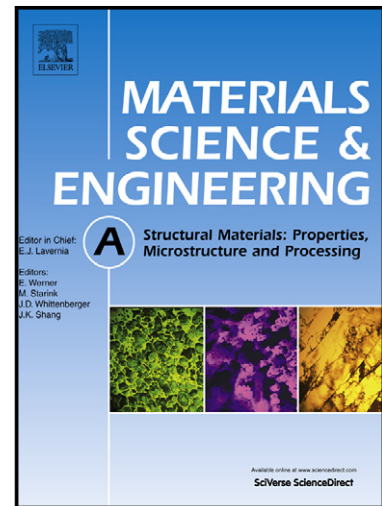


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Effects of quenching and tempering on the microstructure and bake hardening behavior of ferrite and dual phase steels

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ABSTRACT: The effects of quenching and tempering on the microstructure evolution and bake hardening (BH) behavior of both ferrite and dual phase steels were investigated. The C-Mn steels were heated to the soaking temperature, quenched in water and then tempered in the 100-500 °C range. After pre-straining, the baking treatment (180 °C for 20 min) was carried out to measure the BH values. It was found that increased quenching temperature reduced the BH value. Furthermore, the BH value turned to be negative when the quenching temperature exceeded 670 °C and 710 °C for the steels annealed at 800 °C and 900 °C, respectively. The ferrite ageing and the martensite tempering played key roles in the bake hardening behavior during the tempering process. In the present study, three stages were identified during tempering of

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