

## MICROSTRUCTURE CHARACTERIZATION AND EVALUATION OF MECHANICAL PROPERTIES FOR FRICTION WELDED EN-24 ALLOY STEEL

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**C**ontinuous-drive friction welding is performed on EN-24 steel rods in the present study. The effect of post-weld heat treatment on microstructure and mechanical properties of the as-welded rods is examined with the particular focus on three different regions of weldment such as weld interface (WI), heat affected zone (HAZ), and unaffected base zone; and the results are compared with that of base metal. The microstructural characterization at WI and HAZ revealed martensitic structure and fine pearlite and ferrite respectively, in as-welded samples whereas it changes after post weld heat treatment (PWHT) to tempered martensite and coarse pearlite with ferrite, respectively. Martensitic structure at WI of as-welded samples imparts high hardness at the cost of low ductility while tempered martensite at WI of PWHT samples causes substantial decrease in hardness with improved ductility. However tensile strength of weld joint is achieved nearly equal to that of base metal.

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