

Effect of degree of corrosion on the properties of reinforcing steel bars

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Abstract: This paper reports results of a study conducted to assess the effect of degree of corrosion of reinforcing steel bars on their mechanical properties. Reinforcing steel bars, 6 and 12 mm in diameter, that were corroded in reinforced concrete specimens were removed and tested in tension. Results indicated that the level of reinforcement corrosion does not influence the tensile strength of steel bars, calculated on the actual area of cross-section. However, when the nominal diameter is utilized in the calculation, the tensile strength is less than the ASTM A 615 requirement of 600 MPa when the degree of corrosion was 11 and 24% for 6- and 12-mm diameter steel bars, respectively. Furthermore, reinforcing steel bars with more than 12% corrosion indicates a brittle failure. © 2001 Published by Elsevier Science Ltd.