



G08.28

Improvement of the Mold Releasing Properties by DLS Surface Modification for the Injection Processing

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DLC(Diamond Like Carbon) attracts attention as a metal surface modification. The amorphous substance of carbon contributes the flatness and low friction-related on the metal surface. The plastic product with thinning wall and light weighting need bigger mold release force than the ordinary product at the mold opening and ejection. Reducing the mold release force by the mold surface modification makes constant and stable production. Surface modification technology based on the metallic material especially DLC is one of the solutions. We studied the friction coefficient between DLC and PMMA resin under different temperatures and inspected the surface characteristics by SPM(Scanning Probe Microscope) from microscopic viewpoint. As the result of surface inspection by the three dimensional roughness comparisons. DLC did not have the directionality and sharp edges on the substance. Such characteristics restrain the deformation force and adhesion force when the PMMA resin slides on the metal surface. Surface modification technology by DLC contribute the actual mold opening force of the injection molding.

keyword;DLC, Surface Modification, Mold Release Force Reduction