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ON THE ISSUE OF TECHNOLOGY FOR NEW HEAT AND WATERPROOFING COATINGS BASED COMPOSITONS CONTAINING MICROSPHERES FOR PIPES AND HEATING PLANT

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The design and operation of pipelines and construction of high-technology a lot of attention is paid to their operation at high temperatures and temperature changes. One of the main tasks of the industry - a comprehensive energy efficiency and economical use of energy-intensive products. Savings can be achieved by improving the thermal efficiency used coatings. Poetom search for new technological solutions and approaches to reduce the heat loss of all, without exception, industries, enterprises of housing and communal services, civil engineering, is a task of increased relevance. In this connection, as one of the most revolutionary solutions step by step can be regarded that when the thickness of 2-3 mm provide the same insulating effect, as a layer of mineral wool 150 mm thick [1,2,9-18].

In recent years, the literature published the results of many works devoted to the synthesis of hollow glass microspheres [1,2-7]. Known products of the American company Standard Oil Co» foamed sodium and potassium silicates [8], the firm "Emerson and Cuming. Inc». Alumin microspheres are used in composites operating at high temperatures. For reduce the melt viscosity of ceramic melts injected in small amounts SiO_2 , aluminous TiO_2 . Osnovnymi industrial manufacturers mikro sfery avlyayutsya American company «Norton Co», Carborundum Co», Japonic Sebagenko" [1].

In our country, the theory and practice of getting thermal insulation coatings using glass, ceramic, carbon microspheres have not been developed. Also not developed nanotechnology. Materials are available on the market of the Russian, Ukrainian production "Penetron", "Isollat", "Arctic Code" and "Termodon." Kazakhstan has not been studied materials and supplies are not developed the theoretical and technical basis for the production of coatings using microspheres based on local raw materials. In this connection, there is an urgent need for more theoretical and experimental development of technology in the field of coatings with microspheres. The results obtained by the research can be used to produce coatings of main oil and gas pipelines, hot water supply utilities, heating installations in the construction industry.

The proposed technology of new materials should ensure the development of new technologies of a number of heat, hydro, sound-insulating materials with high corrosion resistance and improved strength, adhesion properties to most

industries, meet the needs of industries in the knowledge-intensive high-tech competitive products, which corresponds to the innovation policy of Kazakhstan. At the international scale of the development of the theoretical foundations of new product materials will promote domestic products abroad.

- Development of scientific and technical foundations of new coatings for pipes and heating plants with high heat and waterproofing performance containing microspheres;

- The identification of mechanisms of formation of the structure of new materials;

- Development of recommendations for the control of thermal characteristics of new materials in the design and production.

Development of scientific and technical basis for production of composite materials using silicate microspheres enables a rapid development of technology demanded by many sectors of the economy, the development of more fuel-efficient piping systems and heating plants.

Proposed the creation of scientific and technical foundations of thermal insulation materials with microspheres based on local raw materials. In contrast to the well-known materials and technologies in the proposed project will be prepared high-strength materials with better thermal and waterproofing properties. The preparation of such materials, and the regulation of their properties at the design stage can only be based on the identification of patterns and mechanisms of nanostructure formation. It is also expected that there will be producing materials that will be different from peers also in increased corrosion and temperature resistance and have high adhesion to materials. The use of new coatings gives the opportunity to create new, more efficient heating units.

As a result of the work stated in the project will be established theoretical and scientific and technical fundamentals of new coatings with microspheres for pipes and heating plants to be used in many industries for heating, waterproofing and heat pipe systems, and can also be used in construction. Will identify the mechanisms and patterns of structure formation of nanocomposites, which will control the properties of materials at the design stage and produce products with desired properties.

New coverage will be in demand for thermal insulation of pipelines, piping hot water and heating installations housing and communal services, facilities, civil engineering, defense industry. As a result of the application of research of new materials and technologies may increase the life of the insulation almost 2 times, strength and durability that causes an increase in the service life, reducing the period of repair. Expected to reduce heat loss by 25-30%. The results of the project are the prospects for the discovery of new enterprises with high technology demanded.

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