

0119 The Effect of Temperature on Hardness of a Light-curing Composite

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Objective: To compare the hardness of a 0.5 mm thick light-curing luting composite, inserted at three different temperatures and lightcured directly or through ceramic using halogen (Astralis 10 with turbo, Ivoclar-Vivadent) and LED (LumeCure 2, Ultradent). Methods: A round cavity 0.5 mm deep and 10.0 mm in diameter was prepared in the center of a flattened extracted human tooth surface and filled with Tetric Transparent (Ivoclar-Vivadent), applied in the sense of a luting composite, and lightcured through a 4 mm thick ceramic block (Vitablocks Mark II, 3M2, Vita) for groups 1 to 8, or cured directly in the control groups (9 to 11). After 7 days storage at 37°C in the dark at 100% humidity, 20 Vicker's hardness measurements at the bottom of the specimens were performed per group. Data were analyzed by ANOVA and Scheffée with significance level at $p < 0.05$.

Results: Test Groups Vicker's (Mean \pm SD) 1: 05 °C, 60 s Astralis 10 $54.9 \pm 2,6$ 2: 22 °C, 60 s Astralis 10 $80.9 \pm 2,6$ 3: 40 °C, 60 s Astralis 10 $96.6 \pm 2,1$ 4: 40 °C, 30 s Astralis 10 $87.7 \pm 1,7$ 5: 05 °C, 60 s UltraLume 2 $41.8 \pm 1,5$ 6: 22 °C, 60 s UltraLume 2 $56.0 \pm 1,9$ 7: 40 °C, 60 s UltraLume 2 $86.1 \pm 5,4$ 8: 40 °C, 30 s UltraLume 2 $49.0 \pm 1,2$ Controls 9: 05 °C, 60 s Astralis 10 $87.9 \pm 2,5$ 10: 22 °C, 60 s Astralis 10 $95.9 \pm 3,2$ 11: 40 °C, 60 s Astralis 10 $108.1 \pm 2,4$

Conclusions: Among other parameters, temperature has an important influence on the hardness of a composite.

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