D. Zyatikov , A. Artemenko
V.V. Plotnikov, research supervisor
O.V. Tsygul, language adviser
Kryvyi Rih National University, Kryvyi Rih

Possibility of Use of Pyritic Ash at Agglomerate Production

Pyritic ash is a cheap waste material of chemical plants, where they are generated in large quantities at shops, which produce sulfuric acid from sulfuric pyrite. Pyritic ash is a fine powder, usually reddish-brown colored, rich with iron (65%) and highly humid. That is why the pyritic ash should be dried before it could be mixed with initial charge mixture.

The use of agglomeration charge mixture blended with pyritic ash is very efficient, since the pyritic ash, being the waste material of sulfuric acid production, costs virtually nothing. The pyritic ash can be added to partially replace iron-ore concentrate. According to laboratory and the following industrial trials the possible content of pyritic ash in the iron-ore component of charge mixture is 20-25%, which practically has no effect on the performance of agglomeration machine and the quality of product. Further use of obtained agglomerate in the blast-furnace melting has no effect on the content of sulfur in the cast iron either.

Pyritic ash can possess various chemical compositions, which is conditioned by different deposits of iron pyrite and its chemical composition. Non-ferrous metals such as copper, zinc and lead, as well as arsenic can be found in this ash. Ordinary processing of such raw material with normal agglomeration technology leads to obtainment of off-grade material, melting of which in the blast furnace causes technological difficulties.

Among the proposed methods of pyritic ash with high content of harmful impurities of non-ferrous metals application there is a high temperature chlorinating burning (chloride sublimation), in which the impurities of non-ferrous metals are removed in the form of chlorides, that possess low boiling points.

However with high content of chlorine (9,8%) and sulfur (3,34%) in the ore the overgrowing of firegrate and stoppage of sintering process is observed.