

Cree Behavior of Acrylic Resin Dental Material

By

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ABSTRACT

Creep response of denture base materials is being investigated in this study. The effect of both, temperature and hold stress variations, was taken into consideration. Temperatures of 250C and 700C were chosen to represent room temperature and high temperature similar to actual service temperatures. Different hold stresses were applied to investigate their effect on creep at the chosen temperatures. Hold stress values were determined to cover the region of yield point (slightly below, and above yield point). All creep tests were performed using tensile test specimens. The results showed that most specimens developed a typical creep curve quite similar to that developed by metals. Creep response was clearly affected by the increase of temperature. A clear increase in creep rate (shorter life) was associated with specimens tested at higher temperatures at the same hold stresses. In addition, increase of the hold stresses increased creep rate at the same temperature. Accelerated creep failure was due to polymer chains movement under hold load coupled with time. This movement became easier at higher temperatures, which contributed to a decrease in specimens lives with further increase in temperatures. It can be stated that increase of hold stress increases creep strain rates, while increasing temperature highly increases creep rate