# Peculiarities of high-temperature salt corrosion of Ni(L)–Hf–$Cr_3C_2$ alloy

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Aims and scope →

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## Abstract

The development of wear-resistant materials possessing high resistance to high-temperature salt corrosion is a pressing issue in ship gas turbine construction. The Ni(L)–Hf–$Cr_3C_2$ alloy, which contains hafnium from 16.5–17.5 wt%, is promising in this case. The addition of hafnium enables the formation of a structure maximum resembling the eutectic phase, with a melting point of 1200 + 10 °C, maintaining stable hardness within the range of 649–665 $HV_{10}$ and exhibiting an average corrosion rate of 0.18 mg/($cm^2$ × h) in a 75% $Na_2SO_4$ + 25% NaCl environment at 900 °C. The results allow us to recommend this alloy as a base material for reinforcing the contact surfaces of marine gas turbine engine components.



## Data availability

The authors confirm that all data generated or analyzed during this study are included in this published article.

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### Contributions

Both authors participated in the conception and planning of the study. Preparation of materials, data collection, and analysis were carried out by O. M. Kostin and V. O. Martynenko. The first version of the manuscript was written by O. M. Kostin, and all authors provided comments on earlier versions. Both authors reviewed and approved the final manuscript.

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## Ethics declarations

## Conflict of interest

The authors declare that they have no potential conflict of interest in relation to the study in this paper. The author has no relevant financial or non-financial interests to disclose.

## Additional information

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### Keywords

Nickel alloy · Microstructure · Microhardness · Wear resistance · High-temperature salt corrosion