

Void Shape in Channels of Water Assisted Injection Molded Parts

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Abstract

Thin, plate-shaped parts are usually reinforced with structural ribs. These ribs also serve as water channels with the water-assisted injection molding technology. Water penetration in the channels results in improved moldability and eliminate sinkmark. This study examines the shape of the water void and its relation to rib (channel) geometry and processing conditions. The effects of channel geometry, including aspect ratio and fillet geometry, along with processing conditions such as water injection delay time, water temperature, water pressure etc. on void shapes were investigated. Numerical simulation of the temperature distribution in the channels was also completed to better interpret the water penetration behavior in water-assisted injection molded products.