

High Strength Alloys for High Temperature Service in Liquid-Salt Cooled Energy Systems

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Technology Summary

This invention outlines new high temperature alloys that can be used in contact with liquid fluorides. These alloys have much better creep resistance than existing alloy such as Alloy N and have superior yield and tensile strengths. This implies that the materials can be thinner and hence can sustain better heat transfer rates. The alloys of the present invention can be potentially applied in high temperature heat exchangers in nuclear reactors, concentrated solar power systems, and industrial heat exchanger applications. This particular set of alloys contain elements that have been particularly added to make stronger at high temperatures thus enabling applications such as secondary heat exchangers in liquid salt cooled nuclear reactors where large pressure differences have to be sustained across the heat exchanger walls. These alloys have been specifically designed to be used at temperatures greater than 700 °C.

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