

Flexural behavior of postcured composites at oral-simulating temperatures

黃豪銘

Ho;C.T.;Vijayaraghavan T.V.;Lee;S.Y.;Tasi;A.;Huang;H.M.

Abstract

Post-curing treatments have been known to improve the mechanical stability of visible light-cured composites. After individual post-curing treatment, the flexural strength (FS) of four commercial direct/indirect placement composite materials which differ greatly in composition [oligocarbonate dimethacrylate (OCDMA)-based Conquest C & B (CQT), Bisphenol-A glycidyl dimethacrylate (BisGMA)-based Charisma, urethane dimethacrylate (UDMA)-based Concept (CCT), and BisGMA/UDMA-based Dentacolor] was evaluated under water in the temperature range of 12–50 °C. A control series was tested in air at room temperature (25 ± 1 °C). Data were analysed using ANOVA and Duncan's test. Flexural strengths overall decreased (20–40%, $P < 0.01$) with increasing temperatures except with Conquest C & B. Surprisingly, higher FS values were found in wet conditions than in dry conditions at 25 °C. UDMA-based materials much more easily undergo softening in water and by temperature change than do BisGMA- or OCDMA-based materials. Post-cured composites can be significantly affected by exposure to oral environments. Different composition determines the degree of influence.