



THE CAPABILITY OF HARDENING OF A RAPIDLY CRYSTALIZED ALLOY 6061

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Abstract

Commercial grade 6000-series aluminum alloys are characterized by good corrosion resistance, electrical conductivity and specific strength. These advantages combined with good formability make the 6000-series alloys very attractive for various industrial applications.

Present work describes comparison of hot extruded 6061 aluminum alloy, initially prepared by different processing routes. In particular, industrial material (cast and homogenized), rapidly solidified powders and flakes and machined scraps (chips) were utilized. Mechanical properties combined with structural observations were performed for as extruded materials. Additionally, the effect of cold rolling deformation on the structure and mechanical properties was studied as well. It was found that all processed materials show similar response to mechanical stimulus.

Highly dispersed 6061 material can be effectively consolidated via hot extrusion, which opens new possibilities for solid state recycling. However, it was shown that contrary to expectations, rapid solidification as a method of materials processing has a negligible effect on the 6061 aluminum alloy properties.

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