

Melt Conditioned-Twin Roll Casting of Magnesium Alloy

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Abstract : In the present investigation, magnesium strips were produced by twin roll casting (TRC) and melt conditioned twin roll casting (MC-TRC) processes. The microstructures showed uniform fine equiaxed grain morphology in the case of MC-TRC cast samples. In the case of TRC samples elongated grains with centerline segregation was observed. Further investigation showed both the process has different solidification mechanism. Tensile tests were performed at 250–400°C for both TRC and MCTRC samples. At 250°C, MC-TRC sample showed significant improvement in strength and ductility. However, at higher temperatures the tensile properties were almost comparable, despite of TRC samples having larger grains compared to MC-TRC samples. It was observed that homogenized MC-TRC samples were easily hot stamped compared to TRC samples.

Keywords : MC-TRC, magnesium alloy, solidification, nucleation

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