Multilink® Automix

Multilink® Primer A and B
Metal/Zirconia Primer

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- Självhärdande dental fastsättningskomposit med ljushärdning som tillval
  Självhärdande och självetsande primer
- Selvhærdende dentalt kompositcement med mulighed for lyspolymerisering
  Selvhærdende og selvætsende primer
- Itsekovetteinen ja valinnaisesti valokovetteinen yhdistelmämuovikiinnitysementti hammaslääketieteelliseen käyttöön
  Itsekovetteinen ja itse-etsaava primer
- Kjemisk herdende dental komposittsement med mulighet for lysherding
  Kjemisk herdende og selvetsende primer
- Zelfhardend tandheelkundig bevestigingscomposiet met optionele lichtharding
  Zelfhardende en zelfetsende primer
- Αυτοπολυμεριζόμενη οδοντιατρική συγκολλητική σύνθετη ρητίνη με προαιρετική δυνατότητα φωτοπολυμερισμού
  Αυτοπολυμεριζόμενο και αυτοαδρομούμενο Primer
- Kendiliğinden sertleşen ancak opsiyonel olarak ışıkla sertleştirilebilen rezin esaslı dental yapıştırma simanı
  Kendiliğinden sertleşen (self-curing) ve kendiliğinden pürüzlendiren (self-etching) primer
- Самотвердеющий композитный цемент с возможностью фотополимеризации
  Самотвердеющий самопротравливающий праймер

- Self-curing resin-based dental luting material with light-curing option
  Self-curing and self-etching primer
- Selbsthärtendes zahnärztliches Befestigungscomposite mit optionaler Lichthärtung
  Selbsthärtender und selbstätzender Primer
- Composite de collage dentaire autopolymérisant, avec option photopolymérisation
  Adhésif automordançant et autopolymérisant
- Cemento composito autoindurente con fotopolimerizzazione facoltativa
  Primer automordenzante ed autoindurente
- Material de cementación dental autopolimerizable en base a resina con opción de fotopolimerización
  Primer autopolimerizable y autograbante
- Compósito de cimentação autopolimerizável, com opção fotopolimerizável.
  Primer auto-condicionante e autopolimerizável.

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Instructions for Use

Description
Multilink® Automix is a self-curing luting composite with light curing option for the adhesive luting of indirect restorations made of metal, metal-ceramic, all-ceramic and composite. Multilink Automix is applied together with the self-etching, two-component self-curing Multilink® Primer. The Metal/Zirconia Primer is recommended as a coupling agent to achieve a stronger bond to precious and non-precious alloys, as well as all-ceramics made of zirconium and aluminium oxide.

Shades
Multilink Automix is available in three shades with different degrees of translucency:
- Transparent (high translucency)
- Yellow (high translucency)
- Opaque (low translucency)

Working time
The working and setting times depend on the ambient temperature. Once Multilink Automix has been dispensed from the automix syringe, the following times apply:

	At room temperature 23 °C ± 1 °C	**Intraorally (in combination with Multilink Primer) approx. 37 °C ± 1 °C**
Working time	180 ± 30 sec	120 ± 30 sec
Curing time (without working time)	300 ± 30 sec	180 ± 30 sec

Mixing ratio
Multilink Automix is always dispensed from the automix syringe in the optimum ratio. Multilink Primer A and Multilink Primer B are mixed in a 1:1 ratio (e.g. 1 drop of Primer A + 1 drop Primer B) or a multiple thereof.

Composition
Multilink Automix
The monomer matrix is composed of dimethacrylate and HEMA. The inorganic fillers are barium glass, ytterbium trifluoride, spheroid mixed oxide. The particle size is 0.25–3.0 µm. The mean particle size is 0.9 µm. The total volume of inorganic fillers is approximately 40%.

Multilink Primer A and B
Multilink Primer A contains an aqueous solution of initiators. Multilink Primer B contains HEMA, phosphonic acid and acrylic acid monomers.

Metal/Zirconia Primer
The Metal/Zirconia Primer contains phosphonic acid acrylate and methacrylate cross linking agents in an organic solution.

Indication
Multilink Automix and Multilink Primer are used for the permanent cementation of indirect restorations where a strong bond is desired:
– Inlays, onlays, crowns, adhesive bridges, bridges and endodontic posts made of
  • metal and metal-ceramics
  • all-ceramics, in particular opaque zirconium oxide ceramics
  • composites and fiber-reinforced composites

Contraindication
The use of Multilink Automix and Multilink Primer is contraindicated
– if a dry working field cannot be established or the stipulated working technique cannot be applied
– if a patient is known to be allergic to any of the ingredients of Multilink Automix and Multilink Primer A/B.

Side effects
Systemic side effects are not known to date. In individual cases, allergic reactions to single components have been reported.

Interactions
Phenolic substances (e.g. eugenol) inhibit polymerization. Consequently, application of materials containing these substances is to be avoided. Disinfectants with an oxidative effect (e.g. hydrogen peroxide) may interact with the initiator system, which in turn can impair the curing process. Thus, the automix syringe must not be disinfected using oxidative agents. Alkaline jet media (e.g. Cojet) impair the effect of Multilink Primer.

Application
1. Removal of temporary restoration and cleaning of the cavity
Remove possible residue of the temporary luting cement from the cavity or preparation with a polishing brush and an oil- and fluoride-free cleaning paste. Rinse with water spray. Subsequently, dry with water- and oil-free air.

2. Try-in of the restoration and drying
Next, the shade, fit and occlusion of the restoration can be checked. Care should be taken when checking the occlusion of fragile and brittle ceramic materials before they are permanently cemented as there is a risk of fracture. If necessary, make corrections with fine diamonds at medium speed and with slight pressure using copius amounts of water. Polish ground surfaces. When applying an adhesive luting technique with composites, absolute isolation of the operative area – preferably with a rubber dam such as OptraDam, alternatively with cotton rolls and saliva ejector – is required.

3. Pre-treatment of the restoration
Pre-treat restorations according to the instructions of the manufacturer, otherwise:

3.1 Non-precious/precious metal
a) Sandblasting (micro-mechanical bond) + Metal/Zirconia Primer
– Sandblast the restoration surface (sandblasting parameters according to the instructions of the manufacturer of the restorative material)
– Clean the restoration in an ultrasonic unit for approximately 1 minute.
– Rinse the restorations thoroughly with water spray and dry with oil-free air
– Apply the Metal/Zirconia Primer to the pre-treated surfaces with a brush or microbrush and let it react for 180 seconds. Subsequently, disperse it with a strong stream of air.
– **IMPORTANT!** In order to achieve a reliable bond, do not clean the metal surfaces with phosphoric acid.

b) Alternative: Silicatization (mechanical-chemical bond, especially recommended for high-gold alloys)
The bond strength can be optimized through silicatization and subsequent silanization with a standard silanizing agent (e.g. Monobond-S). Pre-treatment according to the instructions of the manufacturer.

3.2 Glass-ceramics (e.g. IPS Empress, IPS e.max ZirPress, IPS e.max Press, IPS e.max CAD)
– Etch with 5% hydrofluoric acid (e.g. IPS® Ceramic etching gel) for 60 seconds (IPS Empress) or 20 seconds (IPS e.max ZirPress, IPS e.max Press, IPS e.max CAD)
  For all other products, observe the instructions of the manufacturer.
– Thoroughly rinse the restoration with water spray and dry with oil-free air.
– Apply Monobond-S to the pre-treated surfaces with a brush or microbrush and let it react for 60 seconds. Subsequently, disperse it with a strong stream of air.

3.3 Lab-fabricated composite restorations
– Sandblast the restoration surfaces (according to the manufacturer's instructions).
– Clean the restoration in an ultrasonic unit for approximately 1 minute.
– Rinse the restorations thoroughly with water spray and dry with oil-free air.
– Apply Monobond-S to the pre-treated surfaces with a brush or microbrush and let it react for 60 seconds. Subsequently, disperse it with a strong stream of air.

3.4 Zirconium oxide (e.g. IPS e.max ZirCAD) and aluminium oxide ceramics
– Sandblast the restoration surface (sandblasting parameters according to the instructions of the manufacturer of the restorative material).
– Clean the restoration in an ultrasonic unit for approximately 1 minute.
– Rinse the restorations thoroughly with water spray and dry with oil-free air.
– **IMPORTANT!** In order to achieve a reliable bond, do not clean the metal surfaces with phosphoric acid.

a) Bond strength to zirconium oxide and aluminium oxide restorations can be optimized by chemical adhesion with the placement of the Metal/Zirconia Primer.

– Apply the Metal/Zirconia Primer to the pre-treated surfaces with a brush or microbrush and let it react for 180 seconds. Subsequently, disperse it with a strong stream of air.

b) Alternative pre-treatment for zirconium oxide and aluminium oxide ceramics:

– Apply a wetting agent* (silane coupling agent, e.g. Monobond-S) to the inner surface of the restoration. Let it react for 60 seconds and disperse it with air.

*A wetting agent may improve the adaptation of the cement and initial bond strengths. However, no chemical bond is established by the use of a silane or a wetting agent other than the Metal/Zirconia Primer.

4. Mixing of Multilink Primer A and Multilink Primer B

Mix the two Multilink Primer liquids A and B in a 1:1 mixing ratio (e.g. 1 drop of Primer A and 1 drop of Primer B). The mixed Primer A/B is solely self-curing and does not need to be protected against light, but it must be applied within 10 minutes.

5. Application of the mixed Multilink Primer A/B to the enamel and the dentin

Apply the mixed Multilink Primer A/B to the entire tooth surface (cavity, prepared tooth) using a microbrush – starting from the enamel and scrubbing with slight pressure for 15 seconds. A reaction time of 30 seconds is recommended on the enamel and 15 seconds on the dentin. The applied primer is subsequently dried with water- and oil-free air. As the Primer is solely self-curing, no light-curing is necessary.

6. Application of Multilink Automix to the restoration

For each application place a new automix tip on the syringe. Dispense Multilink from the automix syringe and apply the desired quantity directly onto the restoration. As the luting material will cure in the partially used mixing tip, it may serve as a seal for the contents of the syringe until needed once again (replace with a new tip just before the next use).

Note

Multilink Automix should be used quickly after it has been dispensed from the automix syringe and the restoration inserted. As soon as Multilink Automix contacts with mixed Multilink Primer A/B, the self-curing reaction is accelerated so that the curing time is shortened.

Apply Multilink Automix directly to the inner surface of the restoration. The application of Multilink directly to the preparation or the cavity, which has been pre-treated with Multilink Primer, is not indicated as this would lead to a considerable acceleration of the curing process and thus may cause improper fit.

7. Placement of the restoration and removal of excess cement

a) solely self-curing

Seat the restoration in place and fix/hold. Remove excess material immediately with a microbrush/brush/foam pellet/dental floss or scaler. Make sure to remove excess material in time, especially in areas that are difficult to reach (proximal or gingival margins). Due to the reaction between Multilink Automix and Multilink Primer A/B, a high bond strength and a high degree of cure is achieved only a few minutes after the restoration has been seated in place.

b) self-curing with additional light-curing (quarter technique, indicated for cases with up to 2 bridge abutments = 3- to 4-unit bridges)

Seat the restoration in place and fix/hold. Excess material is light-cured with the polymerization light (e.g. bluephase, LOP mode, approx. 650 mW/cm²) for 2-4 seconds per quarter surface (mesio-oral, disto-oral, mesio-buccal, disto-buccal) at a distance of approx. 0-10 mm. Subsequently, it can be easily removed with a scaler. Make sure to remove excess material in time, especially in areas that are difficult to reach (proximal or gingival margins). Subsequently, light-cure all margins again for 20 seconds (e.g. bluephase, HIP mode, approx. 1200 mW/cm²).

c) self-curing with additional light-curing (quarter technique, indicated for cases with up to 6 bridge abutments = circular bridges)

Light-curing and subsequent removal of excess:
Seat the restoration in place and fix/hold. Excess material on all abutments is light-cured with the polymerization light (e.g. bluephase, LOP mode, approx. 650 mW/cm²) for 1 second per quarter surface (mesio-oral, disto-oral, mesio-buccal, disto-buccal) at a distance of approx. 0-10 mm. Subsequently, it can be easily removed with a scaler. Make sure to remove excess material in time, especially in areas that are difficult to reach (proximal or gingival margins). Subsequently, light-cure all margins again for 20 seconds (e.g. bluephase, HIP mode, approx. 1200 mW/cm²).

Note

As with all composites, Multilink Automix is subject to oxygen inhibition. This means that the surface layer (approximately 100 µm) does not polymerize during curing, as it comes in contact with atmospheric oxygen. Therefore, an option would be to cover the restoration margins with glycerine gel/air block (e.g. Liquid Strip) after the removal of excess and rinse it off after complete polymerization.

8. Finishing of the restoration

– Apply finishing and polishing strips in the proximal regions
– Check occlusion and function and make corrections if necessary.
– Polish restoration with polishers (Astropol®, OptraPol® or OptraFine) or discs.

Special instructions for the cementation of endodontic posts:

1. For the cementation of endodontic posts, thoroughly clean the root canal. (If a eugenol-based sealer has been used and remaining sealer/eugenol may inihibit the polymerization of the luting composite.) The root canal and occlusal surface of the preparation are ideally coated with the mixed Multilink Primer A/B using the thin (violet) microbrushes and left to react for about 15 seconds. Remove excess material from the root canal using paper tips.

2. Coat the endodontic post, which has been prepared according to the instructions of the post manufacturer, with the mixed Multilink cement. **IMPORTANT!** Do not lentulate the Multilink cement into the root canal that has been wetted with Multilink Primer A/B. Otherwise, premature curing might occur which possibly prevents the post from being placed into its required position.
3. The endodontic post is placed, thus producing excess cement.
4. The excess Multilink cement can be distributed across the occlusal preparation surface for total coverage. Then light-cure Multilink Automix for 20 seconds, maintaining the post in place with the polymerization light.
5. The core build-up material (e.g. MultiCore®) can then be directly applied onto Multilink Automix, which serves as bonding agent, and cured according to the instructions of the manufacturer (light-curing).

Warning
Unpolymerized Multilink Automix pastes and the Multilink Primer liquids may cause slight irritations. Avoid contact with the skin, mucous membrane or eyes. If Multilink comes into contact with the eyes, immediately rinse with water and, if required, seek medical advice. If the material comes into contact with the skin, rinse with copious amounts of water. Commercial medical gloves do not provide protection against the sensitizing effect of methacrylates.

Storage
- Do not use Multilink Automix and Multilink Primer after the expiry date.
- Cool storage (2–8 °C/ 36-46 °F) for Multilink Automix, Multilink Primer and Metal/Zirconia Primer.
- Multilink automix syringe and primer bottles should be closed immediately after use.
- Shelf life: see expiration date.

Keep material out of the reach of children!
For use in dentistry only!

Date information prepared: 10/2008; Rev. 0

Manufacturer:
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MSDS available online at www.ivoclarvivadent.com