INFLUENCE OF ALLOYING ELEMENTS OF WELD METAL ON MECHANICAL BEHAVIOR OF HSLA-X70 WELDS

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Abstract : In the pipeline industry, the alloying elements are continually evolving as a function of weldability and reliability of steels. For this reason, metallurgists discover and develop every day new base materials like HSLA steels and efficient electrodes. We propose in this work to study the influence of chromium and molybdenum in C-Mn filler metal, hoping to demonstrate their microsturctural evolution and mechanical behavior on welds of high strength steels HSLA-X70. The mechanical properties included hardness, impact and tensile strength was investigated. The results show that, optimal properties of welds correspond to the existence of both molybdenum and chromium in weld metal with proportions varying between 1% and 2.5%.

Keywords : alloying element, Weld metal, HSLA-X70, TIG welding, mechanical behavior