

Study of refinery possibility with the sulfur disposal

© Linara R. Baraeva,⁺ Rezida T. Akhmetova,* Polina A. Chudina, and Aigul I. Tuktarova

Technology of Inorganic Substances and Materials Division. Institute of Petroleum, Chemistry and Nanotechnologies. Kazan National Research Technological University. K. Marx St., 68. Kazan, 420015.

Republic of Tatarstan. Russia. Phone: +7 (843) 238-56-94.

E-mail: office@kstu.ru, baraeva.linara@yandex.ru

*Supervising author; ⁺Corresponding author

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Abstract

Sulfur is one of the most important products of the chemical industry as it is a raw material for the production of many chemical compounds as the main inorganic synthesis (acids, salts, fertilizers), and for the production of organic compounds (tires, drug products, etc.). Limits of sulphur application at present time has grown considerably due to the set of the most important positive technical characteristics, and also the cheapness and availability of the so-called "associated sulphur" that is an offal of oil refining and gas. According to projections, the global sulphur market up to 2020 will have a stable trend of excess of production over the sales, turning this product into a large-tonnage salvage. Therefore, the development of new ways to use sulphur is the up to date direction. One of the directions of sulphur application extension is the production of sulfide materials from it, which have several advantages, including: fast strength generation, curing behavior at temperatures below freezing and in the aquatic environment, the quality of re-use at heating, low cost. This direction is particularly relevant in connection with the fall of sulfur price on the world market. With a corresponding feasibility study, these materials can be applied in various designs and constructions, technology of construction industry and road construction. Modern sulfur-containing materials assume only a mechanical mixture of sulphur and mineral constituents. Chemical linkage of the components with the generation of sulphides is a new direction in sulphur material technology, beneficially redounding on the material strength characteristics and ecological and sanitary safety of production. From this point of view the use of amorphous silica as the mineral component with a developed specific surface and a large number of active centers on the surface is justified. However, the additional activation to ensure chemical interaction of the components is required. Lewis acids can serve as activators. On the one hand, they are able to activate the sulfur, opening of the cyclic molecules, on the other hand, joining the surface of amorphous silica, enhance the activity of the filler.

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