Influence of Steel Shots Size on the tribological properties of Magnetic Molded Aluminium Metal Matrix Composite

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Magnetic Molding is a new generation casting technology. It is similar to lost foam process except that the sand used in the process is replaced with steel shots. An Expendable Polystyrene (EPS) pattern is placed in the mold container and steel shots are made to surround the pattern. Magnetic field is used to compact the steel shots. When the molten metal is poured, the EPS pattern evaporates and the molten metal takes the shape of the pattern. Thus the required casting is formed. This process is better than sand casting process because the steel shots can be used again and again unlike sand. Also the thermal conductivity of the steel shots is high resulting in faster cooling rate and hence better mechanical properties. In this paper, the effect of steel shots size on the wear properties of the cast is studied. Three different sized steel balls are chosen as mold materials. Silicon reinforced Aluminium Metal Matrix Composite (MMC) is cast in each case and its tribological properties such as wear rate, co-efficient of friction, etc. are studied and the best steel shot size for the manufacturing of MMC was found out.

Keywords: Co-efficient of friction, Magnetic Molding, Metal Matrix Composites, Wear Rate