

## Factors Affecting Silicomanganese Production using Manganese Rich Slag in the Charge

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Silicomanganese is widely used as a complex reducer and an alloying addition in the production of various grades of steel due to its economic and metallurgical advantages. It is also used as a semi-product in the manufacture of medium- and low-carbon ferromanganese and metallic manganese. Manganese-rich slag, resulting from high carbon ferromanganese production, has the advantages of high manganese content, high Mn/Fe ratio, low excess oxygen, low phosphorus content, low fine content and low cost. Such slag seems to be very attractive to use as raw materials for the production of silicomanganese alloys. In the present study, experimental heats were designed and carried out to optimise the factors affecting the production process of silicomanganese using manganese rich slag in the charge. The results of pilot plant experimental heats showed that the optimum metallic yield and recoveries of manganese and silicon are obtained with an initial slag basicity,  $(\text{CaO} + \text{MgO}) / (\text{Al}_2\text{O}_3)$ , of 1.8 by using dolomite as fluxing material and charging quartzite and fluorspar in percentage of 25% and 4% of the blend, respectively. The results also showed that an amount of 30% of coke in excess of the stoichiometric amount should be added. These results are relative for the specific high  $\text{Al}_2\text{O}_3$  ores used.

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