

***The Effect Of Different Finishing And  
Polishing Systems On Surface Roughness  
Of New low polymerized Composite  
Materials***

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## ABSTRACT

Adequate finishing and polishing of resin composites is a prerequisite for high quality esthetics and enhanced longevity of resin-based restorations.

The aim of this study was to compare and evaluate the surface roughness of four novel composites (Silorane-based composite **FiltekP90**, 3M / ESPE, St. Paul, MN, USA,; Packable composite **FiltekP60**, 3M / ESPE, St. Paul, MN, USA; Nano-hybrid composite **TetricEvoCeram**, Ivoclar Vivadent, Schaan, Liechtenstein,) ; Microhybrid composite **FiltekZ250**, 3M/ ESPE, St. Paul, MN, USA) after finishing and polishing with three different finishing and polishing systems which are: **Enhance** (Aluminum oxide—silicone dioxide finishing wheel-impregnated UDMA (40 mm), Prisma gloss polishing paste fine (1 mm) and x-fine (0.3 mm), **Optrapol** (Diamond-impregnated Polishers) and **Silicone carbide** finishing paper ( 600 grit).

A total number of 160 disc shaped specimens were prepared in a cylindrical steel mold with a circular hole in its center with a diameter of (10×3mm), (40 disc for each type of composite, 10 of them used as a control which were cured under mylar strip only, and the other 30 discs were finished and polished with the finishing and polishing systems).

Each (10) samples from each composite type were water stored in 10ml de-ionized distilled water at room temperature (23±1)°C for one week.

**Group A: (control without finishing and polishing) 40 specimens** . It contains (10 for each type of composite material).

**Group B: (Optrapol polishing system) 40 specimens**. It contains (10 for each type of composite material).

**GroupC:** ( *Enhance polishing system* )40 specimens. It contains (10 for each type of composite material).

**GroupD:** ( *Silicone carbide finishing paper*)40 specimens. It contains (10 for each type of composite material).

The results obtained of this study showed a statistically highly significant differences among the materials for the (Ra) roughness parameter at each finishing and polishing system used ( $p < 0.05$ ).

All composite materials under control group (without finishing and polishing) showed smoother surface than their corresponding specimens polished with polishing systems and silicone carbide finishing paper, ,on one hand Filtek P90 (3M ESPE) provided the smoothest surface finish (Ra) when they were polished with optrapol polishing system, On the other hand, Filtek P60(3M ESPE Dental Products) presented the roughest surface when it was finished with Enhance polishing system.

In conclusion, composite materials cured with matrix transparent strip only without finishing and polishing produced the smoothest surface (least Ra values), FiltekP90 exhibited the smoothest surface finish compared to the other composite materials used in this study and FiltekP60 exhibited the roughest surface finish compared to the other composite materials used in this study.