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Oxide Ceramic Films Grown on 55Ni-45Ti for NASA and Department of Defense Applications: Unidirectional Sliding Friction and Wear Evaluation

By Kazuhisa Miyoshi

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 30 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. An investigation was conducted to examine the friction and wear behavior of the two types of oxide ceramic films furnished by the U. S. Army Research Laboratory, Development and Engineering Center (ARDEC) under Space Act Agreement SAA3 567. These two types of oxide ceramics were grown on 55Ni-45Ti (60 wt Ni and 40 wt Ti) substrates: one was a TiO₂ with no other species (designated the B film) and the other was a TiO₂ with additional species (designated the G film). Unidirectional ball-on-disk sliding friction experiments were conducted with the oxide films in contact with sapphire at 296 K (23 C) in approx. 50-percent relative humidity laboratory air in this investigation. All material characterization and sliding friction experiments were conducted at the NASA Glenn Research Center. The results indicate that both films greatly improve the surface characteristics of 55Ni-45Ti, enhancing its tribological characteristics. Both films decreased the coefficient of friction by a factor of 4 and increased wear resistance by a two-figure factor, though the B film was superior to the G film in wear resistance and endurance life. The levels...


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