ProLink™ Universal

8th Generation Adhesive

ProLink Universal is an 8th-generation light-cure universal dental adhesive that combines etching, priming, and bonding in one bottle. It is an Ethanol/water-based adhesive engineered for use for both direct and indirect restoratives, flexible for use with all etching techniques, and is compatible with self or dual-cure composite and resin-based cement without an additional activator.

Prolink universal is a new addition to the Prolink line of adhesives. Over the last 12 years, Silmet R&D gained knowledge and experience to overcome all challenges and develop Prolink Universal to perfection

Versatile curing	Compatible with the light-cured, self-cured, and dual-cured cement material.
Flexible use	Compatible with total-etch, self-etch, and selective-etch.
Single-step	8-generation adhesives do not require pretreatment.
Simple application	one bottle, no separate activator needed.

Universal adhesives bonding mechanisms

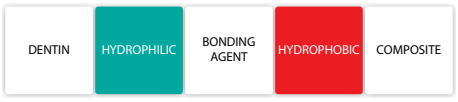
Universal adhesives offer a versatile and convenient option for dental practitioners, as they can simplify the bonding process and reduce the need for multiple types of adhesives.

Even though most adhesives contain the same components, they may differ significantly considering the proportional amount of ingredients. Unbalanced mixtures may lead to reduced bonding effectiveness, durability, shelf life, and to phase-separation reactions, while a well-thought-out formulation will be the key to long-term clinical success.

Prolink universal mixture includes 10-MDP, 4-META, 2-HEMA, BisGMA/ TEGDMA, MPTMS, NaF, colloidal silica, and photoinitiators

The main challenge of bonding the tooth to restoration is that the resin

matrix is **hydrophobic**, while the collagen on the tooth is **hydrophilic**.



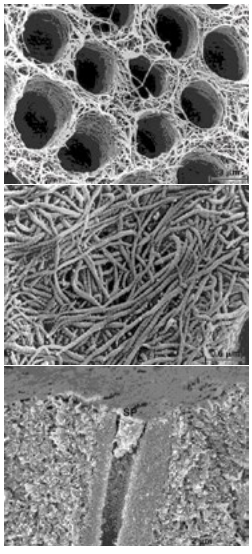
considering the **hydrophilic** nature of the tooth (especially dentin), it is logical that an adhesive should also have a **hydrophilic** nature, to wet the surface and panitratethe available microstructure.

a **hydrophobic** polymeric layer is more insoluble and resistant to erosion and degradation by acids and other components of the oral fluids. Thus the ideal adhesive would have a **hydrophilic** nature during the placement and would become much more **hydrophobic** after curing.

Smear layer

The primer and adhesive penetrate the inter-tubular dentin forming a resin-dentin inter-diffusion zone, and infiltrating the tubules to form resin tags after their polymerization. This hybrid layer is an intermediate layer or a zone of the material consisting of components of both bonding resin and dentin with collagen fibers and infiltration of resin into the etched dentin.

Cutting cavities create a smear layer of debris that adheres tightly to dentin and fills the tubules. presence of residual smear layer and plug particles prevents the penetration of adhesives into the dentinal tubules and results in a significant decrease in bond strengths



Tooth restoration illustration

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Oxygen inhibited layer

There is a coating of uncured resin on the surface of the polymerized bonding resin. this uncured layer will help facilitate a chemical bond between the bonding resin and the composite resin. Once the composite resin is placed over the bonding resin, its presence will exclude air and that uncured layer of bonding resin will cure when the composite is cured.

Solvents

solvents are thinning agents added to reduce the viscosity of co-monomer blends, increasing wetting and molecular wettability.

volatile solvents displace water from the wet collagen and dential surface allowing monomers to penetrate the collagen fiber network.

water solvent can re-expand the collapsed collagen network, thus helping in better penetration and bonding between resin and dentin.

Monomers

BisGMA/ TEGDMA Hydrophobic monomers Cross-linkers directly provide mechanical strength to the adhesive system, Higher flexibility of TEGDMA will result in adhesive with a higher conversion rate.

Carboxylated Methacrylate monomers - Carboxylic acid functional polymer reacts with and bonds to hydroxyapatite. The presence of many carboxylic acid groups along a polymeric

backbone/chain allows multiple bonds to the tooth surface.

4-META a Phosphate monomer

forms a strong bond to calcium in hydroxyapatite surfaces. Promotes adhesion to the tooth surface by the formation of non-soluble Ca2+ salts.

10MDP (10-methacryloyloxydecyl dihydrogen phosphate) forms a strong chemical bond with the hydroxyapatite crystals that remain available on the substrate after the use of the self-etch approach on dentin.

Contribute to the product stability, The long carbonyl chain renders this monomer quite hydrophobic, and hydrolysis stable, as water will be kept at a distance.

This monomer is capable of forming strong ionic bonds with calcium of enamel or dentin, as opposed to 4-META

HEMA a, hydrophilic amide methacrylate help tolerate the moist dentine adhesion, etc.

The advantages of MDP

Prolink Universal contains the Original MDP Monomer, having been in use for more than 35 years, MDP offers a proven excellence in adhesion, so it can also establish an intense and stable chemical interaction with teeth. In addition to assuring a strong bond to enamel/dentin tooth structure and metal alloys, It chemically bonds to zirconia and also has the potential to improve the long-term seal and durability of the bond. Contrary to popular belief, bonding to zirconia is achievable!

As a functional monomer, MDP also has acidic molecules that can etch tooth substrate, facilitate monomer permeation and Provide an opportunity for adhesives to have chemical interactions with the tooth

Having a universal adhesive system eliminates the need for practices to have a stand-alone or zirconia primer in their inventory.

Product Name	Functional Adhesive Monomer
Adhese Universal	MCAP methacrylate carboxylic acid polymer
	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
All Bond Universal	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
Clearfil Universal Bond Quick	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
G-Premio Bond	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
	4-META (4-Methacryloxyethyl trimellitate anhydride)
	MDTP (methacryloyloxydecyl dihydrogen thiophosphate)
Prelude One	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
	Methacryloyloxyalkyl acid carboxylate,
Scotchbond Universal	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
	VP-copolymer Vitrebond Copolymer
Prolink Universal	MDP 10-Methacryloyloxydecyl dihydrogen phosphate
	4-META (4-Methacryloxyethyl trimellitate anhydride)
	RDX multi-functional monomer

Silmet develops and manufactures best-in-class dental products. Our goal is to make our customers' lives easier by helping dentists perform their best dentistry. In addition to placing tremendous value on offering high-quality materials that provide reliable solutions for every restoration need, we are a dedicated team that supports our customers every step of the way.

ProLink Universal 1505UN(5ml), 1503UN (3ml)

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