UNIVERSITI TEKNOLOGI MARA

THE INFLUENCE OF THICKNESS ON MILD STEEL IN RAPID COOLING PROCESS

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ABSTRACT

Mild steel has become very important and mostly used in the development of industry. Even the mild steel is commonly used in industries and manufacturing, but it is rarely to be the best choice since it has drawbacks such as low hardness and low strength. These drawbacks can be improved by rapid cooling process. This project aims to study the hardness and observe the microstructures of mild steel specimen with different thicknesses after rapid cooling process. The range thicknesses of mild steel specimen of 5 mm to 6 mm and 10 mm to 11 mm with two different geometries which are cuboid geometry and cylinder geometry were heated in a furnace to austenite region before immediately quenched in water to cool to room temperature. The microstructure of specimens was observed and the hardness was tested after the process. The results show that water quench produced martensite. The thin specimen of water quench formed a small grain size compared to thick specimen. Since the thin specimen has the hardest formation of martensite than the thick specimen, so the higher hardness surface lies on thin specimen. Thus the rapid cooling process is important to produce the hardest steel.

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