

Simple method to siliconize Mo/W

Silicide film can be formed with low cost simply by dipping the free-form base material into the bath.

Overview

Mo material is excellent in heat resistance. Since Mo material is easily oxidized at high temperature, it is indispensable to form MoSi₂ protective film to prevent it. As a conventional method, the pack cementation method is known. Although this method can stably form MoSi₂ films, it requires processing conditions of 1000 °C or more and 10 hours or more, leading to high costs.

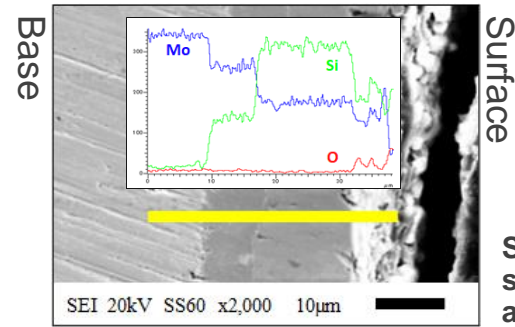
The present invention relates to a method of forming a MoSi₂/WSi₂ film (e.g., 30 μm) on the surface of a Mo/W material by simply immersing a base material in a bath (e.g., 800 °C. for 15 min.). According to this method, the largest advantage is that there is no restriction on the shape that can be treated. The base material processed into a product shape can be subjected to silicification treatment. The Mo material having the present invention has been confirmed to exhibit excellent oxidation resistance (see right table), and is useful as a more convenient silicification method.

Product Application

- ❑ Heater using MoSi₂ or WSi₂
- ❑ Resistors using MoSi₂ or WSi₂
- ❑ Coating services (processing business)

IP Data

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The left figure shows SEM image and line scan result after the anti-oxidation test.

Anti-Oxidation Test

Result of Mo material with MoSi₂ film
 (Conditions : 1150 °C in air, held for 120 min.)

Before	After (Mo remained without volatilization)

The film remained clean without peeling(Gray area).

Related Works

[1] *Surface & Coatings Technology*, 2022, 448, 128938.

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