World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:11, No:11, 2017

Reducing the Chemical Activity of Ceramic Casting Molds for Producing Decorated Glass Moulds

Authors : Nilgun Kuskonmaz

Abstract : Ceramic molding can produce castings with fine detail, smooth surface and high degree of dimensional accuracy. All these features are the key factors for producing decorated glass moulds. In the ceramic mold casting process, the fundamental parameters affecting the mold-metal reactions are the composition and the properties of the refractory materials used in the production of ceramic mold. As a result of the reactions taking place between the liquid metal and mold surface, it is not possible to achieve a perfect surface quality, a fine surface detail and maintain a high standard dimensional tolerances. The present research examines the effects of the binder composition on the structural and physical properties of the zircon ceramic mold. In the experiment, the ceramic slurry was prepared by mixing the refractory powders (zircon(ZrSiO4), mullit(3Al2O32SiO2) and alumina (Al2O3)) with the low alkaline silica (ethyl silicate (C8H20O4Si)) and acidic type gelling material suitable binder and gelling agent. This was followed by pouring that ceramic slurry on to a silicon pattern. After being gelled, the mold was removed from the silicon pattern and dried. Then, the ceramic mold was subjected to the reaction sintering at 1600°C for 2 hours in the furnace. The stainless steel (SS) was cast into the sintered ceramic mold. At the end of this process it was observed that the surface quality of decorated glass mold.

Keywords : ceramic mold, stainless steel casting, decorated glass mold
Conference Title : ICCMMEME 2017 : International Conference on Chemical, Material, Metallurgical Engineering and Mine Engineering
Conference Location : Tokyo, Japan
Conference Dates : November 13-14, 2017