

Bifix SE - Hardness

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Two luting materials were tested for their surface hardness in a study by Dr. Fleming at the Dublin Dental School. The most important results of this study are summarised below.

The hardness of a material is an important criterion in the development of luting materials for indirect restorations. Indirect restorations consist mostly of very hard, inelastic materials (ceramic, metal alloys). This means that the occurring chewing load is fully transferred onto the adhesive layer. The material requires high compressive strength in order to endure these compressive forces without damage. The compressive strength, however, is not the only decisive factor in the long-term success of an indirect restoration; the surface hardness also has a major role in its success. This is particularly important around the edges of the preparation, since increased abrasion can easily result in marginal leakage.

Study on surface hardness

The surface hardness of two luting materials was examined by the work group of Dr. G. Fleming at the Dublin Dental School.^[1] The long-term development after pure chemical curing, which currently dominates in the luting of indirect restoration (particularly the light-transmission in ceramics also always amounts to less than 10%), is most interesting.^[2] The results of this test are shown in Figure 1.

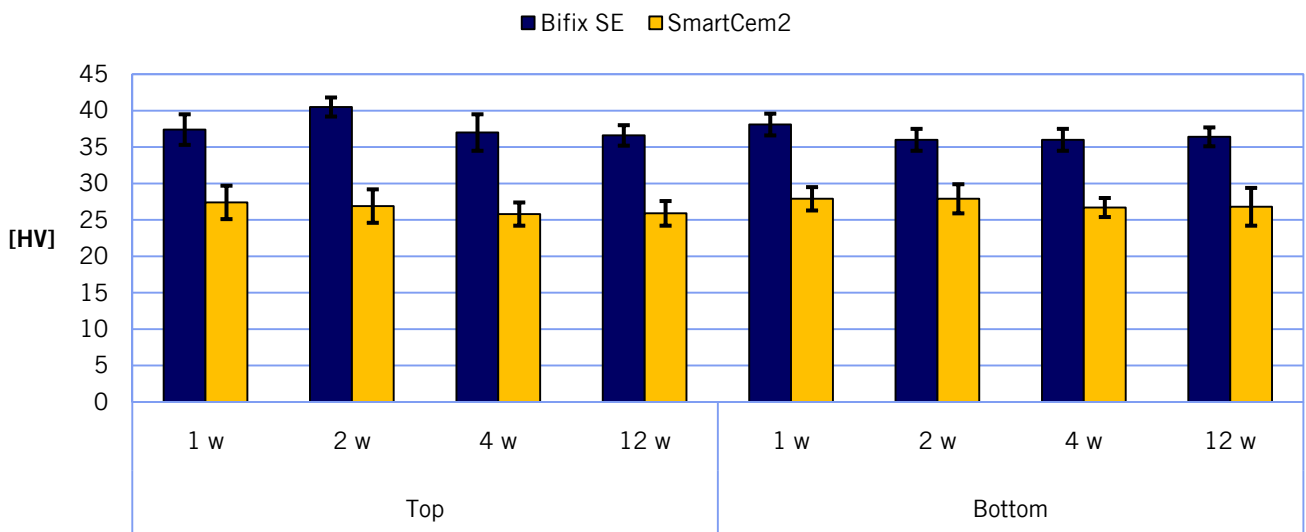


Figure 1: Vickers Hardness [HV] 1, 2, 4 and 12 weeks after application (pure chemical curing)

Bifix SE offers a durable, high surface hardness and it is significantly superior to the competing product also tested in this study. The determination of surface hardness after light-curing was likewise carried out. The results of this test are shown in Figure 2.

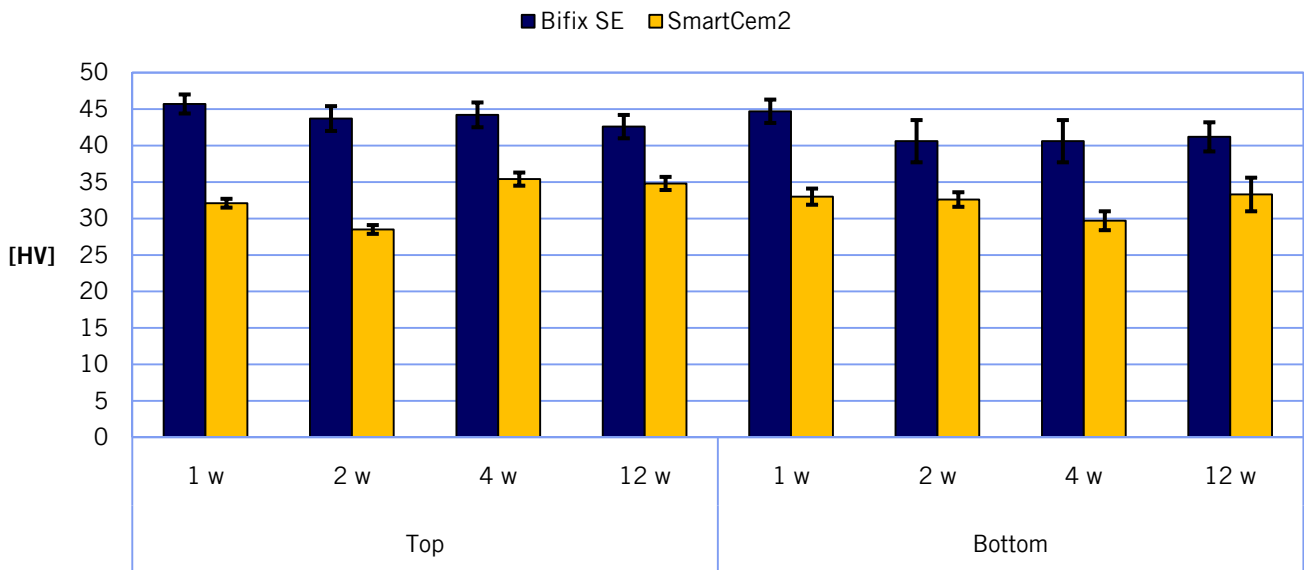


Figure 2: Shear bond strength [MPa] on bovine dentine after chemical curing^[1]

Conclusion: The high surface hardness of Bifix SE facilitates long-term, intact luting of indirect restorations.

[1] Dr. G. Fleming, Dublin Dental School & Hospital, 2008, data on file.

[2] R.T.R.C. Peixoto, V.M.F. Paulinelli, H.H. Sander, M.D. Lanza, L.A. Cury, L.T.A. Poletto, *Dent. Mater.* **2007**, *23*, 1363-1368.