk phosphogypsi
QKY	0,08	3,55
SiO2	95,50	33,18
AI2O3	1,54	0,64
Fe2O3	1,52	23,80
CaO	0,28	8,56
MgO	-	0,24
SO3	0,12	3,50
TiO2	-	22,20
Na2O	0,22	3,72
K2O	0,76	0,14
100,02 99,53		

Radiographic analysis also showed a basic mixture: a-quartz; d = 4.24;
3.34; 2.44; 2.28; 2.22; 1.97; 1.82 A and so on.

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