mould powders in continuous casting

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Abstract : Continuous casting of steel is a process in which liquid steel is continuously solidified into a strand of metal. The components of the continuous casting steel system are the ladle, tundish and mold. Mould powders are spread on the surface of the bath of the molten metal of the ladle and tundish. The quality of steel produced by continuous casting is strongly dependant on the performance of mould powders. Mould powders govern the steel production in terms of production rate, cleanliness, surface condition, defects and environment of casting operation. These powders are SiO2 oxides based materials. Diatomaceous earth, or simply diatomite, formerly called Kieselguhr, is a sedimentary rock of biological origin formed by the accumulation at the bottom of the ocean of siliceous skeletons of diatoms, or unicellular algae. Diatomite is a highly porous silica (SiO2) rich material, major applications are thermal insulation. Melting behaviour of mould powders is one of the most important performance parameters for mould powders and is mainly dependant on carbon which is an essential constituent of mould powders. Carbon blacks have lately attracted considerable attention for use in mould powders due to fine size. A study was conducted to see the effect of addition of carbon black and diatomite to natural silica (sand) for a mould powder used in Arcelor Mittal Steel Annaba.

Keywords : continuous casting, mould powders, oxides, diatomite