

# Corrosion Testing in Nitrate Molten Salt Using Rotating Cylindrical Electrode

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## Abstract

Molten salts are under consideration as the working fluid in thermal power generation. Nitrate molten salts store vast amounts of energy at high temperature and are an efficient energy production medium. Nitrate molten salts are corrosive to structural materials in these applications. Static corrosion studies may neglect the effects of fluid flow on corrosion and flowing test loops can be expensive and complex. A rotating cylinder electrode (RCE) can simulate the effects of fluid flow on the corrosion of structural materials and are more compact and economical than flow loops. We have developed a rotating cylinder electrode apparatus to study the corrosion of structural metals in flowing molten salts using accelerated electrochemical corrosion testing. In this study, we have evaluated the corrosion behavior in molten nitrate salts and used various surface characterization techniques to compare the results from static corrosion tests. Results and analysis of these studies will be presented.

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