

Effect of core and veneer thicknesses on the color parameters of two all-ceramic systems

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Statement of problem. Specific contributions of the core and the veneer thickness on the appearance of layered disk specimens are not well characterized.

Purpose. This study examined the effect of varying core and veneer thickness on the color parameters of layered disk specimens made of 2 ceramic systems.

Material and methods. Disk specimens 16 mm in diameter with core/veneer thickness (mm) of 0.8/0.2 (baseline), 0.8/0.7, 0.8/1.2, 1.0/0.5, 1.3/0.2, and 1.8/0.2 were made from a leucite-reinforced ceramic (IPS Empress; 2B shade), and thickness (mm) of 0.5/0.5 (baseline), 0.5/1.0, 0.5/1.5, 0.8/0.7, 1.0/0.5, and 1.5/0.5 were made from a glass-infiltrated spinell ceramic (In-Ceram Spinell; A2 shade). Color parameters L*, a*, and b* of CIELAB color space were measured against a neutral gray background with a tri-stimulus colorimeter, and ΔE between disk group and its respective baseline group was calculated. Analysis of variance was used to determine the effect of material and core and veneer thickness on the color parameters ($\alpha=.05$).

Results. Increasing the total disk thickness resulted in decrease of L* ($P<.001$) and an increase of a* ($P<.001$), b* ($P<.001$), and ΔE ($P=.0236$). For leucite-reinforced ceramic, the core thickness, veneer thickness, and their interaction exhibited significant influence on the mean values of a* and b* ($P<.0028$) but not on the mean values of L*. For spinell ceramic, the core thickness and veneer thickness exhibited significant influence on the mean values of L* and b* ($P<.0272$) but not on a*; the interaction demonstrated significant influence on b* ($P=.0003$) but not on L* and a*.

Conclusion. The color appearance of the layered ceramic disk specimens is strongly influenced not only by the core thickness and veneer thickness, but also by their interaction. (J Prosthet Dent 2006;95:124-9.)

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