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Presentation Type: Poster Session

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Objectives: To evaluate the color stability of experimental resin based composite (RBC) UBC.

Methods: UBC-001 (UBC, A2-Enamel, Tokuyama Dental Corporation, Experimental), Filtek Supreme Plus (SP, A2E, 3M-ESPE), Esthet-X HD (EX, A2, DENTSPLY), Durafill VS (DV, A2, Heraeus Kulzer), PREMISE (PM, A2, Kerr) and Venus Diamond (VD, A2E, Heraeus Kulzer) were evaluated for color stability. 96 disk-shaped specimens (N = 16 per RBC, D = 10mm, 2mm thick) were made by light polymerizing for 10 or 20 seconds, based on the manufacturer's recommendation, using Optilux 500 (Kerr Inc, Orange, CA, USA) at more than 800 mW/cm². After 24 hour dark storage in distilled water at 37°C the directly irradiated surfaces were ground with P800 grit SiC paper on a grinding/polishing machine (Rotopol V, Stuers, Cleveland, Ohio, USA) under continuously water cooling at 150 rpm, followed by dry polishing with a Sof-Lex disc fine and super-fine grit for 20 seconds (30,000 rpm, Upower UP500, Brasseler, USA). Each specimen was then thermocycled between 5°C and 55°C with the dwell time of 1 min each in distilled water. Color of each RBC was measured using VITA Easyshade compact (Model # DEASYCHP, VITA) before and after thermocycling (TC) and $\Delta E = (\Delta a^2 + \Delta b^2 + \Delta L^2)^{1/2}$ was used to analyze the color stability. One-way ANOVA and repeated measures ANOVA with appropriate post-hoc tests were conducted to assess the effects of composites and polishing times on the color stability, within each polishing and thermocycling step and within each composite, respectively.

Results:

RBC	Delta-Eb (color change using black background)				
	TC 3K	TC 10K	TC 20K	TC 30K	TC 50K
UBC	0.91 (0.10) ^{B,1}	0.86 (0.15) ^{A,B,1}	1.20 (0.17) ^{A,2}	2.08 (0.17) ^{B,3}	3.20 (0.17) ^{B,4}
SP	3.45 (0.35) ^{D,1}	4.22 (0.34) ^{E,2}	4.44 (0.27) ^{D,2}	4.37 (0.29) ^{D,2}	4.43 (0.28) ^{C,2}
EX	0.55 (0.27) ^{A,1}	0.76 (0.19) ^{A,1,2}	1.74 (0.45) ^{B,3}	1.03 (0.23) ^{A,2}	1.01 (0.27) ^{A,2}
DV	0.63 (0.22) ^{A,1}	0.99 (0.23) ^{B,2}	1.34 (0.08) ^{A,3}	1.76 (0.29) ^{B,4}	2.93 (0.68) ^{B,5}
PM	1.62 (0.41) ^{C,2}	1.90 (0.33) ^{C,2}	1.90 (0.28) ^{B,2}	1.76 (0.33) ^{B,2}	1.08 (0.34) ^{A,1}
VD	1.79 (0.25) ^{C,1}	2.65 (0.33) ^{D,2}	3.33 (0.32) ^{C,3}	3.43 (0.32) ^{C,3}	3.95 (0.43) ^{C,4}

Groups within columns with same letter and within row with same number are not significantly different (p > .05).

Conclusion: Color stability for all RBCs, including UBC, was within the stated clinically perceptual limit (ΔE ; less than 3.3, Craig and Powers, 2002) with the exception of SP after 3,000 TC and VD after 30,000 TC challenge.

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Key words: Color, Composites, Dental materials and Stability

Presenting author's disclosure statement: employment

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