

Effect of Heating Rate on Microstructural Developments in Cold Heading Quality Steel Used for Automotive Applications

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Abstract : Microstructural study and phase transformation in steels is a basic and important step during the design of structural steel. There are huge efforts and study has been done so far on phase transformations, due to so many steel grades available commercially the phase development in steel has different consequences. In the present work an effort has been made to study the effect of heating rate on microstructural features of cold heading quality steel. The SEM, optical microscopy, and heat treatment techniques have been applied to observe the microstructural features in the experimental steel. It was observed that heating rate has the strong influence on phase transformation of CHQ steel under investigation. Heating rate increases the austenite formation kinetics with respect to holding time, and this austenite has been transformed to martensite upon cooling. Heating rate also plays a vital role on nucleation sites of austenite formation in the experimental steel.

Keywords : CHQ steel, austenite formation, heating rate, nucleation

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