Dental Science: Scientific Information

iBOND® Total Etch

Bond strength testing – Tufts University, Boston, MA, USA

Bond Strength Testing of Total-Etch Adhesives on Enamel and Dentin.

The quality of the adhesive system strongly influences the longevity of adhesive composite restorations. The main function of an adhesive is to link the composite to the tooth. Each composite shows polymerisation shrinkage which leads to shrinkage stress at the interface of tooth and restoration. Therefore, the bond strength needs to remain stable on a high level to ensure durable restorations.

The following in vitro study emphasises the excellent bond strength of iBOND Total Etch even after thermocycling.

Giving a hand to oral health.
Objective

Comparison of shear bond strength of 4 total-etch adhesive systems on enamel and dentine after 24 hours and 10,000 cycles of thermal stress.

Materials and Methods

128 human molars were randomly divided into 16 groups. Flat enamel and dentine surfaces were prepared using SiC paper. iBOND Total Etch (Heraeus Kulzer), Adper Scotchbond 1XT (3M ESPE), Optibond Solo Plus (Kerr) and Prime&Bond NT (Dentsply) were applied according to directions for use and light cured. Venus Diamond composite (Shade A2, Heraeus Kulzer) was filled in cylindrical plastic molds (Ultradent equipment) and cured for 20 s. Light-activation was done with a LED curing unit (Translux Power Blue, Heraeus Kulzer). Shear bond strength of specimens was determined after 24 h storage in water at 37 °C and after additional thermocycling (10,000 cycles, 5/55 °C). Statistical analysis was performed by three-way ANOVA, with post-hoc analysis conducted via Tukey’s HSD.

Results

Conclusion

Significant differences are found only between different adhesive systems (p = 0.003): iBOND Total Etch (p = 0.004) and Prime&Bond NT (p = 0.013) show higher shear bond strength than Optibond Solo Plus. The substrate (dentine or enamel) and also thermocycling reveals no significant differences (p > 0.05).

Source


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