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Effect of various quenching media on mechanical properties of annealed 0.509Wt% c- 0.178Wt% Mn steels

Dauda and Shariff

Abstract

The authors studied the effect of various quenching media on mechanical properties of annealed 0.509Wt% c-0.178Wt% Mn steels. In their work they tried palm kernel oil, cotton seed oil and olive oil as quenching media and compared the properties of the quenched steel when quenched in water and SAE engine oil. The specimens were heated to 880⁰c and quenched in above mentioned quenching media. The tensile strength, hardness and impact energy were used to measure the quenching media effectiveness. The microstructure was used to estimate the quench severity. They observed that the hardness of the steel for water quenching was (1740HBN, in palm kernel oil 740HBN). The microstructure samples quenched in oil reveals the formation of low proportions of martensite and in the case of olive oil there was retained austenite. Hence they concluded that olive oil can be used where cooling severity is less than that of water and SAE 40 for hardness purpose.