





Degradation of rhenium carbide obtained by mechanochemical synthesis at oxygen and moisture environmental conditions

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Highlights

- Re₂C has a high environmental stability up to 54 months of storage.
- WC-Co milling material is totally degraded at 54 months of storage.
- A schematic diagram of the degradation of Re₂C and WC-Co is proposed.
- The Re₂C can have a longer useful life in non-oxidative environments.

Abstract

In this paper, rhenium carbide (Re₂C) synthesized by mechanosynthesis was characterized by SEM and HRTEM, as well as XRD. The Re₂C was stored at oxygen and moisture environmental conditions in order to know the chemical stability for 2, 12, 27 and 54 months. The results of storage after 54 months indicate that Re₂C is partially degraded into ReO₃, while WC-Co milling material is totally