A Snapshot of Dental Adhesives

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Dr. Michael Buonocore is often credited with the emergence of modern dental adhesive science. This was a result of his 1955 work (1) which detailed etching of enamel with acid as well as his later 1968 publication (2) where he described the “prism-like” tags of resin material that were able to penetrate an enamel surface that had been conditioned with phosphoric acid. Although they vary in application, today’s types of adhesive systems are predicated upon the same principles that resulted from these seminal studies (e.g., inorganic tooth material is exchanged for synthetic resin).

Three-step etch and rinse

Considered the gold standard for resin-based dental adhesive materials, these products have been available for more than 20 years. They have a long track record of non-covered services legislation (AB 20 years. They have a long track record of

Two-step etch and rinse

In order to simplify the adhesive process, a one bottle, two-step etch and rinse approach was developed whereby the priming and bonding steps were combined into one.

Both the three and the two-step method use the same adhesion mechanism and this system still requires the total etch of enamel and dentin with phosphoric acid prior to the application of the primer/adhesive solution.

Examples include Optibond Solo Plus (Kerr), One-Step Plus (Bisco), Adper Single Bond (3M ESPE), Prime & Bond NT (Demetron), Excite (Vivadent) and Fuji VII (Ultradent).

Two-step self-etch

The self-etch adhesives simultaneously condition and prime enamel and dentin. With the two-step self-etch system, an acidic self-etch primer is used instead of phosphoric acid. This step is then followed by the application of the adhesive resin. One of the materials in this category, Clearfil SE, has been extensively studied and has been shown to exhibit a true chemical bond in addition to the mechanical bond that is characteristic of all resin-based systems. These bond strengths are in fact, superior to the two-step etch and rinse category of adhesives. In the self-etch category, this product has become the “gold standard.” Although both in vitro and in vivo studies have revealed serious shortcomings in their properties. In particular, they exhibit lower bond strengths in comparison to multi-step self-etch and etch-and-rinse systems. It is also important to note that two-step and all-in-one self-etching adhesives are poorly compatible with self-cured composites.

Examples include Optibond All-in-One (Kerr), Xeno IV (Dentsply), i-Bond (Hermaeus Kulzer) and S3 Bond (Kuraray).

Summary

The three-step etch and rinse adhesive systems have universal application in the fact that they can be used with both direct and indirect restorations and with both self-cure and light cured composite resins. They remain the preferred choice if one were to keep only one system on hand.

A two-step self-etch system should not only be considered as an attractive alternative when compared to the two-step etch and rinse category, but is in fact the preferred system.

References


Concealed Carry Law and your workplace policies: What does an employer need to consider?

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Wisconsin’s Concealed Carry Law (2011 Wisconsin Act 238) is significant and impactful for every employer to consider in regards to their workplace.

Will you allow the carrying of concealed weapons in your workplace? If yes, will you require prior employer authorization? Or, will you prohibit the carrying of concealed weapons in the workplace?

While the law appears to grant broad immunity if an employer permits the carrying of concealed weapons in the workplace, how comfortable are you that the true scope of that immunity will need to be refined by the courts?

How you, as an employer, answer those questions for your workplace sets your policies and practices. You must educate your employees, patients and vendors appropriately.

Your stance on the carrying of concealed weapons should be reflected in your workplace policies and procedures. Regardless of your stance on the carrying of concealed weapons, we recommend that every employer have a policy setting forth their position to provide a safe work, free of violence.

The following are items to consider:

Your specific stance, including whether or not you require an employee to obtain the employer’s prior authorization before carrying a concealed weapon in the workplace also should be reflected in the section of your handbook setting forth your rules of workplace conduct.

In addition, you must educate your employees on your new policies and procedures. You should meet with your employees to explain your policy regarding the carrying of concealed weapons in the workplace.

Employees should acknowledge receipt of an amended handbook or a new stand-alone policy by signature and date. The executed acknowledgement should be placed in employees’ individual personnel files. This standard practice establishes that you have notified employees about the workplace expectations and protections.

If you choose to prohibit the carrying of concealed weapons in the workplace, you must post the required sign prominently and at or near all of the entrances, so anyone entering the building or workplace can see the sign. The purpose is to clearly notify employees, patients and vendors that weapons are prohibited or limited in your workplace.

Such signs must be 5 by 7 inches and clearly indicate the restrictions. “Firearms prohibition” signs are available on WDA.org.

For more information, contact The QTI Group at 608-585-5252 or email jencel@qtiif.com.

*The QTI Group Inc. is endorsed by the Wisconsin Dental Association Insurance & Services Corp.

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NCS hearing draws WDA dentists

Nearly 40 Wisconsin Dental Association members, staff and contract lobbyists attended the five and one-half hour Assembly Insurance Committee meeting on February 24 in Madison.

Of those 40 attendees, more than 24 in support and four in opposition. Another 12 attendees registered in support of the bill and seven registered in opposition.

WDA dentists emphasized their professional role as “doctors of oral health” by wearing scrubs and lab coats to the NCS hearing.

“We definitely had the bigger group and I think we gave it our best shot,” reported WDA Government Services Director Murta Brooks.

Thanks to everyone who participated – the dentists did an awesome job telling their own stories,” she added.