



3-Point Flexural Strength of Bulk-fill and Hybrid Resin Composite Materials Using Two Photo-polymerization Units

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Purpose: This study investigated the 3-point flexural strength of bulk-fill and hybrid resin composite materials using two photo-polymerization units.

Materials and Methods: Bulk-fill (RevealHD Bulk, Bisco, USA) and hybrid resin composite (Clearfil Majesty, Kuraray Noritake, Japan) specimens were prepared according to ISO norm 6822 (N=60, 15 per group). In half of the groups, photo-polymerization was achieved using Spring Health polymerization unit and in the other half, Ivoclar Bluephase was used. The specimens were then subjected to flexural strength test according to ISO norm 6822 in a Universal Testing Machine (1 mm/min). Data were analyzed using 2-way ANOVA and Tukey's, post-hoc tests ($\alpha=0.05$).

Results: Overall, regardless of the polymerization unit, Reveal HD Bulk resulted in significantly higher flexural strength (MPa) results with both polymerization units, being significantly higher with **Spring Health unit (160.1)** compared to Bluephase (139.5) ($p<0.05$). For the hybrid resin composite, mean flexural strength was not significant when polymerized either with **Spring Health unit (112.4)** or Bluephase (114) ($p>0.05$) (Fig. 1).

Conclusions: Flexural strength of bulk-fill resin tested benefitted from polymerisation with **Spring Health polymerization device with increased values compared to Bluephase.** For the hybrid composite tested, polymerization device did not affect the flexural strength.

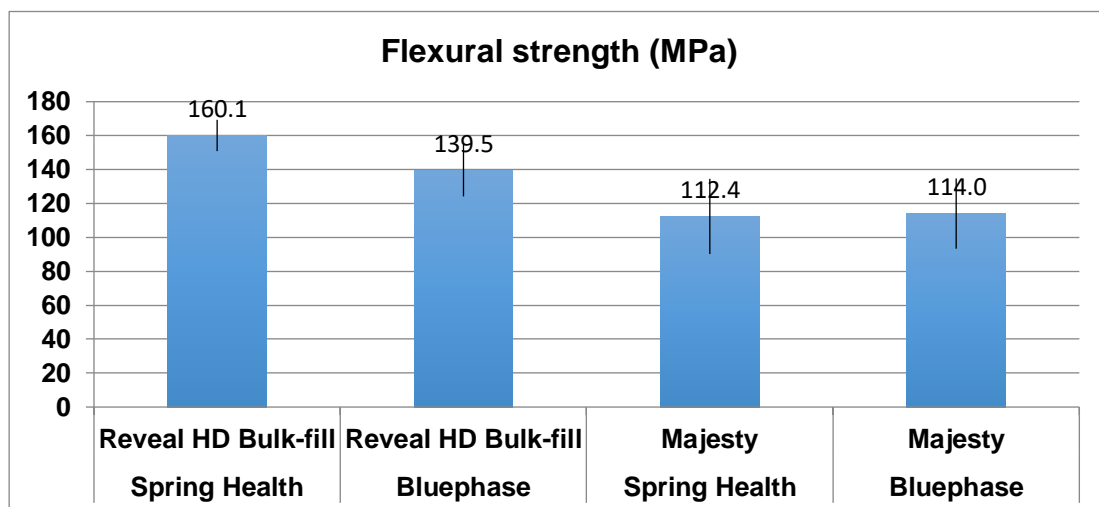


Fig. 1. Mean 3-point flexural strength (MPa) and standard deviations of Bulk-fill (RevealHD Bulk, Bisco, USA) and hybrid resin composite (Clearfil Majesty, Kuraray Noritake, Japan) photo-polymerized using either Springhealth polymerization unit or Ivoclar Bluephase.