论文

氯对TiAl基合金高温氧化行为的影响

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摘要：

研究了表面喷沙少量ＭｎＣｌ２及离子注入氯对ＴｉＡｌ基合金９５０℃恒温氧化行的影响ＴｉＡｌ合金９５０℃氧化后氧化膜为ＴｉＯ２及Ａｌ２Ｏ３的混合物，表面涂少量ＭｎＣｌ２后，合金氧化速度降低了４个数量级，氧化膜的成分主要为Ａｌ２Ｏ３，离子注入Ｃｌ在氧化初期也显著降低了氧化速率，延迟了ＴｉＯ２形成时间。

关键词： TiAl基合金　表面喷涂　氯离子注入

EFFECT OF CHLORINE ON OXIDATION OF TiAl-BASE ALLOY

Abstract:

The effects of MnC1, spraying and C1 ion implantation on the isothermal oxida- tion of TiAl alloy at 950°C have been studied. The oxide scale on TiAl was a mixture of TiO, and Al,03 grains. The oxidation rate was decreased by 4 orders of magnitude after a little amount of MnCl, was sprayed on TiA1. The scale on MnCl, sprayed TiAl mainly consisted of Al,03.' The reason lay in that titanium in the alloy reacted with C1 at the beginning of oxida- tion to form titanium chloride which vaporized from alloy surface. A layer of compact A1,03 scale was formed on the surface of the alloy and prevented the outward diffusion of Ti in the alloy . Ion implantation doses of 1X 10". 1X 10'7Cl-/cmz decreased the oxidation rate appar- ently in the initial period of oxidation and prevented the formation of TiO,. But the amount of TiO2 in the scale increased with increasing oxidation time. Besides A1,03, a little amount of TiO, was also formed on Clbimplanted TiAl at the beginning of oxidation and thus sup- pressed the formation of acompact A1,O3 scale.

Keywords: TiAl-base alloy　MnCl　C1 ion implantation　oxidation

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