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Assessment of mechanical properties of medium carbon steel under different quenching media

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Abstract

The authors have made an assessment of mechanical properties of medium carbon steel under different quenching media. The quenching media used by them was water and palm oil .The mechanical properties assessed by them were impact and hardness, YS and UTS. The temperature was maintained at 200^0c.They used AISI steel for comparison purposes. Steel is essentially an alloy of iron and carbon with other alloying elements .the aim of their work was to examine mechanical properties under above conditions. The methodology of their work consisted of selecting the above mentioned medium carbon steel, identifying the various mechanical properties to be investigated. They have used the UTM and impact testing machines, hardness testing machine. The heat treatment process consisted of the specimen to be heated up to 850^oc, allowed to get soaked at this temperature. The soaked specimen were grouped into three parts, one for air cooling, the second for water cooling, the third for quenching in palm oil. Their main conclusions are as follows. The properties of the heat-treated medium carbon steel from DSC compared favorably well with standard steel products. They have excellent values in terms of tensile strengths and elongation when quenched and temperature in both water and oil. The normalized steel was found to posses good properties in yield strength (508.00N/mm^2), tensile strength (706 N/mm^2) and impact strength of 43.0.j. The quenched steel materials have their yield points elevated. The palm oil quenched steel is found to be exhibited higher level of toughness. They recommended that these mechanical properties be examined under different tempering temperatures to see their variations.