

Bifix SE – Luting of IPS Empress crowns

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A study of University of Alabama (Birmingham) examined bond strength of various luting materials to IPS Empress ceramics, their transverse strength and their modulus of elasticity.^[1]

The leucite-reinforced IPS Empress glass ceramic material has been used million-fold to restore teeth indirectly. The long-term clinical success of these restorations do not only depend on the physical properties of the ceramic material, but also on the quality of the adhesive luting. A study by Burgess et al. carries out an evaluation of various luting materials in the luting of IPS Empress crowns.^[1]

Shear bond strength to IPS Empress blocks

Picture 1 shows the results of shear bond strength measurements of various luting systems on IPS Empress blocks after thermocycling. Bifix SE has significantly higher values than any other tested product.

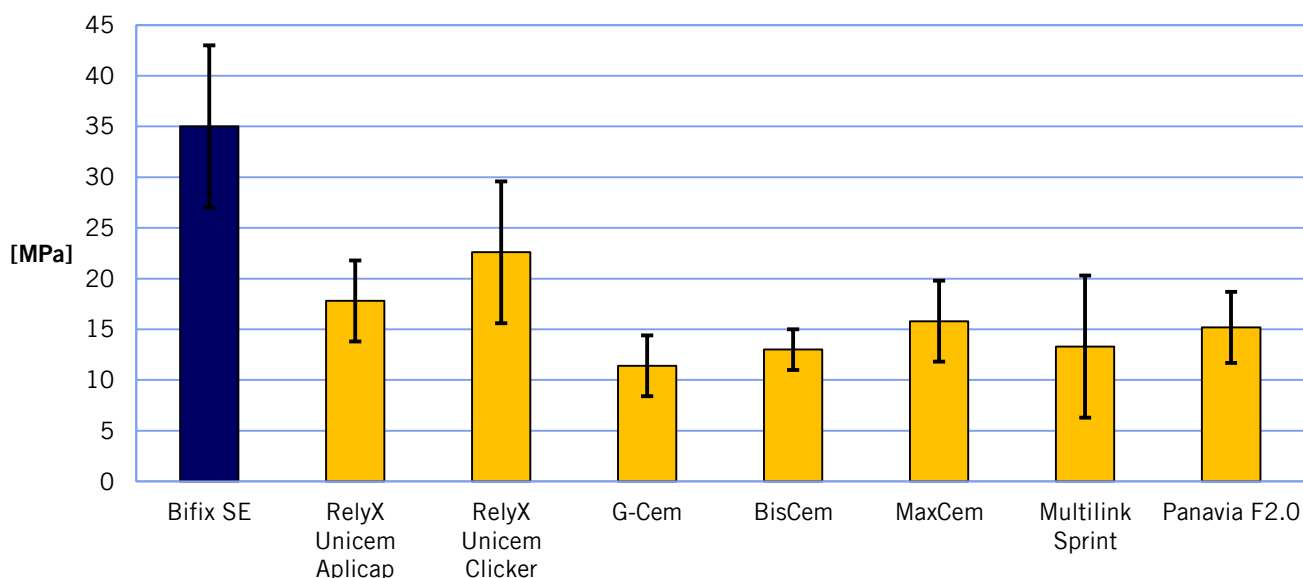


Figure 1: Shear bond strength of various luting materials (24 h, 37 °C water storage, then thermocycling 6 / 60 °C, 1000 cycles)

Transverse strength and modulus of elasticity

In addition to shear bond strength, the study also looked at transverse strength and modulus of elasticity of luting materials. The results are shown in picture 2 and 3. As with shear bond strength, Bifix SE showed significantly higher values than the other tested materials. An exception is Multilink Sprint which shows values of modulus of elasticity similar to Bifix SE, yet significantly lower shear bond strength.

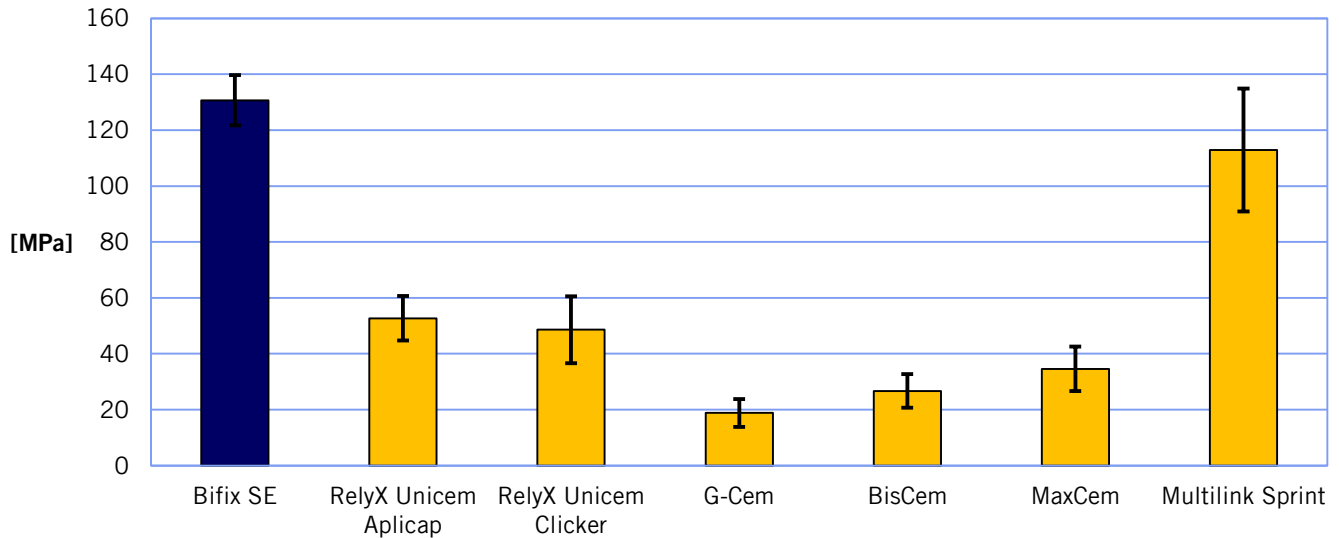


Figure 2: 3-point transverse strength of various luting materials (24 h, 37 °C water storage)

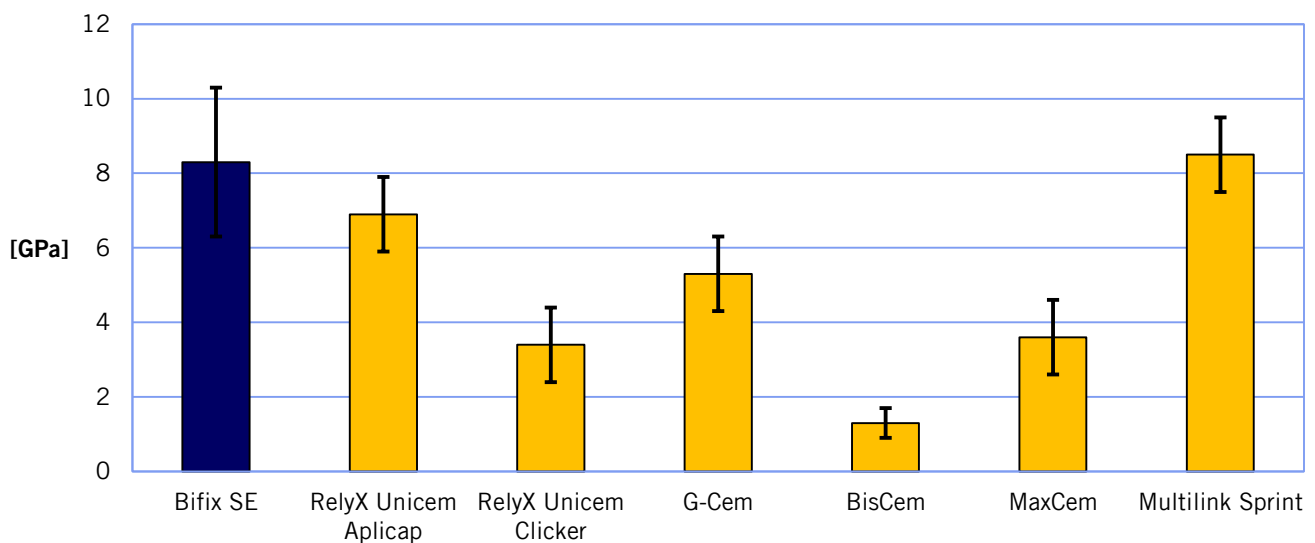


Figure 3: Modulus of elasticity of various luting materials (24 h, 37°C water storage)

Conclusion: Bifix SE provides excellent adhesion to IPS Empress materials. Its high transverse strength and high modulus of elasticity are good conditions for long-term successful luting.

[1] J. Burgess, University of Alabama in Birmingham, report to VOCO, 2009.