

용융침투법으로 제조한 알루미나-유리복합체의 마모특성

Wear Behavior of Alumina-glass Composites Prepared by Melt Infiltration

이득용, 장주웅, * 김병수, * 이세중, ** 이명현, *** 박일석****

대림대학 재료정보학과

*(주) 우리동명 치과재료연구소

**경성대학교 재료공학과

***요업기술원 차세대사업단

****연세대학교 세라믹공학과

용융침투법으로 제조한 알루미나-유리 복합체를 *in vitro* 분위기인 37°C 인공타액 하에서 49196 N의 하중조건 하에서 ball-on-disc 형태의 120 rpm의 회전속도로 직경 14 mm인 트랙을 10⁶ 횟수까지 내마모 실험을 수행하여 내마모거동을 조사하였다. 하중이 49 N, 98 N, 196 N으로 증가함에 따라 마찰계수는 0.025로 일정하였지만, 마모율은 2.18×10⁻⁹ mm³/N m, 3.37×10⁻⁹ mm³/N m, 2.35×10⁻⁶ mm³/N m로 증가하였다. 실험결과, 알루미나-유리복합체의 마모거동은 마모길이 44 km까지 전형적인 흡착마모로 치열 교정용 세라믹 브라켓으로 적합하였다.

Tribological Properties of a Mica Containing Glass-ceramic

Jongee Park and Abdullah OZTURK

Middle East Technical University, Metallurgical and
Materials Engineering Department, Ankara, Turkey

The present study was undertaken to investigate the tribological properties of a mica glass ceramic designed for dental applications. Wear tests were conducted with using a pin-on-disk tribometer. In these tests, a zirconia ball was slid against a glass ceramic disk in normal laboratory conditions with different loads and laps. The friction coefficient was monitored during the tests. The wear volumes were measured from surface profile traces obtained on the wear tracks after completion of the tests and then wear rates were calculated. The friction coefficient varied within the range 0.4 to 1.1 depending on test conditions. The wear rates increased with increasing applied loads. However, the wear rates decreased with increasing sliding distance. Wear tests under distilled water lubrication were also done and compared with those of dry conditions. As the applied load increased, the friction coefficient decreased. However, the friction coefficients in lubricated conditions were higher than in dry conditions.