化工学报 2009 60 (6): 1513-1518 ISSN: 0438-1157 CN: 11-1946/TQ

表面与界面工程

X80管线钢在格尔木土壤模拟溶液中的耐腐蚀性能

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收稿日期 2009-1-20 修回日期 2009-3-1 网络版发布日期 2009-6-17 接受日期

摘要

采用失重法、电化学测试、SEM及XRD微观分析等方法，研究了X80管线钢在格尔木土壤模拟溶液中的耐腐蚀性能。结果表明，在格尔木土壤模拟溶液中，随着浸泡时间的增加，X80钢平均腐蚀速率明显下降，但腐蚀趋势增加，钢基体表面由以全面腐蚀为主转为以点蚀为主;X80钢的阴极反应为氧的去极化;腐蚀产物主要由FeOOH（表层）和Fe_3O_4（内层）组成;X80钢的耐蚀性及腐蚀形态与各试样表面生成的腐蚀产物膜的完整性和致密性有关。研究还发现氯离子含量是影响腐蚀的主导因素。

关键词

X80管线钢 耐腐蚀性能 格尔木土壤 模拟溶液 腐蚀产物

分类号

Corrosion resistance of X80 pipeline steel in simulated solution of Geermu soil

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Abstract

The corrosion resistance of X80 pipeline steel was investigated in simulated solution of Geermu soil in Qinghai province,by using mass loss method, electrochemical measurement, scanning electron microscopy and X-ray diffraction.The results showed that the average corrosion rate of X80 steel decreased obviously, but corrosion tendency increased.This was induced by the change of corrosion morphology from uniform corrosion to pitting corrosion.Cathodic reaction was dominated by oxygen depolarization reaction.The corrosion product was basically FeOOH (surface layer) and Fe_3O_4 (inner layer).The corrosion resistance and corrosion morphology of X80 steel samples was dependent on the integrity and compactness of corrosion product films.The content of Cl^- dominated the corrosion severity.

Key words

X80 pipeline steel corrosion resistance Geermu soil simulated solution corrosion product

DOI:

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