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Multistep induction heating regimes for thixoforming 7075 aluminium alloy

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Abstract: Thixoforming involves processing alloys with a spheroidal microstructure in the semisolid state. Commercially it is applied to conventional casting alloys, and one of the scientific challenges is to extend its application to high performance aluminium alloys such as 7075. Aluminium alloy 7075 is readily available in extruded form, and one route to a spheroidal microstructure is to reheat extruded material into the semisolid state to obtain recrystallisation, with the liquid penetrating the recrystallised boundaries. Here this route has been followed, but it has been found that the presence of pinning particles in the microstructure inhibits recrystallisation. To overcome this, a multistep induction heating regime has been developed consisting of a 1 min hold at 475-500degreesC, a 1 min hold at 575-600degreesC and a shorter 20 s hold for the final step at 620degreesC.

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Cheng YS, Chen QA, Huang ZQ, et al. [Microstructure evolution and thixoextrusion of AZ91D magnesium alloy produced by SSTT](#) TRANSACTIONS OF NONFERROUS METALS SOCIETY OF CHINA 20 S739-S743 Suppl. 3 SEP 2010

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