Corrosion-resistant solar-powered containers for chemical plants

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Pre-oxidized alumina forming Fe-Cr-Al alloys show promising corrosion resistance and stability in molten chloride salts at 700°C for 500h exposure.

In this work, two corrosion mitigation strategies are investigated to alleviate the hot corrosion of structural materials in molten chloride salts: (1) adding corrosion inhibitor and (2) ...

This paper outlines the superior salt corrosion behavior of a novel low-cost, Al2O3-forming, ferritic, Laves phase-strengthened (i.e., structural) steel in NaNO3/KNO3 solar salt at ...

Thus, it is essential to study corrosion behaviors and mechanisms of metallic alloys in molten chlorides at operating temperatures (500-800 °C) for realizing the commercial application of ...

In this project, our goal is to demonstrate that castable cements can be used to make flanged pipe sections. This will offer a lower cost alternative to nickel alloys such as Haynes 230, to form a ...

Molten chloride salts are candidates for CSP applications because of their high decomposition temperatures and good thermal properties; but they can be corrosive to ...

This paper outlines the superior salt corrosion behavior of a novel low-cost, Al2O3-forming, ferritic, Laves phase-strengthened (i.e., ...

The corrosion mechanism of the alloy samples in molten chloride salts was analyzed through the microscopic characterization and elemental analysis tests. The evolution of alloy ...

The cathodic protection strategy involves the addition of a sacrificial metal to prevent corrosion of the alloy

tested as container material in a CSP plant.

Molten salt environments, particularly those involving chloride-based compositions, are at the forefront of advancing thermal energy storage systems in concentrating solar power plants and...

In this paper, aluminum (Al) metal was analyzed as a corrosion inhibitor in OCT and HR224 alloys, obtaining corrosion rates of 4.37 and 0.27 mm/y, respectively. It has been ...

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