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Hardening and characterization of 0.45%C steel using clay/water media as the quenchant

Oghenevweta and Riaz

The authors studied the hardening and characterization of 0.45%C steel using clay/water media as the quenchant. They have considered different weight percent of clay with water to form the quenching media. The test specimens were taken to austenizing temperature and quenched in the above media. The hardness value and other mechanical properties were analyzed. A microstructure of fractured test specimens was also analysed. As for their experimental results, 4% clay gave best mechanical properties including hardness. This may be because uniform thermal energy is released in form of latent heat and prevent the formation of oxide coating on the surface of the specimens. However beyond 4% of clay the mechanical properties are reduced due to the formation of martensite. Hardening is an old process of heat treatment. The basics involve heating metal a high temperature and rapid cooling. However different quenching media gave different results. The research is going on to find out the best quenching media to obtain good mechanical properties. In view of this the authors have tried above clay water quenching medium and have established that this quenching medium offers best mechanical properties including surface hardness.