

INVESTIGATION OF MOLD FLUXES PROPERTIES USED IN THE CONTINUOUS CASTING OF STEELS

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ABSTRACT

Mold fluxes or mold powders are synthetic slags used to cover the liquid pool surface during the continuous casting of steel. The main task of mold fluxes is the creation of a lubricant film between steel strand and the refrigerated mold. After melting, in contact with the molten steel, the mold powder forms a slag which changes its chemical composition as function of time. These changes occur at the slag/metal interface, and have also implications on the friction force between solidified shell and the copper mold. The study of these frictional forces is important for two reasons: (i) to prevent sticker breakouts (B.O.) and (ii) to improve ingot surface quality, which is affected mainly by frictional forces. Alumina absorption by mold flux slags causes an important effect on frictional forces, since the mineralogical constitution of slags depends on it. The results of the present paper suggest that computational thermodynamics can be used to predict the chemical interactions of mold fluxes in contact with liquid steel. Thus, the best possible conditions during the continuous casting of steel products in terms of product quality and production stability can be identified.