N E W S
OF THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF KAZAKHSTAN
SERIES OF GEOLOGY AND TECHNICAL SCIENCES
ISSN 2224-5278
Volume 6, Number 426 (2017), 195 – 200

UDC 577.4:550.41:66.097:661(004.8)

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STUDY OF COMPOSITION OF WASTE FROM METALLURGY PRODUCTION AIMED IN USE THEM AS ACTIVE PHASES OF CATALYSTS FOR HYDROCARBON RAW MATERIALS REFINING

Abstract. Wastes from metallurgical production contain a significant amount of valuable elements such as iron, chromium, manganese, titanium, aluminum. The introduction of small and dispersed fractions in the smelting furnace leads to disturbances in the technological regime. Therefore, these wastes are accumulated in various types of storages. To increase the efficiency of the use of resources, it is necessary to utilize these wastes. The main ways of utilization are agglomeration, as well as the addition in building materials as additives. It is proposed to combine these ways with a new approach to utilization. Based on the data on the composition, it is proposed to use waste from ferrous metallurgy in the Pavlodar region as active phases of catalysts for processing hydrocarbon feedstocks. The obtained results showed that the waste: wet-scrubbing sludge and dry gas scrubbing of the Aktyubinsk Ferroalloy Plant, mixed waste from the ash-slime storage of the Aksu ferroalloy plant, red mud and ferrous sand of the Pavlodar aluminum plant contain significant amounts of Fe, Cr, Mn, Al, Ca. This allows us to predict the possibility of creating catalysts using these types of waste. Thus, it is proposed to study a new approach to solving the problem of utilization of waste products of the metallurgical industry with the production of valuable products - catalysts for processing hydrocarbon raw materials.
Keywords: industrial waste, metallurgical production, utilization, secondary resources, catalysts.

Introduction. In present time metallurgy industry produces great amount of waste. Non-ferrous and ferrous metallurgy take up one of the leading positions in amount of emissions by data given in [1]. Their amounts in the total volume of emissions are correspondingly 22.8 and 15%. Significant part of metallurgy industry of Kazakhstan is focused in Pavlodar region a large industrial center. Thus, by the data given in [2], more than 4 million tons of ferrous metallurgy waste and more than 50 million tons of non-ferrous metallurgy waste are accumulated in Pavlodar by 2013. By experts opinion [3] production of one ton of ferrous metal leads to accumulation of 5-17 tons of waste. Dumps and slime storages are often considered as secondary deposit of valuable metallic components by volumes of their reserves. It is noted, that slags of ferrous metal production contain about 15% of metallic and 27% of oxide iron. In the red mud of aluminium production, which is also stored in storages in great amounts, the presence of iron oxides is 45-50% [4]. About half of total mass of iron ore is conversed into waste called "tailings", which are quartz-ferruginous sand represented by particles of 0.14-0.63 mm in diameter. The wastes are denser in comparison with natural sand because it contains large amounts of iron compounds.

Significant collected amounts of metallurgy wastes require in-depth consideration of opportunities of utilization of them. The involvement of these wastes in industrial processes is one of the most important