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Comparative Studies on mechanical properties of high strength alloy steel with time quenched at atmosphere conditions

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Abstract

The authors have worked on comparative studies on mechanical properties of AISI 4340 High Strength alloy steel with time-quenched at atmosphere conditions. The hardness, microstructure and impact test values were compared with time quenched specimens. They found a difference between the normal quenched values and time quenched values. They have concluded that the grain size of the time quenched specimen was higher than the normal quenched specimen. Austempering method to the heat treatment of AISI4340 steel has been presented and has been compared with the timed quenching method. It is found that hardness of the timed quenching specimen is higher than the austempered specimen. But this hardness is surface hardness only. Grain size of austempered specimen is finer than that of the timed quenched specimen that makes it finer than the time-quenched specimen. Austempered specimen has got good impact resistance as compared to that of the timed quenched specimen. The austempered specimen shows faced structure whereas time quenched specimen shows single phase band like martensitic structure.