Hydrogenation Conditions which Do Not Result in Formation of Cracks During Hydrogen Charging Process of Steels

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It is well known that the susceptibility of steels to hydrogen embrittlement is markedly dependent on hydrogenation conditions of samples. In this contribution are presented key results of relatively extensive studies oriented to examination of the effect of electrolytic hydrogen charging conditions (charging time and current density) on the hydrogen embrittlement of steels evaluated by the slow three point bend tests, micro- and macro-hardness tests. Various kinds of industrially produced hot rolled steel strips were tested (structural steel, dual phase and HSLA steels). The major aim of this study was to determine the hydrogenation conditions that do not result in the formation of defects such as microcrack or voids (in terms of absence of defects found by using optical microscopy) during hydrogen charging process.

Keywords: hydrogen charging process, hardness, mechanical properties, low carbon steels, hydrogen-induced cracking

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References


