

## The Evaluation of the Effect of Different Thicknesses on Polymerization of Bulk Fill Flowable Composites

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### Abstract

**Background and Aim:** The limitation of the curing depth is one of the problems occurring while working with light curing composites which leads to clinical failure of restorations. Using the bulk fill flowable composites have been introduced as a solution to this problem, yet the researches have not had consonant results; That is why, we decided to evaluate the effect of different thicknesses on polymerization of three types of bulk fill and hybrid composites.

**Materials and Methods:** In this In-Vitro study, we put 108 specimens of two types of bulk fill flowable composites, Filtek™ Bulk Fill Flowable(FBF) and X-tra Base(XB), and a hybrid composite, Filtek™ Z250 Universal(Z250) as control samples, in brazen molds with 2.4.10 mm dimensions. After light curing for 20 seconds by Demi™ Plus light cure device, calibrated by the Minamel radiometer device, we put the specimens in CO2 Incubator at 37°C for 24 hours, then we measured the Vickers microhardness of specimens by Vickers V-Test II machine under 300 grams force for 15 seconds. The measurements were done three times respectively at the depths of 0.1-1-2-3-4-5 and the averages were calculated. The results were then analyzed using the ANOVA statistical testing.

**Result:** The highest microhardness was shown by Filtek™ Z250 Universal at the depth of 0.1 mm (98.8±0.8) and the lowest microhardness was shown by Filtek™ Bulk Fill Flowable(FBF) at the depth of 5 mm (31.5±0.7). The detected differences at all of the six depths were statistically significant(p<0.001).

**Conclusion:** It seems that the microhardness of Filtek™ Z250 at the surface of restoration is better than that of the two other composites.

**Keywords:** Bulk Fill Flowable Composites; Microhardness; Filtek Z250; Filtek Flow