

عنوان مقاله:

Study of Pitting Corrosion Inhibition of Mild Steel by Nitrite in Concrete Pore Solution by Polarization and Zero Resistance Ammetry (ZRA) Techniques
(RESEARCH NOTE)

محل انتشار:

ماهنامه بین المللی مهندسی، دوره 22، شماره 4 (سال: 1388)

تعداد صفحات اصل مقاله: 12

نویسندگان:

M.H. Sadegian - Materials Engineering, Ferdowsi University of Mashhad

Z. Abbaspour - Materials Engineering, Ferdowsi University of Mashhad

Mohammad Hadi Moayed - Materials and Metallurgical Engineering Department, Ferdowsi University of Mashhad

خلاصه مقاله:

A research on the corrosion inhibition of mild steel pitting corrosion in concrete pore solution by sodium nitrite was carried out by employing potentiodynamic, potentiostatic polarization and zero resistance ammetry (ZRA) techniques. Passivity breakdown potential was decreased from the transpassive potential of 700 mV at the absence of chloride to a value of -50 mV when just 0.01 M NaCl was added to the test solution and further a decrease to -350 mV was recorded when the concentration of chloride was increased to 0.5 M . Addition of NaNO_2 into the saturated Ca(OH)_2 solution containing 0.5 M NaCl considerably shifted the pitting potential towards noble values. Similar results of inhibitive effect of nitrite were obtained from couple potential and current measurement between two nominal identical electrodes through ZRA establishment. In the test solution containing NaNO_2 , continuous increasing of the corrosion potential towards noble values and simultaneous decrease in couple current density towards zero proved the stability and improvement of the passive film. Whereas, continuous decrease in couple potential accompanied with sharp increase in couple current density with a stable value of $3\text{ }\mu\text{A/cm}^2$ at the absence of NaNO_2 demonstrated the occurrence of pitting corrosion.

کلمات کلیدی:

Concrete Pore Solution, Zero Resistance Ammetry (ZRA), Pitting Corrosion, Sodium Nitrite

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1392433>

