

Surface Treatment on S50C Carbon Steel Die Material for Zinc Die Casting

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ABSTRACT

The mold life of die-casting is a very important character in the zinc die casting process because of mass and highly repeated pressure of die casting. The intense thermal fatigue and soldering and washout of mold caused by die casting is a main factor affecting the production rate and the good yield of AG40A zinc die-casting. Mostly inquire into the thermal fatigue, soldering and washout to aluminum die-casting the research of the mold life influence on the reference, but, the study of increase of mold life of the zinc die casting is scarce. The origin studies the main purpose is inquire into the molding material S50C, give respectively three conditions : don't the surface processing, nitriding treatment, PVD coating, again through die-casting the machine to physically die-casting 1000, 3000 and 5000 number of times. Inquire into again and analyze what surface the processing has the service life of prolonging the mold material S50C. Study the result manifestation mold material S50C after handling through the PVD coating, In spite of after the thermal fatigue and soldering and washout wait for experiment analyze, all compare the surface and did not process and nitriding treatment, there is more good performance. The nitriding treatment contain good performance, but compare with PVD coating mutually, still can not compare with PVD coating. The surface did not process then in spite of at thermal fatigue and soldering and washout etc experiments analysis under, the performance that all is very bad. Therefore, the mold material S50C by PVD coating, really can definitely prolong the service life of the mold.

Keywords : Zinc alloy, die casting mold life, nitriding treatment, S50C,PVD coating, thermal fatigue, soldering, washout

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