iBOND® Universal

Bonding to different materials – Tufts University, USA

In-vitro adhesive bond strength of cements using iBOND® Universal

Self-adhesive cements and adhesive cements using bonding agents are available for the cementation of fixed restorations.

iBOND® Universal can be used for direct and indirect restorations. For indirect restorations it needs to be used in combination with an adhesive cement. Therefore, the adhesive iBOND® Universal and the selected adhesive cement must show full compatibility. But most of the universal adhesives impair a sufficient curing of self-curing or dual-curing adhesive cements. To ensure a complete curing of the self- or dual-curing cements, many adhesives need to be mixed with a Dual-Curing-Activator (DCA) to achieve full compatibility. iBOND® Universal is compatible with all resin-based materials and does not need a Dual-Curing-Activator.

The following study displays the shear bond strength of self-adhesive cements and adhesive cements combined with iBOND® Universal.

Giving a hand to oral health.
Objective
This study measured and compared the shear bond strengths of self-adhesive cements and adhesive cements using iBOND® Universal as bonding agent.

Materials & Methods
A standard dentine surface was prepared by grinding halved bovine incisors. iBOND® Universal was applied and light cured according to its instructions for use. The specimens were inserted into a bonding jig and the resin cement material was applied into the mold according to manufacturer’s instructions. The self-adhesive cements SpeedCEM™ (Ivoclar Vivadent) and RelyX® Unicem (3M Espe) were tested without an additional bonding whilst. The adhesive cements Clearfil® Esthetic Cement (Kuraray), Panavia® F2.0 (Kuraray), NX3 Nexus™ (Kerr) and BiFix® QM (Voco) were used with iBOND® Universal on the tooth surface. The specimens were stored at 37°C for 1h for self-curing. Shear bond strength was tested after 24h water storage or additional thermocycling (5,000 cycles, 5°C/55°C) to simulate aging. The results were analysed using one-way ANOVA statistical analysis (p=0.5).

Results

**Better bonding values with iBOND® Universal**

![Bar chart showing mean shear bond strength test (MPa) for different cements.](chart)

Data analysis showed that there was a statistical significance between self-adhesive cements and adhesive cements. Adhesive cements using iBOND® Universal bonding agent showed higher strengths after thermocycling.

Conclusion
There was a statistical significance between the shear bond strength of the cements. After 24 hours, the mean shear bond strength of NS3 Nexus™ bonded with iBOND® Universal was the highest. RelyX® self-adhesive resin cement had the lowest mean shear bond strength. After thermocycling, Bifix® QM bonded with iBOND® Universal had the highest mean shear bond strength.

Comment
Adhesive cements using iBOND® Universal have higher values in bonding than self-adhesive cements. iBOND® Universal is compatible with all adhesive cements regardless their curing mode. A good adhesion between tooth and restoration is a pre-condition for long-lasting restorations.

Source

The study was abbreviated, summarised and commented and all diagrams and titles have been established by Kulzer.