

# Evaluation of Novel Bisphenol A - Free Self-etching Sealant

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## INTRODUCTION

A dental sealant is a thin, plastic coating applied to the chewing surface of molars, premolars and any deep grooves of teeth. A sealant protects the tooth by sealing deep grooves, creating a smooth and easy to clean surface.

The most commonly used pit and fissure sealants are generally based on monomers that are derived from Bisphenol A glycidyl methacrylate (BPA), such as bis-GMA and bis-DMA. Many of the researchers have shown that there is diffusion of low level of BPA leaches from sealants. Researchers have also suggested that even low level of BPA is harmful to human.

Bisphenol A is a material that may have impact on hormonal levels in the body. According to Journal of American Medical Association, there is a tie between BPA exposure and diabetes, liver and heart disease. A study of National Institutes of Health had shown that BPA also can disrupt endocrine system and brain function. The worst threat of BPA is to infants. As mothers and even fathers ingest BPA, it can result that children would born with chromosomal defects. BPA was found in fetal blood and umbilical cord blood and this fact allows suggestion that babies are exposed to it.

## OBJECTIVE

The purpose of this study was to evaluate the effectiveness of a novel Bisphenol A-free self-etching enamel sealant.

## METHODS

The bovine teeth were separated into 3 groups of ten. In each group was used a certain sealant.

Group 1 included Helioclear (HC) - light-cured pit and fissure sealant that containing approximately 60% of bis-GMA. Group 2 included Ultra Seal XT (USX) – light-cured pit and fissure sealant that containing approximately 16% bis-GMA\*. Group 3 included experimental self-etching sealant (ES) – light-cured self-etching pit and fissure sealant not containing bis-GMA.

The enamel surfaces of teeth were wet-abraded to create a standardized smear layer. There were used two different ways for utilized sealants: with and without acid etching. The Bluephase LED light polymerization lamp (Ivoclar Vivadent) was used for polymerization of all the samples. Shear Bond Strengths (SBS ISO/TS11405) were determined using Lloyd testing machine. The experimental results were analyzed statistically (N=10) by ANOVA ( $p < 0.05$ ).

## RESULTS

The results of Shear Bond Strength to enamel using total etching technique (Figure 1) and without etching (Figure 2) were recorded.

Figure 1. Shear Bond Strength (MPa) of the sealants using total etching technique.

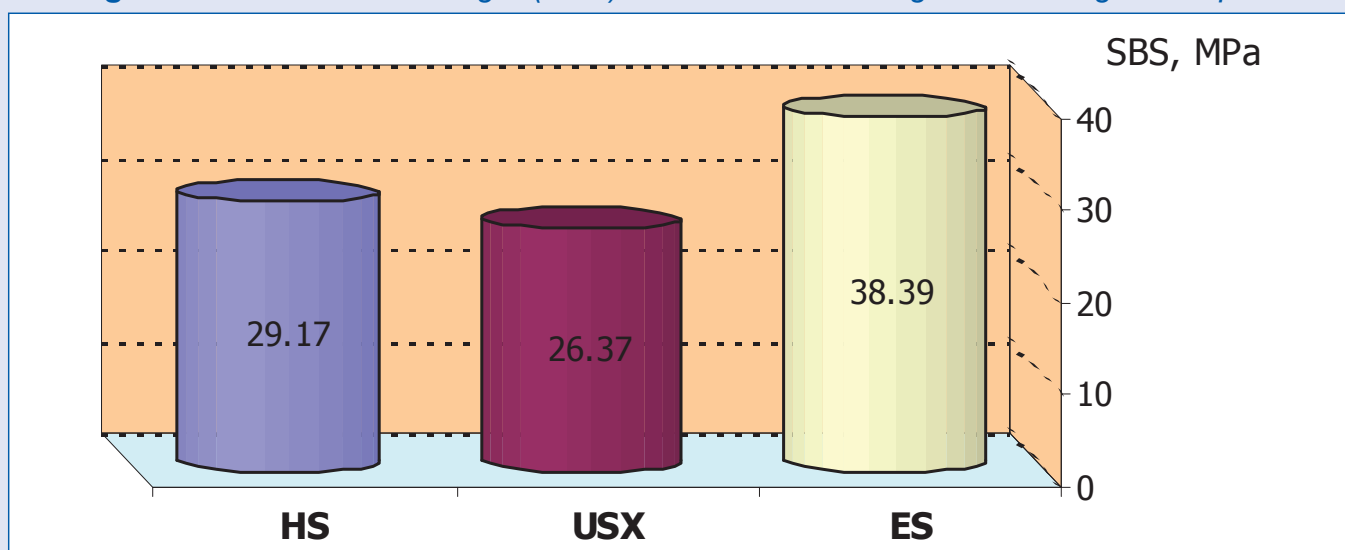
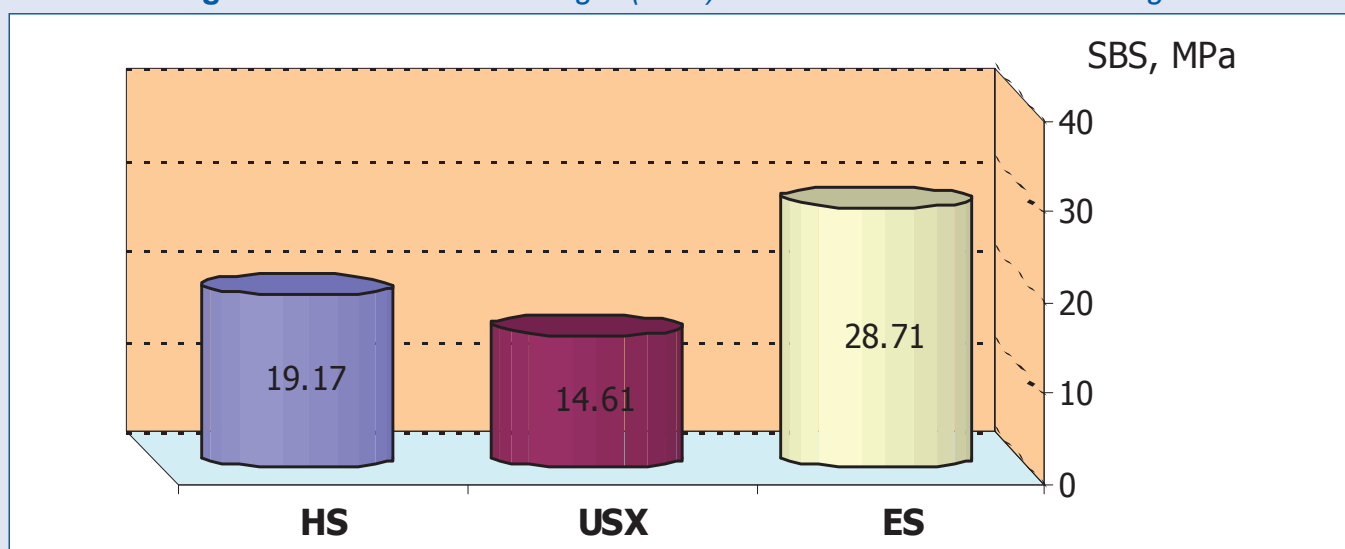


Figure 2. Shear Bond Strength (MPa) of the sealants without etching.



## CONCLUSIONS

The new experimental self-etching sealant showed significantly higher SBS results than sealants containing Bisphenol A. Based on this study, it may be concluded that BPA free sealants can be used not only as light-cured pit and fissure sealant but also as self-etching pit and fissure sealant.