

Performance Assessment of Quenchants on Mechanical Properties of Steel Grade A1046

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Abstract: *The main aim of the study is to assess the performance of ghee oil, coconut oil and sea water quenchants on mechanical properties of A1045 steel. The procedures comprise the production of tensile steel specimens, heat-treat them into electrical oven at 850°C for one hour, quench them in ghee oil, coconut oil and sea water separately. The quenched samples were again tempered separately at the temperature of 400°C. Then all the specimens taken for the mechanical tests such as hardness, tensile, impact test and also to calculate the percentage of elongation, having completion of tests, microstructural analysis had conducted to view the structures contain in each specimen. The results obtained on these processes determine whether these oils can be used as local industrial quenchants. The facilities required for the research is include material testing laboratory, heat treatment workshop, machine shop and metallographic laboratory to mentioned but a few. The material selection is steel grade A1045, that have been normally utilize in metal industries for the production of machine parts and structural components*

Keywords: Quenchants, tensile test, hardness test, percentage elongation