3M Science. Applied to Life.™

3M™ RelyX™ Universal Resin Cement &
3M™ Scotchbond™ Universal Plus Adhesive

Frequently Asked Questions

Features & benefits

1. What are the system benefits of 3M™ RelyX™ Universal Resin Cement and 3M™ Scotchbond™ Universal Plus Adhesive?

- It is a fully aligned system that consists of only two components covering virtually all direct adhesive as well as adhesive and self-adhesive dual-cure resin cement indications
- Simplifies the resin cement workflow and training of operating personnel by reducing work steps and possible errors
- The cement initiates and cures the adhesive without an additional light-cure step
- The already high bond strength of the cement in self-adhesive mode can be further enhanced with the adhesive
- The system shows higher bond strength values to zirconia than competitors, as found in a Dental Advisor study
- Both products show virtually no post-operative sensitivity
- The system enables a therapy completely based on BPA derivative-free formulations

Features & benefits

2. What are the main product features and benefits?

3M™ RelyX™ Universal Resin Cement

- Self-adhesive mode offers excellent bond strength on dentin which is superior to competitors, as found in a Dental Advisor study
- Fast and easy excess clean-up
- Self-sealing automix syringe with improved hygiene compared to currently available automix syringes
- 80% less cement waste and 50% less plastic waste per application compared to currently available automix syringes
- High esthetics with four fluorescent shades
- Cement shades match with 3M™ RelyX™ Try-In Pastes

3M™ Scotchbond™ Universal Plus Adhesive

- Suitable for all direct and indirect indications
- Suitable for all etching techniques
- Adheres to all dental surfaces including restoration materials without the need for a separate primer
- Bonds all restorative materials without the need for separate primers
- First radiopaque universal adhesive with dentin-like radiopacity
- Bonds and seals caries-affected tissue and dentin
- Advanced bonding to dental and restorative substrates, including glass ceramics
- No separate dual-cure activator needed
- Available in vial and unit dose for efficient hygiene management

3. What is the difference to RelyX Unicem 2 Self-Adhesive Resin Cement and RelyX Ultimate Adhesive Resin Cement and Scotchbond Universal Adhesive?

3M™ RelyX™ Unicem 2 Cement	3M™ RelyX™ Ultimate Cement & 3M™ Scotchbond™ Universal Adhesive	3M™ RelyX™ Universal Resin Cement & 3M™ Scotchbond™ Universal Plus Adhesive
Self-adhesive resin cement	Adhesive resin cement	Universal resin cement: covers both adhesive and self-adhesive indications
N/A	Fully aligned system: Scotchbond Universal Adhesive cured by RelyX Ultimate Cement	Fully aligned system: Scotchbond Universal Plus Adhesive cured by RelyX Universal Resin Cement
Requires precise tack-cure timing for clean-up	Requires precise tack-cure timing for clean-up	Easy excess clean-up by new initiator system
State-of-the-art automix delivery	State-of-the-art automix delivery	Unique, ergonomic automix syringe providing precise application, better hygiene through self-sealing mechanism, low-waste design with 80% less cement waste and 50% less plastic waste
Good bond strength to glass ceramics	High bond strength to glass ceramics	Improved bond strength to glass ceramics by enhanced silane primer function of Scotchbond Universal Plus Adhesive
High self-adhesive bond strength to dentin	Excellent adhesive bond strength to dentin	Enhanced self-cure by new initiator system, excellent adhesive and self-adhesive bond strength to dentin in all curing modes
Radiopaque cement	Radiopaque cement	Radiopaque adhesive (dentin-like) Improved cement radiopacity due to new fillers (higher than enamel)

FAQs

3M™ RelyX™ Universal Resin Cement &
3M™ Scotchbond™ Universal Plus Adhesive

Properties of 3M™ RelyX™ Universal Resin Cement

1. What are the main physical and mechanical properties of RelyX Universal Resin Cement?

	value
Film thickness [µm]*	21
Depth of cure [mm]*	2.9
Flexural strength [MPa]*	100
Compressive strength [MPa]**	312
Water sorption [µg/mm³]*	29
Solubility [µg/mm³]*	-0.1
Expansion after 1 month [%]	0.7

* acc. to DIN EN IS0 4049 ** following to DIN ISO 9917-1:2008

2. Can I use RelyX Universal Resin Cement with another adhesive than 3M™ Scotchbond™ Universal Plus Adhesive?

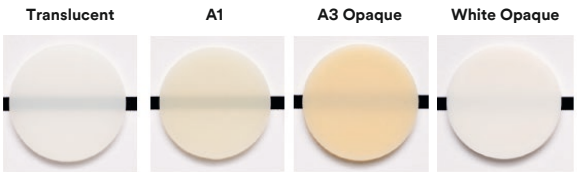
No. RelyX Universal Resin Cement and Scotchbond Universal Plus Adhesive are a closed system. Good clinical results can only be guaranteed when using the system. However, Scotchbond Universal Plus Adhesive can be used as standalone adhesive.

3. What does “Universal” in RelyX Universal Resin Cement mean?

“Universal” is related to the ability to cover virtually all adhesive and self-adhesive dual-cure resin cement indications.

4. How many shades are available?

RelyX Universal Resin Cement is available in four highly esthetic shades:
Translucent (TR), A1, A3 Opaque (A3O) and White Opaque (WO)



5. Does it have fluorescence?

Yes. All shades of RelyX Universal Resin Cement show fluorescence that is close to natural fluorescence of human teeth.

Properties of 3M™ RelyX™ Universal Resin Cement

6. What is the color stability/risk of discoloration?

All shades show high color stability under Xenon light exposure and no discoloration after 24 hour storage in coffee.

7. Do the 3M™ RelyX™ Try-In Pastes match?

Yes. The four RelyX Universal Resin Cement shades match the corresponding RelyX Try-In Pastes.

3M™ RelyX™ Universal Resin Cement	Matching 3M™ RelyX™ Try-In Paste
Translucent (TR)	Translucent (TRT)
A1	A1/light yellow (A1T)
A3 Opaque (A3O)	A3 Opaque/yellow opaque (A3T)
White Opaque (WO)	White Opaque (WOT)

8. What is the radiopacity?

The radiopacity is 2.5 mm Al (250% equivalence to aluminum) which is higher compared to enamel, RelyX Unicem 2 Cement and RelyX Ultimate Cement for improved treatment control.

9. Is RelyX Universal Resin Cement compatible with core build-up materials?

Yes. The surface of the core build-up material should be roughened. Use alcohol to clean and dry.

10. Was the excess clean-up improved? And if so, how?

Yes. Easier excess clean-up was one of the main development goals and was confirmed during an 8-week field evaluation with over 120 dentists from Europe and the US.
The new initiator system improved the rheology of the cement for an easier excess clean-up. This means the pastes flow easily when pressure is applied (e.g. while dispensing), but stay put when no pressure is applied (e.g. after having seated the crown). The excess formed around the margin does not flow away but stays where applied, making excess clean-up easier.

11. What is the difference in excess clean-up compared to RelyX Unicem 2 Cement and RelyX Ultimate Cement?

The new initiator system improved the rheology of RelyX Universal Resin Cement for an easy excess clean-up, requiring a longer tack-curing time of 2-3 seconds.

Properties of 3M™ RelyX™ Universal Resin Cement

12. May I use desensitizing agents before cementing restorations with RelyX Universal Resin Cement?

No. After the final cleaning, substances such as desensitizers, disinfectants, astringents, dentin sealants, rinsing solutions containing EDTA, scanning powder, etc. should not be used. Their residues may have a detrimental effect on the bond strength and setting reaction of the adhesive or resin cement, respectively.

13. How does the cost compare to standard automix syringes that have more cement in each syringe e.g. RelyX Ultimate Cement?

The RelyX Universal Automix Syringe enables a similar number of applications and cost per application compared to standard automix syringes like RelyX Ultimate and RelyX Unicem 2 automix syringes due to 80% less cement waste per application.

FAQs

3M™ RelyX™ Universal Resin Cement &
3M™ Scotchbond™ Universal Plus Adhesive

Properties of 3M™ Scotchbond™ Universal Plus Adhesive

1. How is it different from its predecessor 3M™ Scotchbond™ Universal Adhesive?

- 3M™ Scotchbond™ Universal Plus Adhesive is built on the platform of Scotchbond Universal Adhesive, the clinically proven and most researched universal adhesive.
- Careful adjustments have been made to allow for the new benefits of radiopacity, BPA derivative-free formulation, improved bond strength to glass ceramics and improved dual cure compatibility.

3M™ Scotchbond™ Universal Adhesive	3M™ Scotchbond™ Universal Plus Adhesive
MDP Phosphate Monomer	≙ Same gold standard adhesive monomer
HEMA	≙ Same hydrophilic monomer for wetting dentin
3M™ Vitrebond™ Copolymer	≙ Same 3M proprietary technology for moisture tolerance
Filler	≙ Same non-settling silica filler for adjusting viscosity and handling
Ethanol/water	≙ Same solvent, adjusts viscosity, wetting of tooth structure
Initiators	≙ Same photoinitiators based on camphorquinone
Silane	**Optimized mixture of silanes** for improved bond strength to glass ceramic
Dual Cure Activator (DCA) (separate vial)	**Dual cure accelerator** for improved dual cure compatibility – no more mixing with DCA from a separate vial
Dimethacrylate resins containing BisGMA	Dimethacrylate resins contain a **BPA derivative-free**, crosslinking **radiopaque monomer** – does not contain BisGMA (which is based on BPA)

Overview of chemical composition of 3M™ Scotchbond™ Universal Plus Adhesive in comparison to 3M™ Scotchbond™ Universal Adhesive

2. Can I use Scotchbond Universal Plus Adhesive with my composite or cement (non 3M product)?

Yes, it is compatible with light-, dual-, and self-cure composite filling materials, cements and core build-ups.

3. When using Scotchbond Universal Plus Adhesive with a cement other than RelyX Universal Resin Cement, do you need to light-cure Scotchbond Universal Plus Adhesive before applying the cement?

Yes. Only RelyX Universal Resin Cement initiates and cures Scotchbond Universal Plus Adhesive.

Properties of 3M™ Scotchbond™ Universal Plus Adhesive

4. Is the viscosity different and if so, how?

Scotchbond Universal Plus Adhesive has a slightly lower viscosity than Scotchbond Universal Adhesive. However, most participants in an 8-week clinical field evaluation with over 120 dentists from Europe and the US did not notice the change in viscosity.

5. Does the yellowish color of the adhesive completely disappear after curing?

Yes. The yellow color comes from the camphorquinone photoinitiator. It provides good visibility on the tooth during application. Upon air drying and light-curing, the yellow color fully disappears and does not come back.

6. Why do I need to rub in Scotchbond Universal Plus Adhesive for 20 seconds?

Rubbing for 20 seconds is required in order to ensure optimum performance. Active application or rubbing has been shown to increase bond strength for a variety of universal adhesives.*

Since functional monomers like MDP need time to react with the tooth, a shortened application time can reduce bond strength.**

* Source: P. Saikaew et al.: Does shortened application time affect long-term bond strength of universal adhesives to dentin?, Oper Dent. 2018 43, 549-558)
** Source: AD Loguercio et al. : Does active application of universal adhesives to enamel in self-etch mode improve their performance?, J Dent 2015, 43, 1060-1070

7. Is it stable over time and will all components remain reactive at the solution's pH?

Yes. It can be stored for 36 months at room temperature or in a refrigerator. No shaking needed.

8. Is the silane in Scotchbond Universal Plus Adhesive stable?

Yes. Scotchbond Universal Plus Adhesive contains an optimized proprietary combination of silanes for high bond strength to all dental materials including glass ceramics throughout its shelf life.

9. What is the adhesive's radiopacity and how does that help with treatment?

Scotchbond Universal Plus Adhesive has a radiopacity like dentin of about 100% aluminum. This minimizes the risk of misdiagnosing a thicker adhesive layer (pooling) as secondary caries, marginal gaps or voids.

Properties of 3M™ Scotchbond™ Universal Plus Adhesive

10. Does it work on caries-affected dentin? If so, how? Is the caries arrested?

Yes. Scotchbond Universal Plus Adhesive seals and bonds caries-affected dentin by forming a well defined void-free hybrid layer. Research has shown that sealing in remaining bacteria and blocking them from nutrients stops caries from progressing.

Source: E. A. M. Kidd: Clinical Threshold for Carious Tissue Removal, Dent Clin N Am 2010, 54, 541-549

11. What properties contribute to achieving virtually no post-op sensitivity in total-etch mode?

Like its predecessor, Scotchbond Universal Plus Adhesive has been optimized for high moisture tolerance (high bond strength at varying moisture levels). It forms a continuous, well defined hybrid layer without gaps or voids, which means the dentin is well sealed and open tubules are closed. 3M's patented 3M™ Vitrebond™ Copolymer has been shown to contribute to high bond strength to even dry, etched dentin.

Source: C. Thalacker, R. Guggenberger, A. Syrek, H. Loll, D. Krueger: Influence of Vitrebond™ Copolymer on bonding to dry etched dentin, IADR 2010, #2937

12. Can I use it for porcelain repair?

Yes, it bonds to all dental surfaces without the need for an additional primer.

13. Is it effective in both total- and self-etch techniques?

Like its predecessor, Scotchbond Universal Plus Adhesive has been developed as a universal adhesive, optimizing bond strength on etched and unetched enamel and dentin.

14. Can I use the self-etch method when bonding a veneer?

Since veneers are predominantly bonded to enamel and can be subject to high forces when biting into hard food, we recommend etching in order to maximize enamel bond strength. Also, etching the enamel minimizes the chance for marginal discoloration.

Source: T. Burke et al.: What's New in Dentine Bonding? Universal Adhesives, Dent. Update. 2017, 328-337

15. Do I have to use 3M™ Scotchbond™ Universal Etchant Etching Gel with this adhesive?

No. Any common phosphoric acid etching gel (about 30–40%) can be used.

Properties of 3M™ Scotchbond™ Universal Plus Adhesive

16. Why is it indicated to use without etching on uncut enamel with a sealant, but not in other restorations?

The bond strength needed for a sealant is not as high as for a composite filling, as sealants are located in fissures outside the reach of occlusal forces (and are worn quickly anyway if they are on an occlusal surface). Fillings can be subject to occlusal forces – therefore it is advisable to maximize bond strength by etching if the filling extends over uncut enamel.

17. Does it bond to amalgam?

The bond strength of amalgam to a cured methacrylate based formulation is very low – that is why amalgam fillings still have to be placed in a retentive cavity preparation, regardless if the cavity has been treated with an adhesive or not. Scotchbond Universal Plus Adhesive is not indicated for bonding amalgam, however it is indicated for sealing the cavity prior to placing amalgam to prevent post-operative sensitivity. On the other hand, Scotchbond Universal Plus Adhesive has high bond strength to cured amalgam (e.g. if part of a core preparation).

FAQs

3M™ RelyX™ Universal Resin Cement &
3M™ Scotchbond™ Universal Plus Adhesive

Delivery systems

1. What is new about the delivery systems?

3M™ RelyX™ Universal Automix Syringe

- Hygienic automix syringe with RelyX Universal Micro Mixing Tip
- Self-sealing syringe mechanism. After the mixing tip is removed, the syringe is sealed automatically
- 80% less cement waste and 50% less plastic waste per application compared to current automix systems
- Easier to clean compared to current automix syringes
- Thin, long and flexible endo elongation tip offers more reach and an easier way to void-free cement application into the root canal compared to other methods

3M™ Scotchbond™ Universal Plus vial

- Streamlined vial with smooth surface and edges
- Tamper seal for added safety
- Reduces the environmental footprint by more than 18% compared to Scotchbond Universal Adhesive because of:
  - No more rubber gasket in cap
  - No need for additional bottle of activator to accomplish self-cure
  - Less plastic needed compared to predecessor bottle
- Also available in unit dose (L-Pop) for efficient hygiene management

2. How many applications are there in each delivery system?

3M™ RelyX™ Universal Automix Syringe

- Each syringe contains 3.4 g for an average of 15 applications, comparable to current automix syringes with 8-9 g

3M™ Scotchbond™ Universal Plus vial

- Each vial contains 5 ml ~ 200 drops of 0.025 ml
- Each unit dose (L-Pop) contains 0.11 ml ~ 0.12 g

3. Do I need to shake the Scotchbond Universal Plus Adhesive vial before use?

No shaking is needed. The radiopacity in Scotchbond Universal Plus Adhesive is achieved via a novel radiopaque resin, not by conventional radiopaque filler particles, which might settle from the liquid.

4. How should I store the delivery systems between uses?

RelyX Universal Automix Syringe:

Used mixing tips should be discarded after each use to avoid the risk of cross-contamination, to help protect the shelf life of the material and to facilitate the cleaning and disinfection of the syringe.

Scotchbond Universal Plus Adhesive vial:

The vial lid should be closed immediately after dispensing and between uses to avoid the risk of cross-contamination and to help protect the shelf life of the material.

FAQs

Delivery systems

5. What are the shelf lives and recommended storage conditions?

3M™ RelyX™ Universal Resin Cement

- 18 months in foil pouch at 2–25°C/36–77°F
- After removal from the foil pouch, use within six months and before the expiration date
- Between uses, used mixing tip should be removed and discarded and syringe stored without tip

3M™ Scotchbond™ Universal Plus Adhesive

- 36 months at 2–25°C/36–77°F
- Do not use after the expiration date
- Vial cap should be closed between uses

6. Is refrigeration during storage required?

No refrigeration is required for both materials if room temperature does not exceed 25°C/77°F.
The automix syringe should reach room temperature before use when stored in a refrigerator.

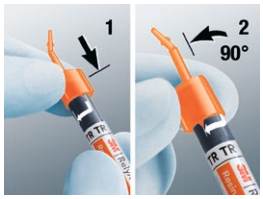
FAQs

Handling procedure – material application

1. What should be considered when using the automix syringe?

1

2



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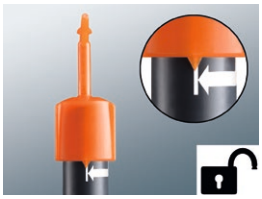
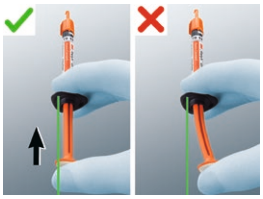


Full rotation until stop.

4



Apply moderate centric force without bending the plunger.

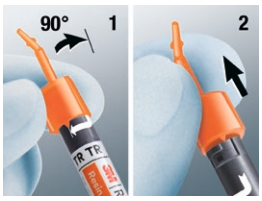
15 applications on average

5

Discard a small amount of cement.

6

7



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Store syringe without mixing tip.

Handling procedure – material application

2. What are the indications for use?

Self-adhesive mode (3M™ RelyX™ Universal Resin Cement only) or adhesive mode (with 3M™ Scotchbond™ Universal Plus Adhesive)

Final cementation of

- All-ceramic, composite, or metal inlays/onlays, crowns and bridges


Inlay


Onlay


Crown


Bridge

- Posts made of ceramic, glass fiber reinforced composite or metal and screws


Endodontic post

- All-ceramic, composite or metal restorations on implant abutment


Restoration on abutment

Adhesive mode (with Scotchbond Universal Plus Adhesive)

Final cementation of

- All-ceramic or metal Maryland bridges and 3-unit inlay/onlay bridges


Maryland and inlay/onlay bridge

- All-ceramic or composite veneers and occlusal veneers (tabletops)


Veneer, tabletop

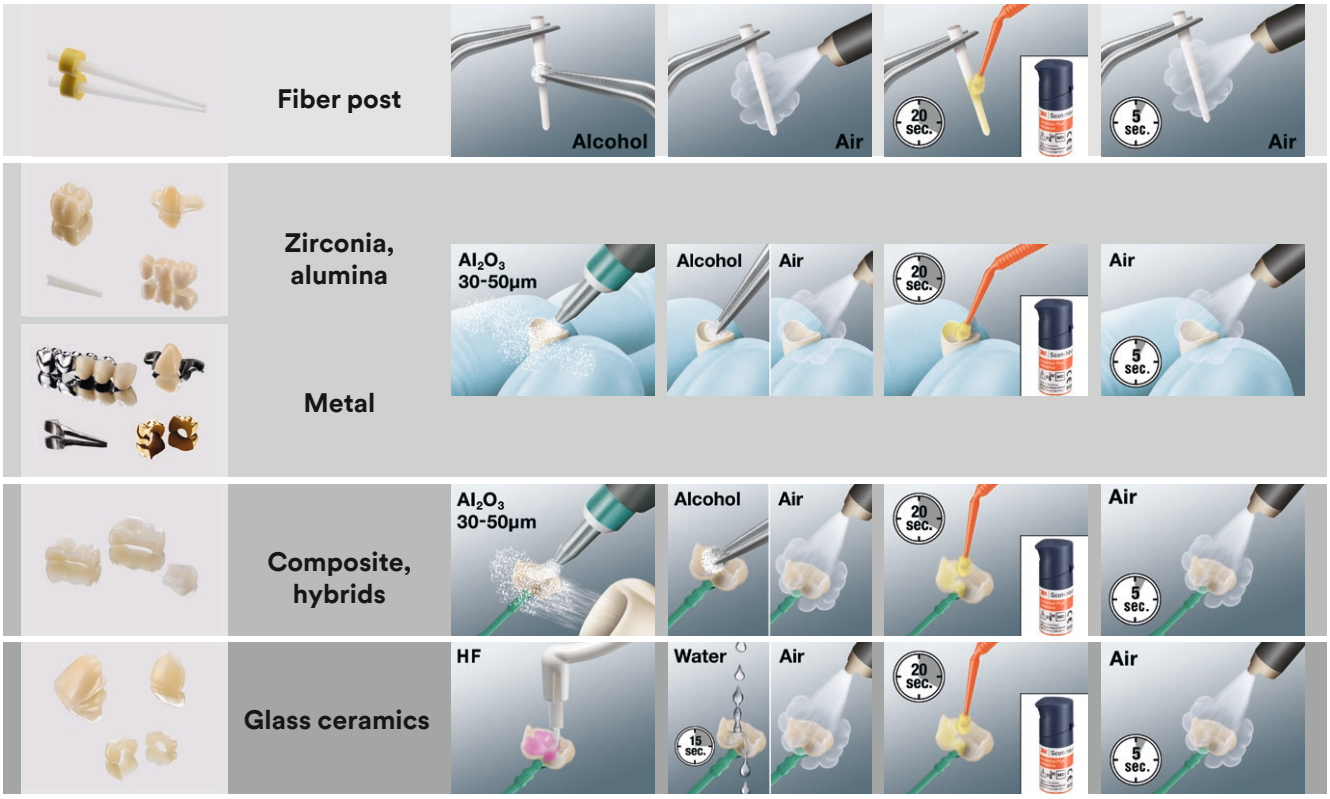
3. When do I need to use which adhesive mode and when do I need to etch?

- For posts, crowns and bridges, the self-adhesive mode (RelyX Universal Resin Cement only) is recommended with no etching required
- For inlays/onlays, the adhesive mode (RelyX Universal Resin Cement with Scotchbond Universal Plus Adhesive) with selective enamel-etch for the adhesive is recommended
- For tabletops, veneers and adhesive bridges (e.g. Maryland), the adhesive mode (RelyX Universal Resin Cement with Scotchbond Universal Plus Adhesive) with total-etch for the adhesive is required

Handling procedure – material application

4. How do I pre-treat restoration and tooth preparation for the different materials and indications?

Restoration pre-treatment



Tooth pre-treatment options

Option 1: Self-adhesive

Recommended for:
- Post
- Crown
- Bridge

Adhesive not required on tooth

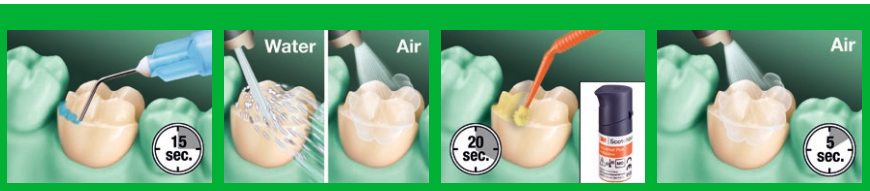
Option 2: (Selective-etch) adhesive

Recommended for:
- Inlay
- Onlay

Optional for cut enamel

Option 3: Total-etch adhesive

To be used for:
- Tabletop
- Veneer
- Adhesive bridge



FAQs

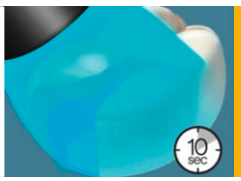
3M™ RelyX™ Universal Resin Cement &
3M™ Scotchbond™ Universal Plus Adhesive

Handling procedure – material application

5. How do I apply 3M™ Scotchbond™ Universal Plus Adhesive and what are the curing times?

1 Apply with agitation for **20 sec.**

2 Air dry for at least **5 sec.** until adhesive does not move anymore.



3 Polymerize the adhesive with a commonly used curing light (e.g. 3M™ Elipar™ DeepCure-S Curing Light) for **10 sec.**

6. What are the working and setting times of 3M™ RelyX™ Universal Resin Cement?

The maximum working time is 2 minutes from start of mixing. Self-cure setting time is 6 minutes from start of mixing at mouth temperature.

7. What is the best strategy for excess clean-up?

Excess clean-up for best esthetic results

- Remove the excess before polymerization, e.g. using a sponge pellet, while using a suitable instrument to hold the restoration in place.
- Cover the margins of the restoration with a glycerin gel to prevent oxygen inhibition.
- Immediately light-cure or wait for the self-curing to finish.

Fast excess clean-up

- Use an appropriate instrument (e.g. scaler) to remove excess cement after brief light exposure (approx. 2–3 sec. with a conventional polymerization device); clean the proximal areas in particular without delay. Use a suitable instrument to hold the restoration in position during this procedure.
- The tack-curing time of 2-3 sec. for RelyX Universal Resin Cement is significantly longer than for RelyX Unicem 2 or RelyX Ultimate Cement.
- The 3M™ Elipar™ S10 and 3M™ Elipar™ DeepCure-S Curing Lights have a built-in tack-cure mode that permits a controlled brief curing of 1 sec.

Scientific Data

1. What clinical data is available?

The combination of both products was tested in an 8-week field evaluation with over 120 dentists from Europe and the US in clinical use. The evaluation of the handling was rated very positively. These dentists reported virtually no post-operative sensitivity.

Cleaning & disinfection

For cleaning and disinfection please refer to the product´s Instructions for Use and Guidelines for Infection Control.