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## Experimental studies on evaluation of khaya seed oil as quenchant in the hardening process of plain carbon steel of 0.34% carbon

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### Abstract

The authors have made experimental studies on evaluation of khaya seed oil as quenchant in the hardening process of plain carbon steel of 0.34% carbon. This process was done by comparing with water and SAE 40 engine oil quenched. The hardness properties of the plain carbon steel in the annealed, normalized and quenched and tempered conditions were investigated. The test samples were austenitized by heating to 870c and quenched in above quenching media. They found that the hardness value of the carbon steel increased from 14.3HRC to 56.3 and the tensile strength increased from 732N/mm<sup>2</sup> to 906,927,953 for water, khaya, seed oil and SAE40 engine oil. The microstructure of the samples with khaya oil indicated the formation of martensite. All these experiments were conducted by them because certain engineering components require high hardness in heavy duty applications. Hardness involves heating the metal alloy to high temperature and rapidly cooling. The effectiveness of the quenching process depends mostly on the properties of the quenching media used. Water is the most widely used quenching medium.