

Shear Bond Strength of Ventura Nanolux Composite and Ventura Unibond 2 Bonding Agent

Purpose: The purpose of this project was to determine the shear bond strength of a composite and bonding agent system.

Experimental Design:

Materials:

Composite: *Ventura Nanolux* (Madespa S.A.) Lot# 1155-17457

Bonding agent: *Ventura Unibond 2* (Madespa S.A.) Lot# 1815-17537

Substrate: ground superficial dentin etched with 37 % phosphoric acid (Total Etch / Ivoclar Vivadent, Inc.)

Tests/Replications: Ultradent Shear Bond Strength/ n=8

Shear Bond Strength Conditions: 1.) 24 h in 37 C water, and 2.) 24 h in 37 C water plus thermo-cycling between 5 and 55 C for 5000 cycles

Methods:

Ultradent Shear Bond Strength: Adult human extracted third molars, previously stored in sodium azide solution, then in saline and then in water, were embedded in resin and abraded on their facial surface with 600-grit SiC paper to form bonding substrate specimens of ground superficial dentin. The bonding agent was applied to the dentin surface according to the manufacturer's instructions (which included etching with phosphoric acid). Each prepared specimen was then mounted into the Ultradent jig where the composite was applied to the bonding agent prepared dentin surface using the Ultradent Teflon mold part of the jig to form the composite shear cylinder. The composite was light cured for 20 seconds using a *Demi* LED curing light (Kerr Corp.). Specimens were stored in water at 37 C for 24 h for the un-cycled specimens and then debonded in shear on a universal testing machine (Model 5866, Instron) at a crosshead speed of 0.5 mm/min. The "thermo-cycled" specimens were cycled from 5 to 55 C with a 23 second dwell time for 5000 cycles and then were similarly shear tested on the universal testing machine. Means and standard deviations of the shear bond strength were calculated.

Results:

Shear Bond Strength

Ultradent Shear Bond Strength to Dentin <i>Ventura Nanolux</i> composite, <i>Ventura Unibond 2</i> adhesive		
Test Condition	Bond Strength, MPa (SD)	Adhesion Failure, %
24 H	24.3 (4.4)	78
5000 TC	23.3 (9.7)	68

Conclusion:

The bond strengths of *Ventura Nanolux* and *Ventura Unibond 2* to dentin after storage for 24 hours in water and after thermocycling were satisfactory.

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