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Effect of superfine pretreatment on carbides precipitation behavior of plastic S136 mould steel

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S136 steel is a kind of plastic mould steel with excellent corrosion resistance, which is often used for high polishing and high demand internal mould to produce products in medical and food industry. Due to the influence of component segregation and cooling after forging, the microstructure defects such as chain carbides are easy to appear after annealing. Adding superfine pretreatment process such as high temperature solid solution or high temperature solid solution and high temperature tempering after forging and annealing can solve the problem of uneven distribution of carbides. In this study, the distribution characteristics of chain carbides in the annealed structure of S136 steel were analyzed, and the effect of solution temperature on the dissolution of chain carbides of S136 steel was studied. The results show that after superfine pretreatment, a large number of chain carbides on the grain boundary in the annealed structure of S136 steel are redissolved, the state of ferrite is maintained in the crystal, the grain is refined as a whole, and the mechanical properties are better. The superfine pre-treatment process of high temperature solution and high temperature tempering can control the number and size of carbides precipitation in the annealing process, and the process can be manipulated, which is a practical means of S136 steel pretreatment.

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