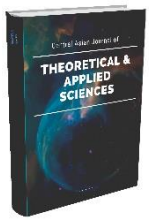

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Application of ASH of Heat Power Plants in Mixtures

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Abstract: *This article contains many studies in our country on optimizing the composition of fillers using industrial waste, chemical and mineral additives, improving the properties of fillers. One of the important tasks is the creation of a composition of fillers with given properties and characteristics using industrial waste, the development of energy-saving technologies that increase labor productivity while strengthening mountain cavities.*

Key words: *field-effect and bipolar transistors, non-trivial modes, multifunctional sensor, drain-gate voltage, solar radiation.*

Introduction. A lot of research work is underway in the world aimed at optimizing the composition of fillers using industrial waste, chemical and mineral additives from deposits, and targeting the formation of structures in mixtures. In this regard, it is important to study the physical and technical properties of aggregates, to increase the strength, resistance and durability of aggregates deposited in mountain voids, to develop a technology for their preparation and placement.

Five priority areas of the Strategy for the further development of the Republic of Uzbekistan for 2017-2021 have been identified, including "... the implementation of targeted programs for the development and modernization of construction, road transport, engineering communications and social infrastructure, Widespread introduction of energy-saving technologies into production ... "[1]. One of the important tasks is the implementation of these tasks, including the widespread use of filling systems in the processing of ore deposits in the mountains, the use of local raw materials and industrial waste, the creation of aggregates with specified properties and characteristics, the development of energy-saving technologies.

Literature review. Leading researchers of the world, including: Khomyakov V.I., Tsygalov M.N., Shvarts Yu.D., Aldambergenov Yu.A., Baikonurov O.A., Krupnik L.A. and others have participated and made a great contribution to solving these problems.

Scientists of our country have carried out a number of studies to develop the composition of building materials based on industrial waste, improve their structure and properties and increase their efficiency. Kosimov E.Yu., Gaziev Yu.A., Tokhirov M.K., Samigov N.A., Tulaganov A.A., Botvina L.M., Turopov M.T., Komilov XX and others have achieved significant results in this area based on his research over the years.

Research method. In Russia, a mixture of fillers was first used at the Norilsk Mining and Metallurgical Combine, where all components were ground in ball mills to obtain a homogeneous mixture with a

density of 1800-1900 kg/m^3. Cement and granulated blast furnace stone were used as complex binders, natural coarse sand and flotation waste were used as fillers. As a filler in 1 m^3 of the mixture, granular crushed stone and a nickel production unit are used, cement consumption 50-160 kg, anhydrite consumption 300-400 kg, aggregate strength 2-10 MPa [2].

At the fields Falconbridge, Inco (Canada), Gekla, Kennecott Copper, Tennessee Copper (USA), the wastes of the concentrating plant were used as fillers, and cement was used as a binder in a ratio of 1: 20–1: 40. top layer 150-300 mm thick increases to a ratio of 1: 6-1: 15. An increase in cement consumption in the upper layer of the deposit made it possible to increase the strength and ore production without bedding. This led to the efficient use of mining waste and the filling of 6-8 m vertical slots. Falun ore from a concentrator containing pyrrhotite is used as a filler at the Falun mine (Sweden). Cement consumption was 30 kg per 1 m^2 of area [3].

Analyzing the experience of using the above mixtures of fillers, it should be noted that the main disadvantage of a monolithic filling system is the high cost of cement and filler that make up this hardening mixture.

Thus, an important aspect of increasing the efficiency of the use of fillers and the construction of artificial curing systems is to reduce the cost of fillers and improve their properties through the use of new types of binders, as well as local raw materials, mining. , waste of energy and metallurgy.

The use of TPP ash in backfill mixtures. In the process of cement clinker hardening without processing as an ash additive (up to 15% of the cement mass) without changing the properties of the cement clinker; as an additive that increases plasticity in heavy and light concrete, mixtures (up to 60% of the mass of cement); in the strengthening of raw materials for the construction and foundations of roads (up to 20% of the mass of cement and sand); As a result of coal combustion at thermal power plants in the form of the mineral part of coal, fine ash and flakes are obtained, which occurs at high temperatures (1200-1700 ° C).

Gray is a polymineral material containing a different amount of glassy phases (40-65%) depending on the type of coal being burnt, spherical particles 100 microns in size, dehydrated clay, mullite, magnesite, quartz, various bonds of calcium and magnesium. and sulfur. In contrast to coal preparation, the ash of the PWI does not contain coal grains, the burnt part of the ash consists of coal residues of various modifications.

The generally accepted classification [4] does not include waste containing fuels. Separately developed classifications (by origin, structural and mechanical properties, chemical and mineral composition) as a result of research fully describe these wastes.

G. Sivertsev [5] also proposed a classification of combustible rocks and ash. According to him, the properties of pulverized coal ash depend on the combustion mode of the fuel, as well as on the ratio of glassy and crystalline phases. At present, it is generally accepted that the more glassy phases in the relative composition, the higher the ash activity. In order to increase the binding properties of power plant ash, large-scale research work was carried out by prominent scientists P.P. Budnikov, Yu.M. But A.V. Conducted by Volzhensky [6, 7, 8].

The hydraulic activity of power plant ash has been studied in numerous studies by various scientists [9, 10]. There is no consensus on the reason for the hydraulic activity of the ash. A number of studies, including foreign ones, were considered as the reaction of pozzolan to the hardening of mixed binders based on IES ash and Portland cement clinker [11, 12].

Activation of ash and pulverized carbonates removed by water is carried out by adding superplasticizer S-3 and LST and processing in rotary-pulsating equipment (RPU). This binder reduces the water requirement of the mixture and optimizes its microstructure. Lutsevich Ya.A. [13] in his research work on

the use of rock waste, limestone and fuel ash, as well as the optimal ratio of rock waste, limestone and fuel ash in cement-ash-carbonate compositions, the introduction of an alkali metal - NaCl, Na_2SO_4, Na_2CO_3, NaOH and rotor pulsation. The problem of activation by treatment in equipment has been studied. The optimal composition of the binder mixture is 70% of rock waste and 30% of KES ash.

Scientific works of a number of researchers [14, 15] on the use of low-grade coal ash (sulfocalcium) have led to the conclusion that ash can be used in practice in building mixtures (up to 30%) and concrete (up to 30%). twenty%).

The research carried out by the scientists of our country on the fly ash of the New Angrenskaya CHPP aroused sufficient interest in us. Toksirov M.K., Kosimov E.U. and in the scientific works of other scientists it was recommended to add fly ash to the concrete composition in an amount not exceeding 10-15% in order to replace part of the cement [16].

This improves the ease of placing the concrete mix by reducing the settling and heat release of the concrete or mix during curing. In addition, ash slows down hardening in the initial period after concrete preparation, reduces water permeability and frost resistance. However, a water-soluble resin based on SAFA plasticizer with air-absorbing additives accelerated concrete hardening. Fly ash New Angren IES with a dispersion of 4000 cm^2 / g from 20% to 40% was used as a mineral additive. The high dispersion of ash, the dissolution of particles of different sizes has a positive effect on the convenience of laying the concrete mixture with a low consumption of the binder.

Maksamataliev I.M. [17] used New Angren IES fly ash as filler for Ss.yu. = 3000 cm^2/g in the production of concrete mixtures based on activated cement binder. Superplasticizers S-3, LST, KZhN and SVK were used as additives to cement. He revealed the specific properties of a cement binder based on an ash-filler modified with MKT, which reduces cement consumption by 28-50% depending on the application and mixing speed of MKT, has a low ash content of the cement binder and high structural and mechanical characteristics. It was noted that it is possible to obtain ash-cement stone. The positive side of this work is the study of the influence of technological parameters, such as the sequence of the introduction of binders, the duration of mixing, on the properties of concrete mixtures based on activated binders with filler.

In our research, we used ash-cement compositions to obtain aggregates that differ from concrete in different physical and mechanical properties (strength, mobility, etc.) and the operating conditions of the aggregates. An important research issue is the use of loose sand on a mountain basis, marble processing waste, fly ash, copper smelting industry waste, Portland cement and superplasticizer in the preparation of aggregates used in underground mines.

Electrostatic precipitator-entrainment of the New Angren TPP (volumetric weight - 900 kg / m^3, specific surface area - 4500 cm^2 / g);

Table 1: Fly ash chemical composition

Name	The number of oxides by weight %								
	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	Na_2O +K_2O	К.М.Й.	All
Fly ash	35,80	18,45	15,30	18,30	4,15	3,80	0,5	3,7	100,0

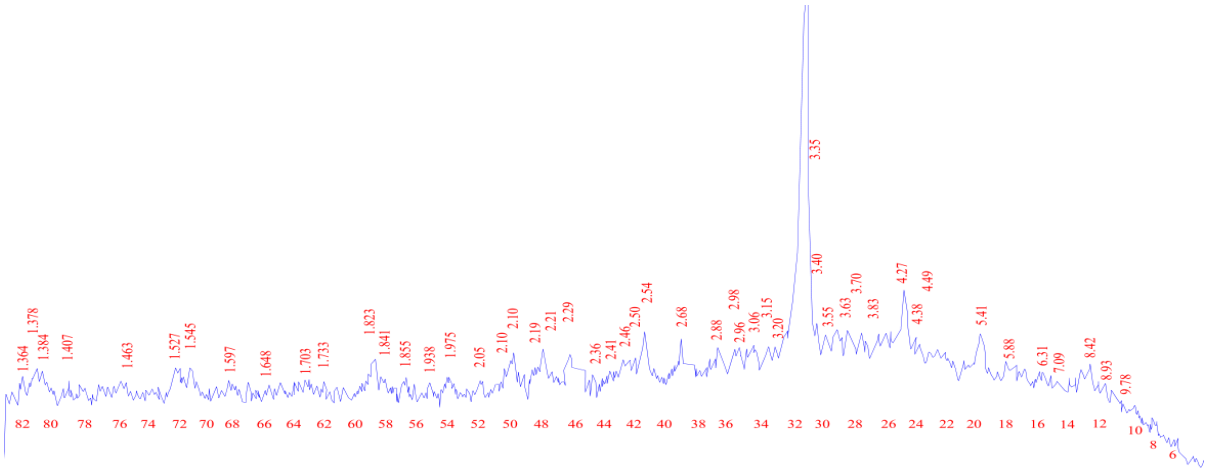

Figure 1. X-ray of Yangiangren IES fly ash

As a result of the analysis of the X-ray diffraction pattern of the fly ash of the Yangiangren TPP (see Figure 1), the ash content contains quartz (d = 4.27; 3.35; 2.46; 2.29; 2.21; 2.10; 1.97; 1 , 82 Å), mullite (d = 5.41; 3.40; 2.54; 2.19; 2.13; 1.84 Å), calcite (d = 3.83; 3.05; 1.76 Å) , feldspar (d = 3.25; 3.20; 2.13 Å), ferivitite (d = 8.42; 4.49; 2.70 Å), varietal (d = 5.39); minerals such as 4.83 have been identified; 4.38; 4.29; 3.06; 2.68 Å).

Optimal composition and physical and mechanical properties of fly ash, copper-smelting mixtures and fillers based on superplasticizers.

Contents t / r	Materials per 1 m3 of mixture consumption, kg							Mixture mobility, cm	Density of the mixture, kg / m3	Average compressive strength, MPa (in one day)		
	Portland cement	Volatile ash	Copper smelting stone	Loose rock-based sand	Sand based on marble processing waste	Water	The amount of "FREM S-3" relative to the			7	28	60
1	160	40	-	1200	400	242	4,0	11-12	1845	5,28	8,94	10,8
2	128	32	-	1200	400	238	3,2	11-12	1804	3,46	6,18	9,22
3	120	30	-	1200	400	236	3,0	11-12	1793	3,36	5,56	7,44
4	96	24	-	1200	400	230	2,4	11-12	1762	2,38	4,84	6,65
5	80	20	-	1200	400	226	2,0	11-12	1738	2,15	3,42	4,32
6	64	16	-	1200	400	222	1,6	11-12	1719	1,13	1,87	2,47
7	160	-	40	1200	400	238	4,0	11-12	1838	5,16	8,16	10,3
8	128	-	32	1200	400	234	3,2	11-12	1802	3,29	5,86	8,96
9	120	-	30	1200	400	230	3,0	11-12	1782	3,18	5,29	6,45
10	96	-	24	1200	400	228	2,4	11-12	1762	2,16	4,26	6,21
11	80	-	20	1200	400	224	2,0	11-12	1733	1,95	3,17	3,94
12	64	-	16	1200	400	218	1,6	11-12	1710	1,06	1,79	2,38

CONCLUSION. The main disadvantage of the monolithic filling system was the high cost of cement and aggregate that make up this hardening mixture.

Thus, an important aspect of increasing the efficiency of using fillers and building artificial curing systems is to reduce the cost of fillers and improve their properties through the use of new types of binders, as well as local raw materials, mining, energy, metallurgy and waste.

An analysis of the results of the experimental tests carried out shows that the addition of 30% copper smelting rock and fly ash to the cement mixture in relation to the mass of cement reduces the strength of the solid mixture relative to the strength of the control samples. Therefore, to ensure the strength of the aggregate mixture, mineral additives were obtained, added to the mixture as an optimal composition in an amount of 20% with respect to the weight of cement. As a result of adding 1.5-3% of the weight of the binder chemical additive to the mixture, strength increases due to a decrease in the water-cement ratio.

REFERENCES:

1. Strategy of actions for the development of the Republic of Uzbekistan for 2017-2021. February 7, 2017. PF-4947.
2. Vyatkin A.P., Gorbachev V.G., Rubtsov V.A. Hardening backfill on the ore miner. Moscow.- "Nedra". -1983.-P.47-54.
3. Gaziev Yu.A., Raksimov Sh.T., Shakirov TT, Kholmatov M. Composition and properties of sand aggregates on loose rocks of the Kauldi ore deposit. Scientific and technical journal "Problems of architecture and construction" .- No. 1.-Samarkand.-2012.-P.52-54.
4. Aleksin Yu.A., Lyusov A.N. Economic efficiency of using secondary resources in the production of building materials. M .: "Stroyizdat" .- 1988.-S.56-107.
5. Bazhenov Yu.M., Shubenkin P.F., Dvorkin L.I. "The use of industrial waste in the production of building materials." -Moscow. - "Stroyizdat". - 1986.-P.13-25.
6. Butt Yu.M. Technology of cement and other binders. M .: - "Stroyizdat". - 1956.
7. But Yu.M., Timashev V.V. Workshop on the chemical technology of materials drying. M.: - "High school". - 1973.-P.296-322.
8. Volzhensky A.V., Burov Yu.S., Kolokolnikov V.S. Mineral binders. - 3rd ed.-Moscow. - "Stroyizdat". - 1979.-P.473.
9. Baranov A.T., Buyevich G.A. Gold concrete. -Moscow. -1960.-S.221.
10. Volzhensky A.V., Burov Yu.S., Vinogradov B.N., Gladkis K.V. Concrete and products from slag and ash materials. Moscow. - "Stroyizdat" .- 1969.-C.389-392.
11. Venua M. Cement and concrete in construction.-Moscow. "Stroyizdat" .- 1980.-P.39-45.
12. Vasilkov Yu.V. Computer computing technologies in mathematical modeling. / Tutorial. M .: Finance and statistics. - 2002.-P.256.
13. Gaziev Yu.A., Kadyrova D.Sh., Raksimov Sh.T. Using the outcomes of copper-smelting and marble production as a microfiller in drying. Tashkent Institute of Railway Engineers, "Innovative Technologies in Construction", materials of the interuniversity scientific-practical conference of undergraduate and graduate students, senior research fellows-applicants. -Issue-8. May 30-31. -2013.-S.51-53.

14. Gaziev Yu.A. "Industrial waste in the production of building materials and products." Textbook. - Tashkent. -2015. -S.232-242.
15. Gaziev Yu.A., Raksimov Sh.T., Shakirov TT, Kholmatov M. Composition and properties of sand aggregates on loose rocks of the Kauldi ore deposit. Scientific and technical journal "Problems of architecture and construction" .- No. 1.-Samarkand.-2012. S.52-54.
16. Gleckel F.A. Physicochemical bases of the use of mineral additives. - Tashkent. - Publishing house "Fan". - 1975. -P.69-88.
17. Vasilkov Yu.V. Computational technologies calculated in mathematical modeling. Tutorial. M .: Finance and statistics. - 2002.-P.256.

