

INVESTIGATION ON MICROALLOYED STEEL REINFORCING BARS, L. Martinez, Programa de Corrosión del Golfo de México, Universidad Autónoma de Campeche and Instituto de Física, Universidad Nacional Autónoma de México, P.O. Box 139B, 62191 Cuernavaca, Morelos, Mexico.

The aging of hooks, anchors and other bent reinforcing steel bars in concrete structures is considered in modern international standards. Rebend tests have been designed in order to predict the aging embrittlement susceptibility by submerging bent reinforcing bar specimens in boiling water. Subsequently the bars are rebend or straightened in order to determine the loss of ductility or embrittlement of the strain aged material. The present work is related to the influence of carbon, sulfur and niobium on the performance of reinforcing bars in rebend tests of 300 heats of microalloyed steel bars with a variety of alloy compositions. The microstructural evidence and the statistical results clearly indicate the strong influence of carbon and sulfur on rebend failure, while the niobium rich precipitates contribute to the hardening of the ferrite grains during aging.