

## Sealants

[Topical Fluoride and Sealant Placement](#)  
[Just Seal It!](#)

### Topical Fluoride and Sealant Placement (11/03)

**Question:** May sealants be placed on teeth immediately following a topical fluoride treatment?

**Answer:** There has been an opinion for many years that a recent topical fluoride application would interfere with the etching pattern and render the enamel somewhat more resistant to an adequate acid-etching procedure. Several studies have looked at retention and bond strength of sealants with and without prior fluoride treatments.<sup>1-3</sup> In a clinical study by Warren et al<sup>1</sup>, 122 sealants were placed on opposite sides of the arch on 16 patients before and after fluoride treatment. After two years, sealant retention was not adversely affected by fluoride application immediately prior to sealant placement. In a laboratory study by Koh and others<sup>2</sup>, exposure of enamel to sodium fluoride, stannous fluoride or acidulated-phosphate fluoride prior to placement of filled or unfilled sealants had no effect on tensile bond strength between the enamel and the sealant. According to Simonsen, it is unlikely that a topical fluoride treatment, applied immediately prior to acid-etching for a sealant would negatively affect the etching ability of phosphoric acid.<sup>4</sup> Therefore, based on these limited studies, sealant application may immediately follow topical fluoride treatment.<sup>5</sup> More studies are necessary to further substantiate these findings.



### References

1. Warren DP, Infante NB, Rice HC, Turner SD, Chan JT. Effect of topical fluoride on retention of pit and fissure sealants. *J Dent Hyg* 2001;75:21-24.
2. Koh SH, Chan JT, You C. Effects of topical fluoride treatment on tensile bond strength of pit and fissure sealants. *Gen Dent* 1998;46:278-280.
3. Koh SH, Huo YY, Powers JM, Chan JT. Topical fluoride treatment has no clinical effect on retention of pit and fissure sealants. *J Gt Houst Dent Soc* 1995;67:16-18.
4. Simonsen RJ. Pit and fissure sealant: review of the literature. *Pediatr Dent* 2002;24:393-414.
5. Feigal RJ. The use of pit and fissure sealants. *Pediatr Dent* 2002;24:415-422.

[Return to Top](#)

### Just Seal It! (Originally published in May 2003)

**Question:** A wide variety of sealants are available, from filled to colored to fluoride-containing. Are there really any differences?

**Answer:** Surprisingly, research has found that unfilled sealants perform as well as or better than filled sealants. Studies have found that unfilled sealants are significantly better retained<sup>1,2</sup> and have less microleakage<sup>3</sup> than filled sealants. Although potentially more difficult to control during placement, the lower viscosity of the unfilled sealants allows them to penetrate deeper into the fissure system.<sup>4</sup> Filled sealants may provide better mechanical properties and therefore less wear, but they suffer from a potential need for occlusal adjustment as part of the application procedure. If an unfilled sealant is left in occlusion, it will usually abrade rapidly.<sup>4</sup> However, one study found that with filled sealants, most patients were unable to abrade the interferences to a comfortable level.<sup>5</sup> Also, reduction in wear may not be as clinically significant as penetration when evaluating the sealing and retentive abilities of a sealant in the deeper depths of a pit or fissure.<sup>4</sup>

Colored sealants are easier to see during application and at recall examinations. A study by Rock and others found the error rate in identifying a sealant was 22.8% for a clear resin and only 1.4% for an

opaque resin.<sup>6</sup> The latest marketing trend is to incorporate color-change chemistry into the sealant to make it easier to see during placement. One example is a product recently evaluated by DIS (see *DIS* 65-13) called Clinpro, a new fluoride-containing, light-activated pit and fissure sealant by 3M ESPE. Clinpro is pink when expressed from its delivery syringe and turns white following light activation.

While no one will argue against the substantial advantages of fluoride in caries prevention, it has been difficult to unequivocally prove any significant reduction in caries with the use of fluoride-releasing restorative materials. The actual fluoride release of fluoride-releasing resin-composite restorative materials and sealants is among the lowest of all the fluoride-releasing materials manufactured.<sup>7</sup> No studies have documented a caries reduction due to fluoride in fluoride-releasing sealants, raising serious doubts about any clinical significance. The addition of fluoride is probably more of a marketing benefit than a clinical advantage.<sup>4</sup>

Finally, the introduction of light-activated sealants many years ago provided the advantages of command set, the ease of non-mixing, and fewer voids compared to autopolymerizing materials. However, De Craene and others found no significant difference in terms of retention or caries prevention between self-cured and visible light-cured sealants.<sup>8</sup>

### **References**

1. Barrie AM, Stephan KW, Kay EJ. Fissure sealant retention: a comparison of three sealant types under field conditions. *Community Dent Health* 1990;7:273-277.
2. Rock WP, Weatherill S, Anderson RJ. Retention of three fissure sealant resins. The effects of etching agent and curing method. Results over 3 years. *Br Dent J* 1990;168:323-325.
3. Hatibovic-Kofman S, Wright GZ, Braverman I. Microleakage of sealants after conventional, bur, and air-abrasion preparation of pits and fissures. *Pediatr Dent* 1998;20:173-178.
4. Simonsen RJ. Pit and fissure sealant: review of the literature. *Pediatr Dent* 2002;24:393-414.
5. Tilliss TS, Stach DJ, Hatch RA, Cross-Poline GN. Occlusal discrepancies after sealant therapy. *J Prosthet Dent* 1992;68:223-228.
6. Rock WP, Potts AJ, Marchment MD, Clayton-Smith AJ, Galuszka MA. The visibility of clear and opaque fissure sealants. *Br Dent J* 1989;167:395-396.
7. Garcia-Godoy F, Abarzua I, De Goes MF, Chan DC. Fluoride release from fissure sealants. *J Clin Pediatr Dent* 1997;22:45-49.
8. De Craene GP, Martens LC, Dermaut LR, Surmont PA. A clinical evaluation of a light-cured fissure sealant (Helioseal). *ASDC J Dent Child* 1989;56:97-102.

[Return to Top](#)