

Thermokinetic Diagram of the Nonequilibrium Crystallization of Die Steel 2Kh5MNFSL

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Abstract

© 2014, Springer Science+Business Media New York. A thermokinetic diagram of the hardening of steel 2Kh5MNFSL is plotted on the basis of results of experimental studies of the effect of the rate of cooling of a melt on the temperature field of castings and the rate of displacement of the directional crystallization front. The critical temperature of supercooling of the melt is determined along with the dimensions of the homogeneously structured layer that is formed on the surface of the casting; segregation-inducing diffusion of the alloying elements is almost completely suppressed within this layer.

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Keywords

Directional crystallization, Equilibrium and nonequilibrium solidus temperatures, Homogeneous structure, Rate of displacement of the crystallization front, Segregation-inducing diffusion