

RelyX™ Unicem Self-Adhesive Universal Resin Cement Frequently Asked Questions

Q1. What about the clinical history of RelyX Unicem cement?

The first restorations were cemented with RelyX Unicem cement in 2001. The excellent clinical experience reported to us by our costumers is consistent with the results of numerous in vivo studies by independent researchers that confirmed the high performance of the RelyX Unicem cement. The latest publications in this series are the following:

1. The Dental Advisor's 7-year clinical performance rating (5+) (May 2010 Vol. 27, No. 04)
2. 3M™ ESPE™ RelyX™ Unicem/ Unicem 2 Automix Self-Adhesive Resin Cement Expertise™ Clinical Studies 2003 – 2010

Q2. What about the expansion values for RelyX Unicem cement?

RelyX Unicem cement shows low expansion values for the cementation of glass ceramic restorations and posts. This was proven in long term in vivo and in vitro studies by independent external researchers (e.g. "expansion less than or equal to 1%": CRA October 2004). These results are corroborated by the clinical experience of the dental community since the introduction of the cement 5 years ago in 2001.

Q3. How should indirect restorations be pretreated before cementation with RelyX Unicem cement?

Depending on the type of restoration we recommend the following pretreatment methods:

Pre-treatment of Etchable Glass Ceramic Restorations

Please follow the instructions for use applicable to the product being used. If the manufacturer has not provided deviating instructions, we recommend the following procedure:

- ▶ Use hydrofluoric acid to etch the inner surface of the glass ceramic restoration.
- ▶ Rinse thoroughly with water for 15 seconds and dry with air free of water and oil.
- ▶ Apply a silane in according to the manufacturer's instructions for use (e.g. 3M ESPE RelyX™ Ceramic Primer)

Pre-treatment of Zirconia and Aluminum Oxide Ceramic Restorations

Please follow the instructions for use of the restoration material. If the manufacturer has not provided deviating instructions, we recommend the following procedure:

Alternative 1:

- ▶ Blast the inner surface of the restoration with aluminum oxide $\leq 40\mu\text{m}$.
- ▶ Clean the blasted surface with alcohol and dry it with air free of water and oil.

Alternative 2:

- ▶ Coat (silicate) the inner surface of the restoration with the micro-blasting device Cojet™ Prep and the blast-coating agent Cojet™ Sand from a distance of 2-10 mm and vertically to the surface for 15 sec, see instructions for use for Cojet Prep and Cojet Sand; both products are manufactured by 3M ESPE.
- ▶ Blow away any residues of the blasting agent with air which is free of water and oil.
- ▶ Then apply a silane according to the manufacturer's instructions for use.

Pre-treatment of Metal Surfaces

Please follow the instructions for use from the manufacturer. In the absence of deviating instructions, we recommend the following procedure:

- ▶ Blast the inner surface of the restoration, the post, or the screw with aluminum oxide $\leq 40\mu\text{m}$.
- ▶ Clean the blasted surface with alcohol and dry it with air free of water and oil.

Pre-treatment of Composite Restorations

Please follow the instructions for use of the restoration material. If the manufacturer has not provided deviating instructions, we recommend the following procedure:

- ▶ Blast the inner surface of the composite restoration with aluminum oxide $\leq 40\mu\text{m}$.
- ▶ Clean the blasted surface with alcohol and dry it with air free of water and oil.
- ▶ For Paradigm(TM) MZ100 Block for CEREC®, apply silane and dry for 5 seconds

Pre-treatment of Glass Fiber Reinforced Posts

Please follow the instructions for use of the post. If the manufacturer has not provided deviating instructions, we recommend the following procedure:

- ▶ Clean the post with alcohol and dry with air free of water and oil.
- ▶ Then apply a silane according to the manufacturer's instructions for use.

Q4. How should I pretreat my CAD/CAM restoration?

The materials used with CAD/CAM systems are either etchable glass ceramics (e.g. Paradigm™ C Ceramic block, 3M ESPE, Vita Mark II, Vita; IPS e.max CAD, Ivoclar Vivadent) or composite material (e.g. Paradigm™ MZ100 block, 3M ESPE). For detailed pretreatment recommendations see Q3, Pretreatment of indirect restoration.

An important consideration for using RelyX Unicem cement for bonding CAD/CAM restorations is to make sure that the tooth surface is completely clean prior to placing the cement. The scanning process for some system requires that a separate liquid adhesive and powder be placed on the tooth to obtain a good digital image. It is imperative that the powder and liquid be completely removed from the tooth surface prior to placement of the restoration. RelyX Unicem cement must be able to directly interact with the clean tooth surface in order to demineralize the surface and penetrate into the tooth. Any residue from the liquid or powder may affect the bond of the RelyX Unicem cement to the tooth. This may result in marginal staining or failure of the restoration. A simple water spray or rinse may not completely remove the residue. It is advisable

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to physically remove the powder/liquid residue from the tooth by brushing the surface with aqueous pumice slurry followed by a thorough water rinse.

Q5. How do I prepare the root canal before cementation of a post with RelyX Unicem cement?

Remove the existing (Guttapercha) root filling and clean the root canal with a 2.5-5.25% sodium hypochlorite solution (NaOCl). Rinse immediately with water and dry with paper points; do not overdry. RelyX Unicem cement proved to bond as securely to root dentin as to crown dentin (Walter R. et. al., IADR 2003, Gothenburg Sweden, #1463)

Q6. How should I dry the tooth prior to cementing my restoration with RelyX Unicem cement?

Lightly dry in only 2-3 second intervals with air free of water and oil, or use cotton pellets to dry the excess water. Do not overdry! The tooth should be just dry enough that the surface has a slightly glossy appearance. As is the case with any fixation cement, over drying can lead to post-operative sensitivity.

Q7. May I use desensitizing agents before cementing restorations with RelyX Unicem cement?

The unique chemistry demineralizes and penetrates into the tooth surface without utilizing a separate acid etching step. This greatly reduces the potential for patient tooth sensitivity when compared to a typical total-etch resin cement system. Therefore, the use of an additional desensitizing step is NOT beneficial. We recommend that cleaning the prepared tooth with an aqueous pumice slurry and water as the final treatment before cementing the restoration with RelyX Unicem cement.

Q8. Will fit checker materials have an effect on the bond strength of the cement?

Yes. Contamination of the tooth surface with this type of material could be detrimental to any bond. If a fit checker or any oil-based product is used during try-in use, an aqueous pumice slurry and water spray to ensure a clean tooth surface prior to cementation is recommended.

Q9. Can etching help to increase bond strength?

RelyX Unicem cement shows good bond strength to enamel and very high bond strength to dentin without any pre-treatment. If enamel is selectively etched the bond strength to enamel can be improved to a degree. However, etching of dentin does NOT increase bond strength, whereas it generates the risk of post-operative sensitivities and microleakage. Therefore, if selective etching of enamel is desired, care ought to be taken not to etch adjacent dentin.

Q10. Is RelyX Unicem cement compatible with core build-up materials?

RelyX Unicem cement provides a secure bond to all types of core build-up materials. However, composite core build-up materials are the preferred material type with respect to its physical

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properties and esthetics. Therefore they are the best match for ceramic restorations and for RelyX Unicem cement. The surface of the core build-up material should be roughened. Use alcohol to clean and dry.

Q11. Is there a recommended waiting time before light curing RelyX Unicem cement?

No. In contrast to certain resin cements by other manufacturers for which some waiting time is recommended, RelyX Unicem cement can be light-cured immediately and high bond strengths will be achieved. The reason lies within the highly efficient and fast initiator system in combination with the unique adhesive technology.

Q12. Why is RelyX Unicem cement not indicated for cementing Veneers?

RelyX Unicem is a dual curing cement and, once the capsule is activated and mixed, there is a limited amount of working time. It could be difficult for the dentist to load up multiple veneers and seat them properly before the working time is up. For cementing veneers, the light cure RelyX™ Veneer cement has been specifically designed, and perfectly complements RelyX Unicem Cement.

Q13. What are the possible reasons of occasional marginal discoloration?

Answer:

3. Do not use iron-containing liquids with translucent all-ceramic crowns. A gray discoloration may develop underneath the translucent restoration a few weeks after cementation. Do not use ferrous liquids at the impression appointment or seating appointment.
4. Avoid using desensitizers, disinfectants, hydrogen peroxide, dentin sealants, rinsing solutions containing EDTA, etc., after final cleaning with aqueous pumice slurry and water spray. Their residues may have a detrimental effect on the bond strength and setting reaction of the cement.

Hydrogen peroxide is a strong oxidizing agent that decomposes chemical initiating systems. Hydrogen peroxide is not easily removed from the tooth surface by a water spray. Generally, its use should be avoided with resin cements.

5. Make sure to pretreat the restoration as described in the RelyX Unicem cement instructions for use. For details see also Q3 and Q4.

Q14. Are try-in pastes available for RelyX Unicem cement?

Yes, there are RelyX™ Try-In Pastes, available individually or as part of the RelyX Veneer cement intro kit. They are designed to fit both RelyX Unicem cement and RelyX Veneer cement shades.

Q15. Some researchers report low in vitro bond strengths when testing RelyX Unicem cement. What may be the cause of this?

RelyX Unicem cement is reliable cement in the hands of clinicians; however, skewed results can arise in the hands of those unfamiliar with testing this new class of material in-vitro.

Typically when cement bond strengths are tested, teeth are prepared and a PTFE (polytetrafluoroethylene) mold is placed over the tooth. The mold has a cylindrical hole cut into it. The mold is then filled with the cement and cured. This bond strength technique is fairly representative for testing bond performance with direct restorative materials, but is not clinically representative for an indirect procedure. For traditional total-etch adhesives/resin cement systems the tooth is etched followed by an application of the adhesive and cured. This leads to a surface ready to bond the cement and usually leads to acceptable bond performance. However, for RelyX Unicem cement, the tooth does not receive any pre-treatment to prepare the surface. The adhesion is dependent on the cement's ability to wet out the tooth and penetrate into the tooth under some pressure. This technique does not allow RelyX Unicem cement to be evaluated in a representative clinical manner and typically lower bond strengths will be seen.

A more clinically relevant method for evaluating bond strength with RelyX Unicem cement as well as other cements is to fabricate a cylinder or disc of a representative restorative material (ceramic or pre-cured composite), place the cement onto the bonding surface of the cylinder and seat the cylinder onto the tooth surface. The excess cement should be cleaned up as recommended and then light cure the cement. This is a more clinically representative approach to testing cements. When the RelyX Unicem cement is tested in this manner, consistent high bond strengths are achieved.