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The Effect of phosphate ions ( $\text{PO}_4^{3-}$ ) on the Corrosion of Iron in Sulphat Solutions

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**Abstract:** The effect of phosphate ions on the corrosion of iron in sulphate solutions at different temperatures (293 K, 313 K, 333 K and 353 K) and at different pH (pH=2.1, 7.2 and 12.3) values was investigated. The electrochemical three-electrode technique was employed. The cathodic and anodic current-potential curves were obtained by strating from the corrosion potential measured against SCE and polarizing it first in cathodic and then in anodic direction. The results obtained indicate that at high pH (pH=7.2 and 12.3)  $\text{SO}_4^{2-} + \text{PO}_4^{3-}$  ions together reduce the corrosion rate of iron to a greater extent than  $\text{SO}_4^{2-}$  alone. At low pH (pH=2.1), as the temperature increases the corrosion rate of iron increases in both  $\text{SO}_4^{2-}$  and  $\text{SO}_4^{2-} + \text{PO}_4^{3-}$  solutions.

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