

Figure 2 shows the microstructure of the material after heat treatment. The microstructure is characterized by a fine, regular grid pattern, which is typical of a well-ordered lattice structure. The scale bar indicates a length of 10 μm.

2.1.2 Temperature dependence

The temperature dependence of the material's properties is shown in Figure 3. The plot shows the relationship between temperature and a specific property, with data points and a fitted curve. The temperature range is from 0 to 1000 K, and the property value ranges from 0 to 1.0.

Fig. 2.

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2.2 C ed C

Continuous cooling transformation (CCT) diagrams are essential tools for understanding the microstructural evolution of steels during cooling. The diagrams show the relationship between cooling rate and the resulting phase structure. For steels with or without Mo addition, the CCT diagrams illustrate how the presence of Mo affects the transformation kinetics and the stability of different phases like ferrite, pearlite, bainite, and martensite. The diagrams typically plot cooling rate (K/s) on the y-axis against the logarithm of time (s) on the x-axis. The presence of Mo generally shifts the transformation curves to longer times, indicating a retarding effect on the transformation process.

F 4.5

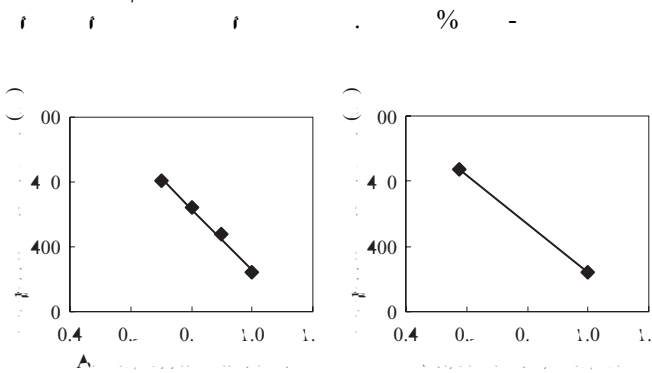


Fig. 4 Effect of cooling time and velocity of blast air on the finish cooling temperature

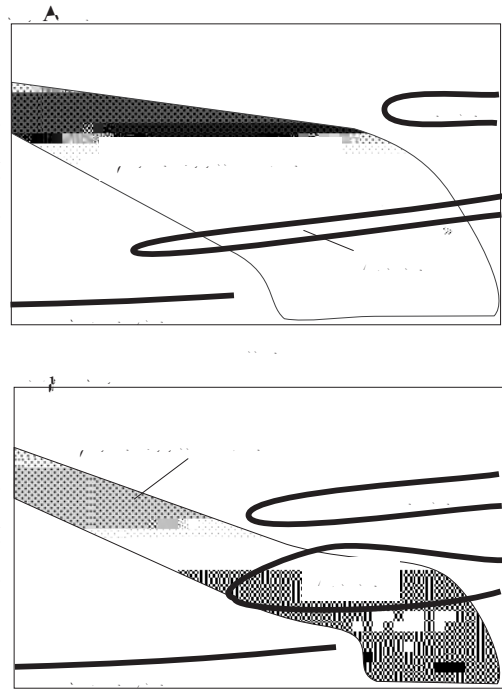


Fig. 5 Continuous cooling transformation diagrams of steels with or without Mo adding

2.3 De e e f 4-R b S ea Re f e e

E ce e Ba a ce f  
C c e B d S a d  
Be d D c

The CCT diagrams for steels with and without Mo addition show that the presence of Mo significantly retards the transformation process. This is evident from the shift of the transformation curves to longer times for the Mo-containing steel. The diagrams also illustrate the effect of cooling rate on the resulting microstructure. Higher cooling rates generally lead to the formation of finer microstructures, such as bainite and martensite, while lower cooling rates favor the formation of coarser structures like ferrite and pearlite. The Mo addition is particularly effective in stabilizing the austenite phase, allowing for higher cooling rates to be used in industrial processes without the risk of undesirable microstructural changes.



