

Kuraray Noritake Introduces New Universal Adhesive Featuring RAPID BOND TECHNOLOGY

It's been 38 years since Kuraray introduced the total-etching adhesive system CLEARFIL BOND SYSTEM F. Now, following extensive research and development into new adhesion technologies, Kuraray Noritake Dental has developed CLEARFIL Universal Bond Quick, a one-bottle, one-step adhesive system that penetrates dentin immediately, delivering a predictable, lasting and consistent result.

The development of adhesive monomer tech-

nologies was the key to the launch of Kuraray's adhesive systems where the connection between the adhesive and hydroxyapatite is made on a molecular level.

The Original MDP Monomer; the Secret Behind CLEARFIL and PANA VIA Performance

Kuraray applied for a patent on the original MDP monomer (Figure 1) in 1981. It was used in the first composite cement, PANA VIA EX, launched in 1983, and thereafter in many adhesives such as CLEARFIL SE BOND. Recently, other manufacturers have started using different MDP monomers in their adhesive products. However, it is one of the most difficult ingredients to produce. Incorporating the adhesive elements is a complicated process. Research studies have shown the remarkable effect of the purity level of different MDP monomers and the importance of catalysts used for curing different MDP solutions. A study (Yoshihara et al, *Adhesive Dentistry*, 2015, Vol. 33, No. 4), conducted with 3 different MDP monomers provided by 3 different manufacturers, revealed that the original MDP produced by Kuraray Noritake Dental was of a higher purity and demonstrated superior durability.

MDP and Amide Create New RAPID BOND TECHNOLOGY

Kuraray Noritake Dental's new hydrophilic amide monomer is one of the key factors in the development of RAPID BOND TECHNOLOGY. Bonding to dentin isn't easy; the adhesive solution needs to be able to penetrate the wet dentin. CLEARFIL Universal Bond Quick uses Kuraray's new hydrophilic amide monomer technology to penetrate

the dentin. It has extremely high hydrophilicity compared to the HEMA-monomer and has high curing ability.

Water Absorption

Having low water sorption is one of the most significant characteristics of adhesives. The organic matrix of the adhesive absorbs water in the long term. High water sorption of adhesives is cited as a factor in the deterioration of bonds and secondary caries.

CLEARFIL Universal Bond Quick showed the lowest water sorption among the tested materials (Hosaka et al, *J Conserv Dent Meeting*, 14-4-16), even though it contains highly hydrophilic amide monomers. It could be attributed to the high curing property of Kuraray's new amide monomers.

Flexural Strength

This new technology with amide monomers offers optimal mechanical strength and stability due to its high degree of curing.

Procedural Freedom—No Waiting Time

With this new adhesive—unlike other one-bottle universal adhesives, which utilize “slow monomers” that need time to penetrate—there's no need to wait for it to penetrate the dentin before you dry and light-cure it (Figure 2).

Aesthetics and Optimal Bonding

CLEARFIL Universal Bond Quick has a thin film layer of just 5 to 10 μm , making it aesthetically pleasing, even in the most demanding anterior restorations. Its innovative new amide monomers create many crosslinks to improve the stability of the thin film layer. This in turn delivers a superior bonding layer that is resistant to moisture and displays good aesthetics along the margin of anterior restorations.

By introducing RAPID BOND TECHNOLOGY, we are assured of a quick-developing bond to dentin. The RAPID BOND TECHNOLOGY used in CLEARFIL Universal Bond Quick is proven to be so effective that can be used with no waiting time without compromising bond strength or physical properties.

For more information, call Kuraray toll-free at (800) 879-1676 or visit the kuraraydental.com.

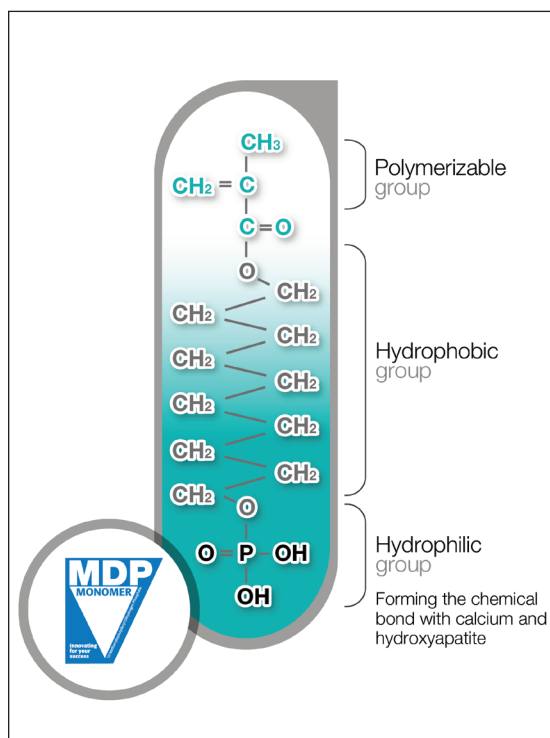


Figure 1. The structure of MDP monomer.

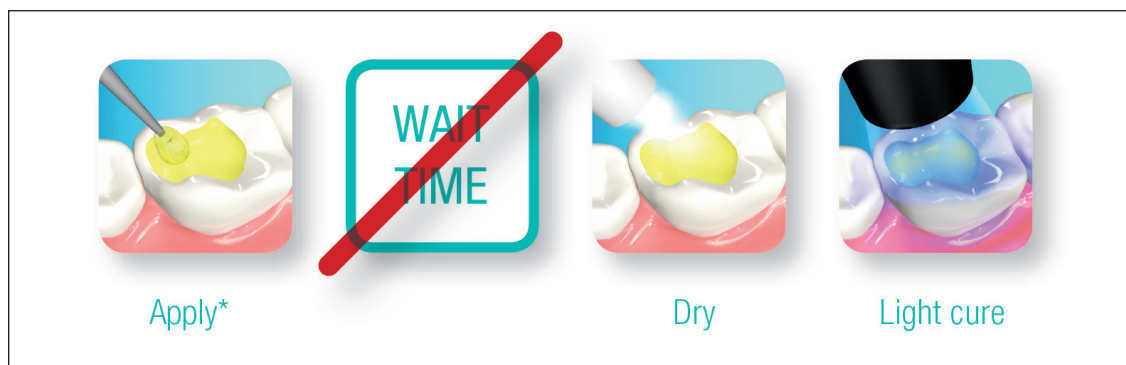


Figure 2. Adhesive application.