

## GLUMA® Bond Universal

### Universal Bonding Agents – Yeditepe University, Turkey Microtensile Bond Strength Evaluation of Universal Adhesives

The bonding of resin composites to tooth structure can be achieved with different bonding techniques. Classic three step total-etch systems have a great bonding efficiency especially on enamel, but are time-consuming and have a higher risk of postoperative sensitivity. The single step self-etch adhesives have increased in popularity due to their simplified technique and lower incidence of postoperative sensitivity<sup>1</sup>. But their bonding performance to enamel is slightly lower.

The recent introduced class of universal adhesives allows the dentist to select most appropriate bonding technique for all individual clinical situations. So, in deep cavities a self-etch approach minimises the risk of postoperative sensitivities, whereas the total-etch technique optimises the bonding to enamel.

GLUMA Bond Universal can be used with a self-etch, selective enamel etch and total-etch technique and can be bonded to all restoration materials available.

Giving a hand to oral health.



**KULZER**  
MITSUI CHEMICALS GROUP

<sup>1</sup> Unemori M, Matsuya Y, Akashi A, *et al.* Self-etching adhesives and postoperative sensitivity. Am J Dent 2004; 17: 191-195

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## Microtensile Bond Strength Evaluation of Universal Adhesives

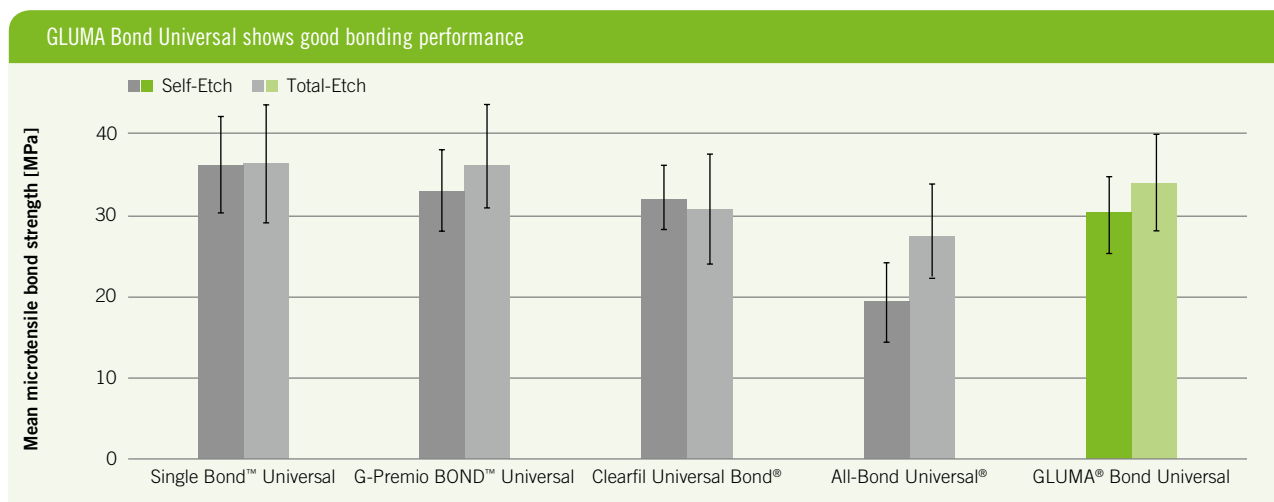
### Objective

The aim of this study is to compare the microtensile bond strengths of GLUMA® Bond Universal (Kulzer), G-Premio BOND™ Universal (GC), All-Bond Universal® (Bisco), Clearfil Universal Bond® (Kuraray) and Single Bond™ Universal (3M). They were applied in self-etch and etch & rinse techniques. OptiBond™ FL (Kerr) and Clearfil® SE Bond (Kuraray) were taken as gold standard reference for respectively etch & rinse and self-etch system.

### Materials & Methods

36 non-carious human third molars were divided into 12 groups. Each group was tested with 3 teeth. The occlusal enamel was removed and dentine surfaces were standardised. Universal bonding agents were applied either in self-etch or etch & rinse mode according to their manufacturer's instructions. After composite build-up with Filtek® Z250, they were stored in water for 24 hours at 37 °C and sectioned into 1 mm<sup>2</sup> sticks. Microtensile bonding strength was measured using a universal testing machine. Data was analysed with two way ANOVA and post-hoc Tukey's test.

### Results



Significant higher microtensile bonding strengths were found in the etch & rinse than in the self-etch modes for GLUMA® Bond Universal, G-Premio BOND™ Universal and All-Bond Universal®.

Clearfil® SE Bond (36,08±3,39 MPa) and Single Bond™ Universal showed highest microtensile bonding strengths among the other tested adhesives regarding the self-etch mode.

OptiBond™ FL yielded significantly the highest microtensile (45,45±6,47 MPa) bonding strength, whereas GLUMA® Bond Universal, G-Premio BOND™ Universal and Single Bond™ Universal showed significantly higher microtensile bonding strengths than All-Bond Universal® and Clearfil Universal Bond® in the total-etch mode.

### Conclusion

Immediate bonding performance of universal agents were dependent on adhesive and etching mode, resulting mostly in higher microtensile bonding strength when used in etch & rinse mode. The gold standard three-step etch & rinse adhesive showed the highest microtensile bonding strength overall.

### Comment

Time-consuming classic three bottle bonding systems are still the gold standard. But the study demonstrates a good bonding performance of the universal adhesives regardless their etching strategy.

GLUMA® Bond Universal shows good bonding values within both etching techniques.

### Source

Sirinsukan N, Can Say E: Microtensile bond strength evaluation of universal adhesives. J Dent Res (Special Issue 95 B), 2006, #1120.

GLUMA® Bond Universal is chemically equivalent to tested iBOND® Universal adhesive.

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