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A STUDY ON THE EFFECTS OF TORSIONAL PRESTRAIN ON THE SUBSEQUENT TENSILE STRESS-STRAIN CURVE OF CIRCULAR BAR

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A commercially viable method of increasing strength of reinforcing bar is by cold twisting (i.e. torsional prestrain)[2,3]. The strengthening occurs due to strain hardening caused by cold twisting. After cold twisting the strain varies from a maximum at the bar surface to zero at the bar axis. In this study an attempt is made to predict the tensile stress-strain curve of a torsional prestrained circular bar. This predication is compared with experimental results.

The comparison of predicted and experimentally obtained tensile stress-strain curves show the following:

1. For small tensile strains the predicted tensile stress is greater than the experimental values.
2. For larger tensile strains the predicted tensile stress is smaller than the experimental values.

These deviations may be explained by assumptions made in the prediction model with the real situation. Results are also presented from another similar investigation.

References

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