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## Evaluation of fatigue properties of medium carbon low alloy forged steels quenched in polymer

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Medium carbon low alloy forged steels (EN 18, EN19, EN 24 and EN25) have been investigated with respect to their fatigue properties for untreated (Forged) and polymer quenched samples. For heat treatment, the solutionizing temperature of 855°C with a soaking period of 60 min followed by step tempering of 5750 and 2200 was used. Thereafter quenching was carried out in a polymer (polyethylene glycol 10% & 30%) separately. Fatigue tests were carried out for untreated and polymer quenched samples considering

the UTS values for various loads; the polymer quenched samples being superior to untreated samples. Simulation of fatigue analysis carried out using ANSYS and corroborated the experimental results for the polymer quenched samples loaded to 30% of UTS, also the specimens quenched in poly ethylene glycol exhibited the best mechanical properties. The heat-treated specimens had a structure of fine tempered martensite with a small amount of ferrite.

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