

## Scotchbond™ Universal Adhesive

### Dentin Bond Strengths of a Universal Adhesive in Multiple Modes

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**Objectives:** A new universal adhesive (Scotchbond Universal Adhesive, 3M ESPE) was recently introduced to the market accompanied by claims it can be used with the self-etch, selective etch or etch and rinse modes. The purpose of this study was to evaluate the dentin shear bond strengths of the new universal adhesive system used in each of the three modes.

**Methods:** The labial surfaces of 40 bovine teeth were ground to create flat, 600-grit dentin surfaces. Resin-composite (Filtek Z250 Universal Adhesive, A2, 3M ESPE) was bonded to dentin using the new universal self-etch system via three etching techniques: self-etch, selective etch and etch-and-rinse. The etchant was a 35% phosphoric acid gel. When used in the etch-and-rinse method, it was applied for 15 seconds. For selective etching, it was applied to enamel only for two seconds. Rinsing caused a diluted solution of the etchant to flow over the dentin. An etch-and-rinse, two-step adhesive (Adper™ Single Bond Plus Adhesive, 3M ESPE) served as a control. Following storage in water for 24 hours, shear bond strengths were determined using an Instron universal testing machine. The data were subjected to a one-way analysis of variance test and Duncan's test for multiple comparisons.

**Results:** Mean shear bond strengths to dentin were  $26.3 \pm 6.3$  MPa for etch-and-rinse,  $20.1 \pm 7.9$  MPa for selective etch and  $19.1 \pm 8.9$  MPa for self-etch. Mean bond strength of the control group was  $28 \pm 9.4$  MPa. The statistical analysis indicated that mean bond strengths of the control and the universal adhesive in etch-and-rinse mode were significantly greater ( $p < 0.05$ ) than those of the self-etch and selective etch modes.

**Conclusions:** The new universal adhesive had higher dentin bond strengths when used with the etch-and-rinse technique compared to the selective etch and self-etch modes. The clinical relevancy of the slightly lower bond strengths in the self-etch and selective etch modes is not known.

### 3M ESPE Summary

**Aim of Study:** To evaluate the bond performance of Scotchbond Universal Adhesive to dentin in self-etch, total-etch and selective etch treatment compared to a total-etch control adhesive.

**Summary of Results:** Scotchbond Universal Adhesive provided consistent high bond strengths to dentin with slightly higher bond values after the dentin surface had been etched.