

Comcord

composite and fibre matrix

SIMPLE AND EASY FOR EVERYONE.

D L S DENTAL LIFE
SCIENCES

 **ARKONA**

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SIMPLE AND EASY FOR EVERYONE.



SIMPLE

- QUICK APPLICATION
- MODELLING IS AS EASY AS A FILLING
- NO TRAINING REQUIRED

FOR EVERYONE

- MULTIPLICITY OF INDICATIONS
- LOW-COST PROCEDURES
- NO TRAINING REQUIRED

APPLICATION EXAMPLES



05. LARGE FILLINGS, ONLAYS - A TOOTH WITH EXTENSIVE CORONAL DAMAGE BUT WITHOUT THE NEED FOR ROOT CANAL THERAPY

Extensive crown damage is particularly difficult to rebuild when it reaches below the gingival margin and when it involves the loss of contact points. A COMCORD reinforced onlay is a quick and effective way to solve this problem. COMCORD helps restore the contact points, it adheres tightly to the tooth surface and protects the gum by preventing plaque build up that causes inflammation. The total procedure takes approximately 15 minutes.

Using COMCORD as a support for large fillings ensures the same benefits as above.



07. CROWNS - CORE BUILD UP

COMCORD can be used for all types of crown reconstruction, regardless of shape of the core. Permanent and highly aesthetic work can be completed in 30-40 minutes.



12. CROWNS - CROWN RESTORATION WHERE THERE HAS BEEN ROOT CANAL THERAPY

COMCORD re-establishes the contact points, adheres closely to the remaining tooth. COMCORD with its fibre re-inforcement is much more durable and faster to apply than layering composite. It will withstand forces greater than those experienced by chewing. COMCORD's close adherence to the remaining tooth protects the gum from interproximal inflammation.



14. BRIDGE - SINGLE-TOOTH RESTORATION

A single missing tooth is the most common type of tooth loss. A COMCORD reinforced bridge enables a one-visit tooth replacement which takes no more than 30-40 minutes.



15. STABILISING SPLINT - MOBILE TEETH

Periodontal disease is usually associated with progressive tooth mobility. A COMCORD splint is a durable and very simple way of achieving tooth stabilisation. The procedure takes approximately 20-30 minutes and it can be easily performed in any dental office.



17. SPLINT-BRIDGE - MOBILE TEETH WITH A SINGLE-TOOTH RESTORATION

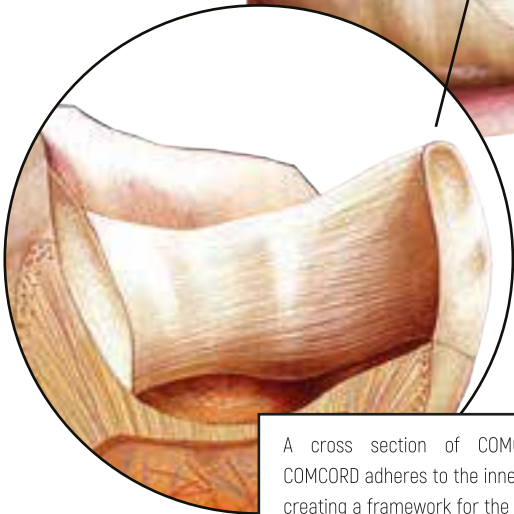
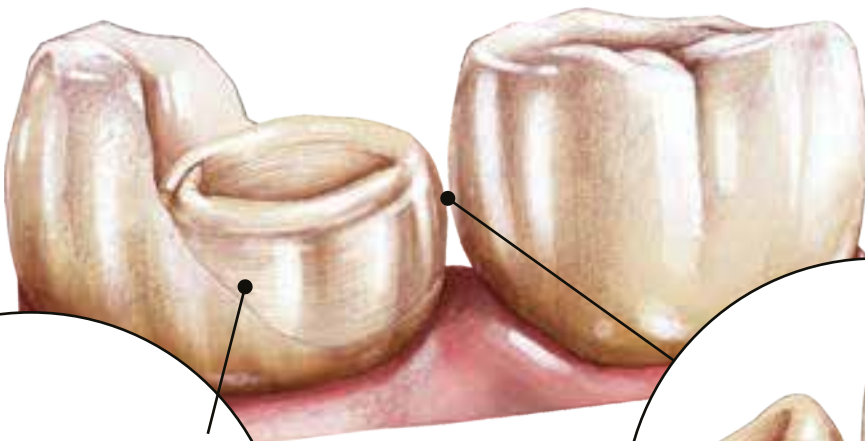
In the most severe cases of periodontitis there is associated tooth loss. In such cases the best solution is to make a splint with the replacement teeth attached. A COMCORD splint enables permanent stabilisation of the preserved mobile teeth as well as aesthetic replacement of the lost ones.

PROBLEM



A tooth prepared for a large filling or onlay

COMCORD APPLICATION OPTIONS

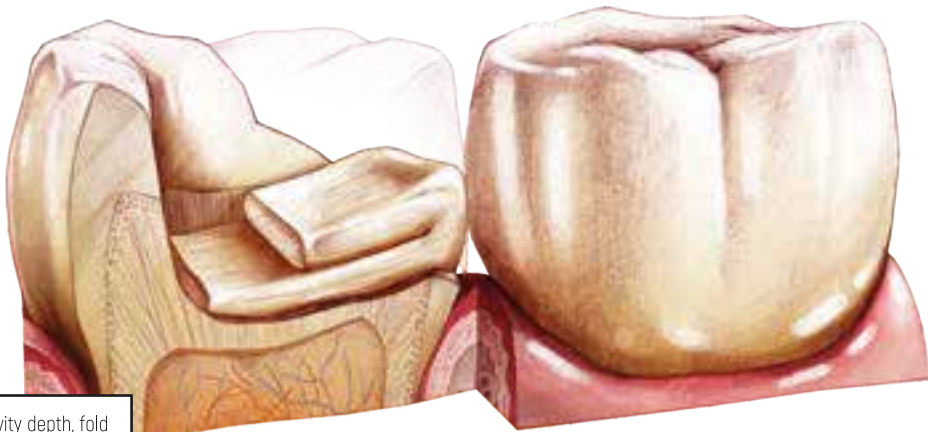
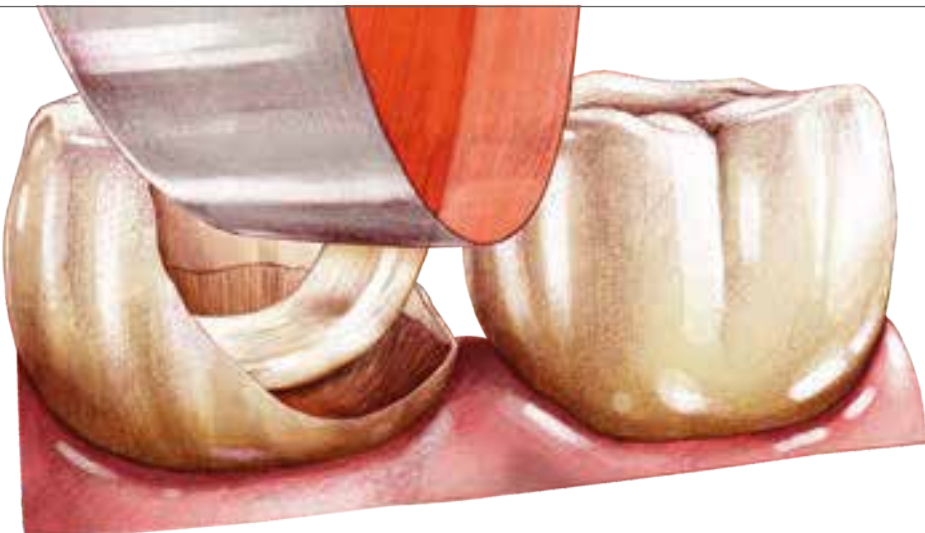


A cross section of COMCORD reinforcement: COMCORD adheres to the inner surface of the tooth, creating a framework for the restoration.

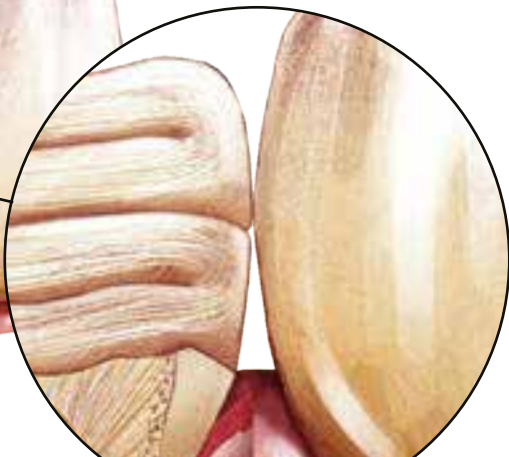
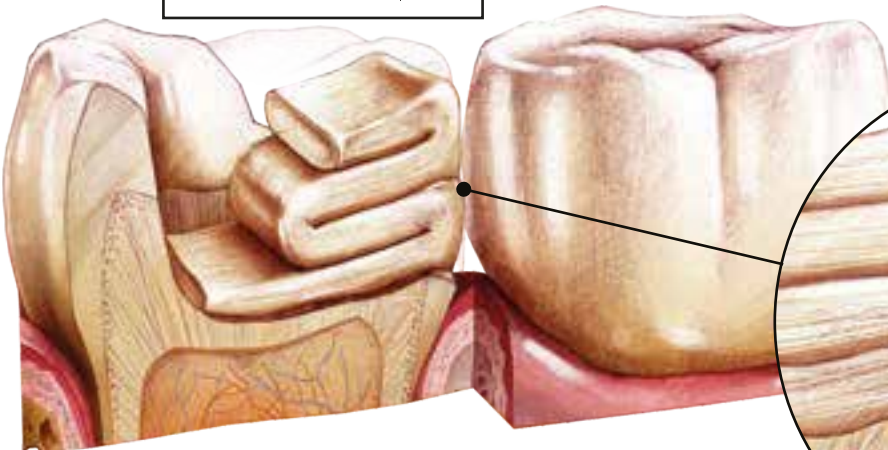


A correctly reconstructed contact point, ensuring a proper protection for interdental papillae

COMCORD APPLICATION OPTIONS



Depending on the cavity depth, fold COMCORD several times in order to reconstruct the contact point.



A correctly reconstructed contact point.
Cover the external surface of the reconstruction with glaze or flow-type composite to obtain a better adhesion to the adjacent tooth.

RESULT



PROBLEM

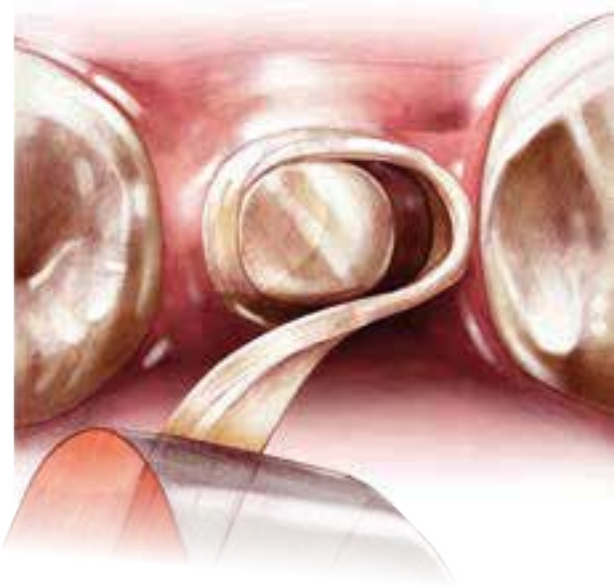


A prepared core (small tooth)

The first stage of COMCORD placement (top view)



The second stage of COMCORD placement: contact point reconstruction



The picture shows core build up with contact point reconstruction. Such COMCORD application requires more attention than placing the fibre directly on the core (page 08.) however, it makes crown reconstruction quick and easy.



In the case of smaller teeth (such as premolars, canines and incisors), contact point reconstruction is possible with a single COMCORD ring.

COMCORD APPLICATION OPTIONS

CROWN - CORE BUILD UP, SMALL TEETH AND MOLARS

PROBLEM



A prepared core (small tooth)



A prepared core (molar)

COMCORD APPLICATION OPTIONS



COMCORD reinforcement made directly on the core (top view)



COMCORD reinforcement made directly on the core (side view)

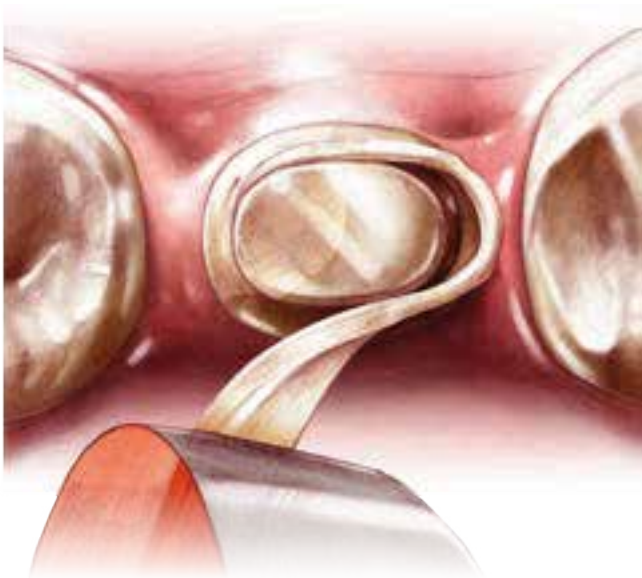
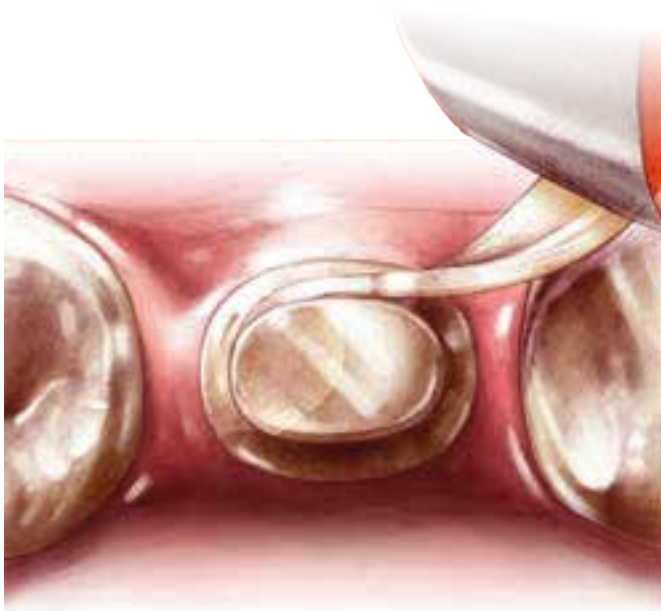
Such reinforcement is much easier to make than the one involving contact point reconstruction (page 07.) however, it requires more effort during composite crown reconstruction.

PROBLEM



A prepared core (molar)

COMCORD APPLICATION OPTIONS

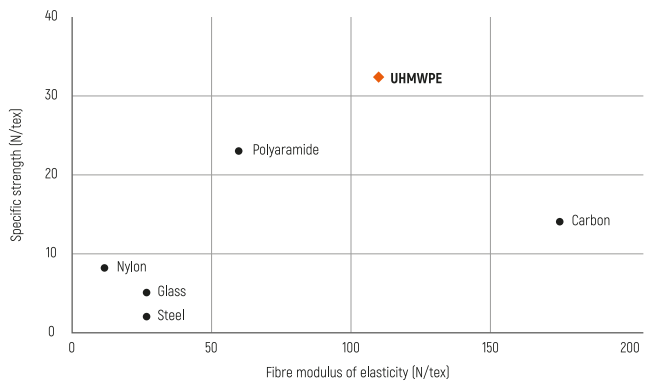


An example of how to make a composite crown support. A ring of COMCORD filled with composite ensures the durability of the crown. COMCORD makes the crown resistant to forces greater than when composite is used alone.



In the case of longer crowns, it is best to place an additional COMCORD ring for an easy reconstruction of contact points. Such COMCORD application requires more attention than placing the fibre directly on the core (page 08.) however, it makes crown reconstruction quick and easy.

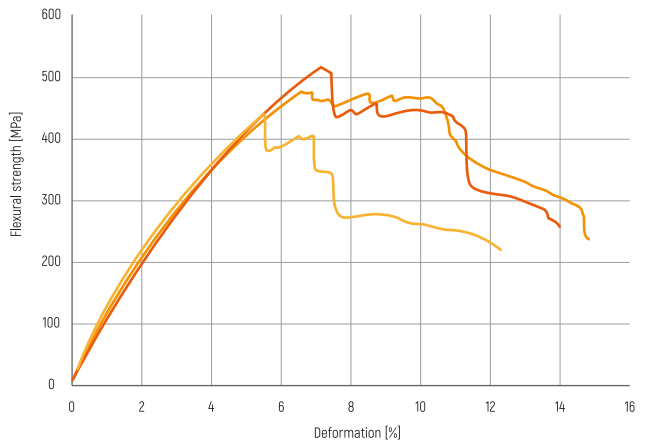
Raw UHMWPE fibres have the highest specific strength of all known fibres and a high modulus of elasticity. The durability of glass fibres is incomparably lower.



FLEXURAL STRENGTH
in accordance with EN ISO 4049

The test was performed on composite bars reinforced with two layers of COMCORD.

Flexural strength of composite bars reinforced with two layers of COMCORD oscillates around 500 MPa.

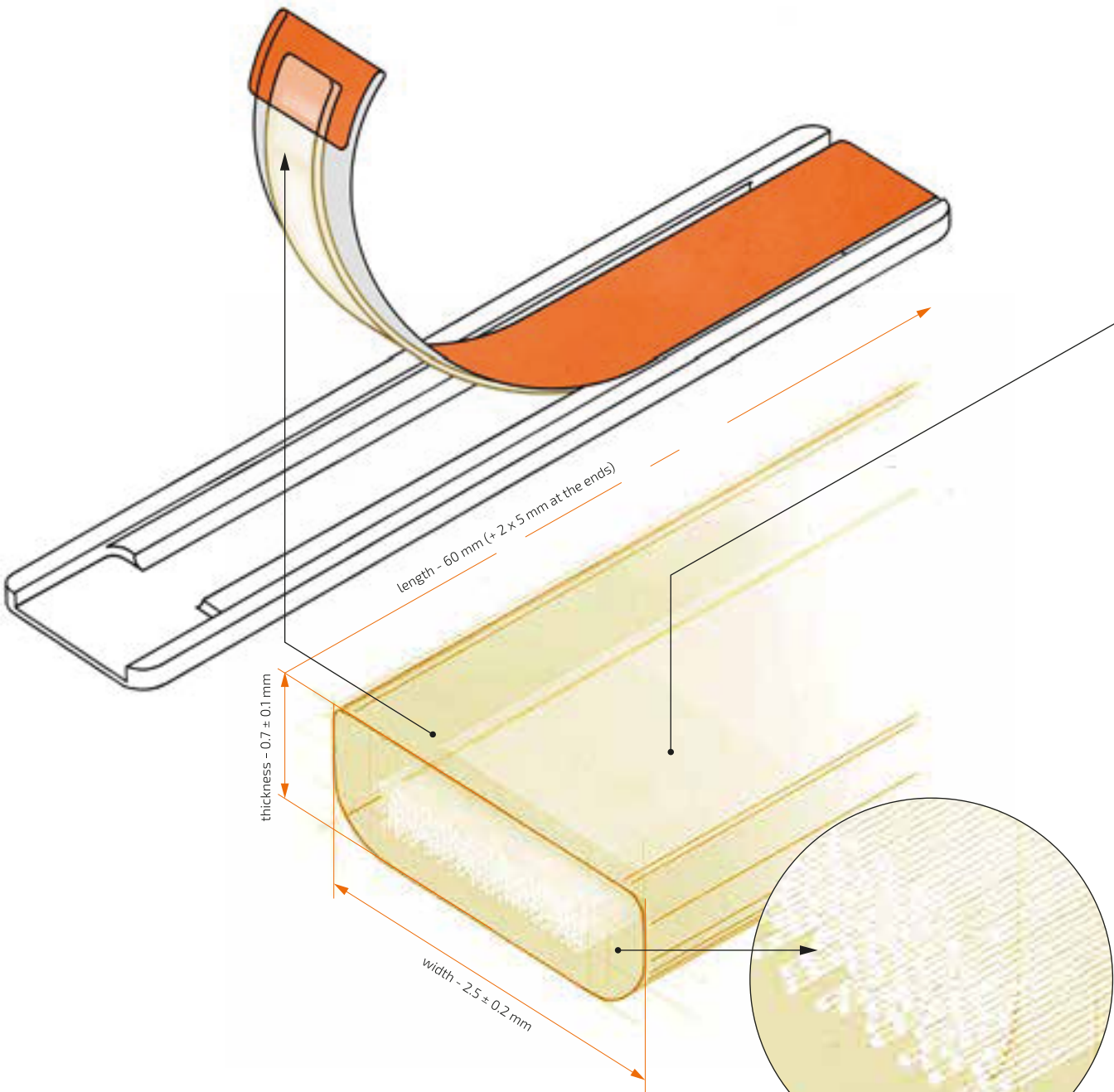
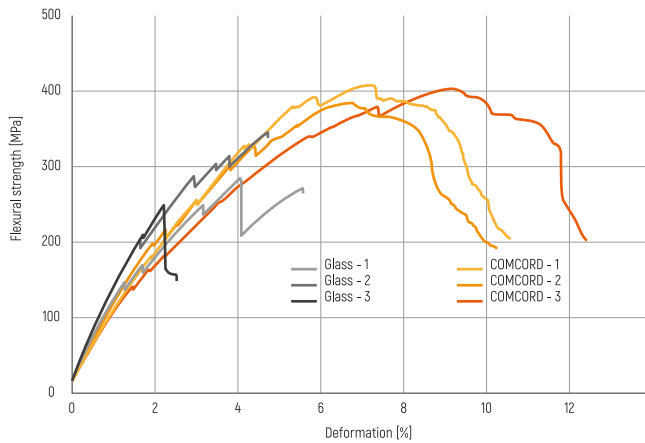


FLEXURAL STRENGTH (FIBRE COMPARISON)
in accordance with EN ISO 4049

The test was performed on composite bars reinforced with a single fibre (glass or COMCORD).

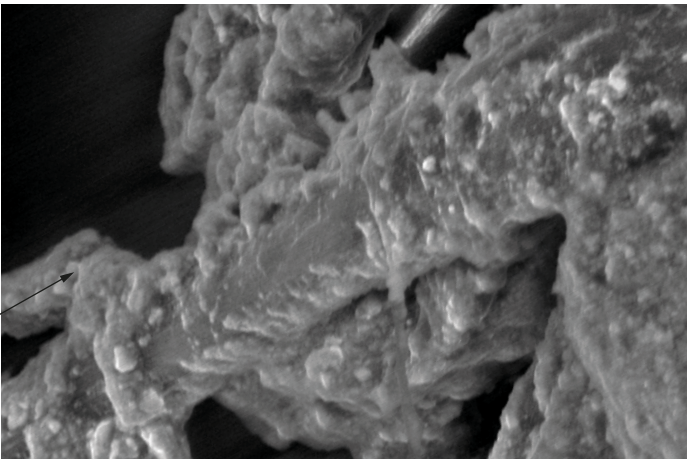
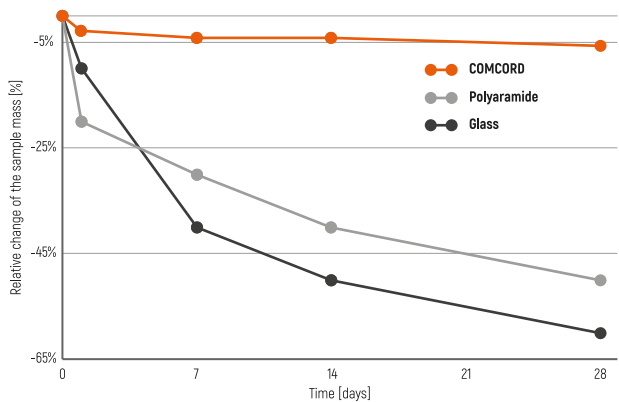
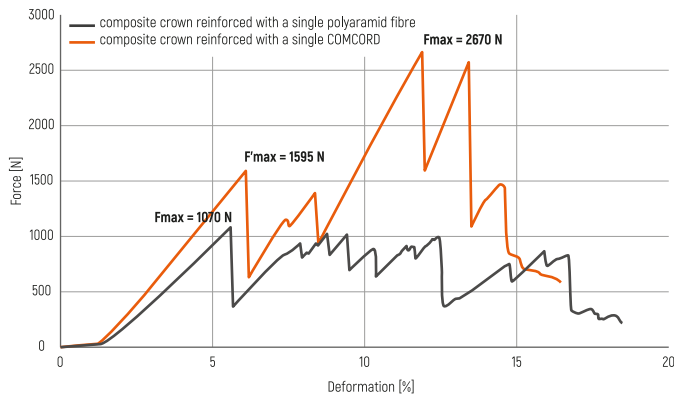
Flexural strength of composite bars reinforced with a single layer of COMCORD oscillates around 400 MPa. Flexural strength of composite bars reinforced with glass fibres is at least 25% lower.

COMCORD reinforced composite bars are able to withstand twice the strain (compare to glass fibres) without breaking.

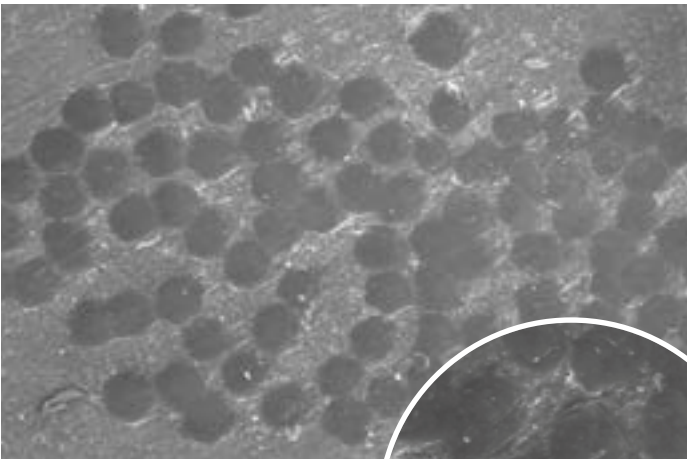


COMPRESSIVE STRENGTH OF FIBRE-REINFORCED COMPOSITE CROWNS

The compressive strength of composite crowns reinforced with a single COMCORD ring is very high. A COMCORD reinforced crown withstands forces exceeding 2 500 N.



Composite covered filament (2 500 x)



Internal structure of polymerised COMCORD - cross section (2 000 x)

COMPOSITION

COMCORD is a system of 1056 UHMWPE (ultra high molecular weight polyethylene) filaments, running parallel to one another, embedded in a composite cover based on dimethacrylate resins. COMCORD undergoes free radical polymerisation when activated by visible light at wavelengths between 400 nm and 500 nm (blue region).

POLYMERISATION TABLE

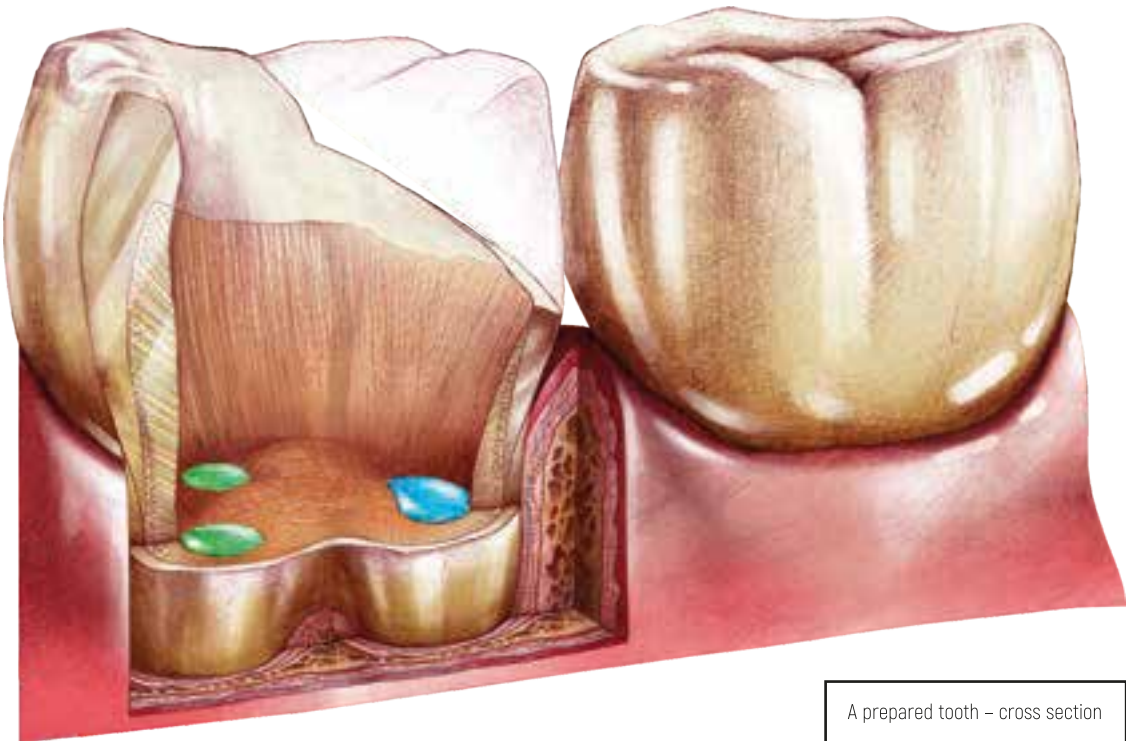
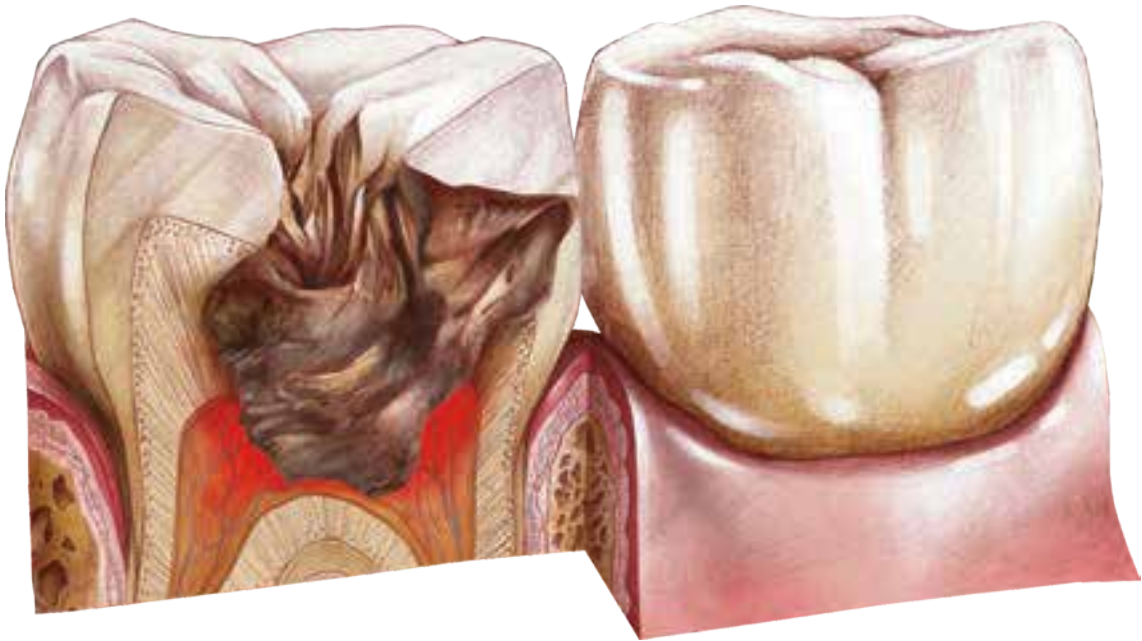
| | | | |
|--------------------|--------------|-------------------|---------------|
| Lamp power density | < 500 mW/cm² | 500 - 2000 mW/cm² | > 2000 mW/cm² |
| Curing time | 40 s | 20-30 s | 10 s |

HYDROLYTIC STABILITY (RESISTANCE TO WET ENVIRONMENT)

The graph illustrates mass changes of three different fibres during their aging in a solution of artificial saliva at 37°C.

It is evident that the mass of COMCORD changes only slightly during the entire test. It means that, compare to all tested fibres available on the market, COMCORD exhibits the highest resistance to wet environment. Glass fibres exhibit the lowest hydrolytic stability.

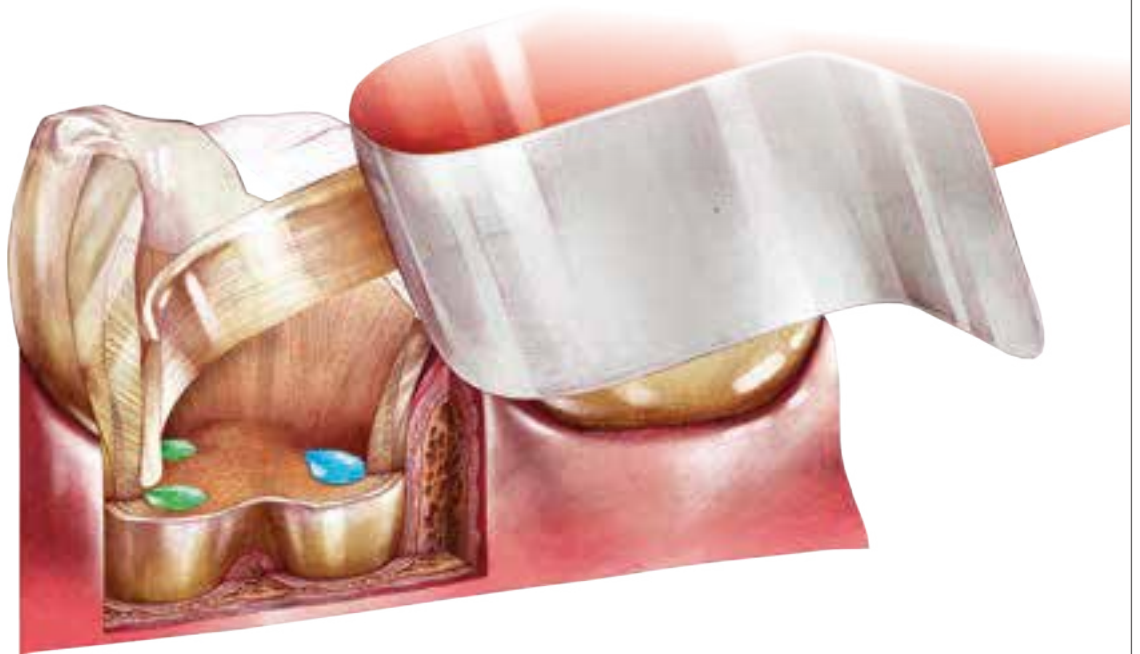
PROBLEM



A prepared tooth – cross section

CROWNS - CROWN RESTORATION WHERE THERE HAS BEEN ROOT CANAL THERAPY

COMCORD APPLICATION OPTIONS



For fast reconstruction of the contact point, form COMCORD into a ring. Such a COMCORD framework ensures a quick and easy filling of the cavity.

RESULT



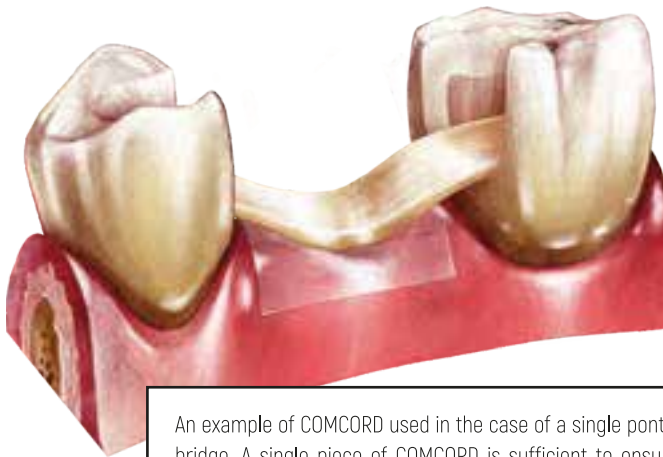
Place additional rings of COMCORD as required to make large, durable restorations.

BRIDGE - SINGLE-TOOTH RESTORATION

PROBLEM



SOLUTION



An example of COMCORD used in the case of a single pontic bridge. A single piece of COMCORD is sufficient to ensure the strength and stability of the composite restoration.

RESULT



STABILISING SPLINT - MOBILE TEETH

PROBLEM



Very loose teeth: wide interdental spaces, receding gums, atrophy of the alveolar bone; some teeth are displaced and rotated around the long axis.

PREPARATION



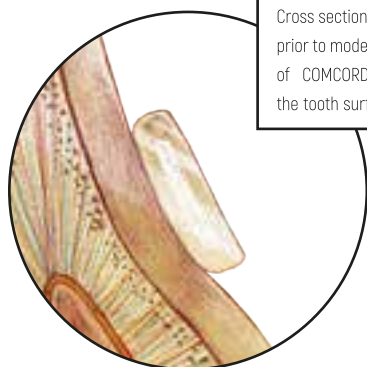
The image shows cleaned and temporarily stabilised teeth before the splinting procedure. Correct and secure stabilisation ensures that the teeth will be in occlusion; it also enables an easy modelling of the splint.

SOLUTION - STAGE I

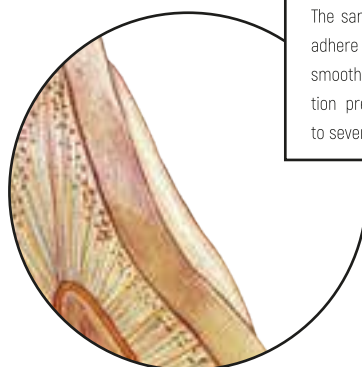


When splinting, position one end of COMCORD on the first stable tooth nearest to the loose teeth. Polymerise COMCORD in sections no longer than 5-8 mm (approximately the width of the light guide). Such staged splinting enables a precise insertion of COMCORD into interdental spaces.

STABILISING SPLINT - MOBILE TEETH



Cross section of a tooth with COMCORD in place: prior to modelling and polymerisation, the edges of COMCORD do not yet lie flush against the tooth surface.



The same tooth after polymerisation: the edges adhere perfectly to the tooth, forming one smooth surface. Such a precisely made restoration prevents food impaction that often leads to severe periodontal problems.



During the subsequent stages of splinting, COMCORD is placed on the mobile teeth intended for stabilisation. Note: COMCORD has to be inserted into interdental spaces in such a way as to fit snugly on three surfaces of each splinted tooth (i.e. each tooth has to be surrounded by COMCORD on three sides).



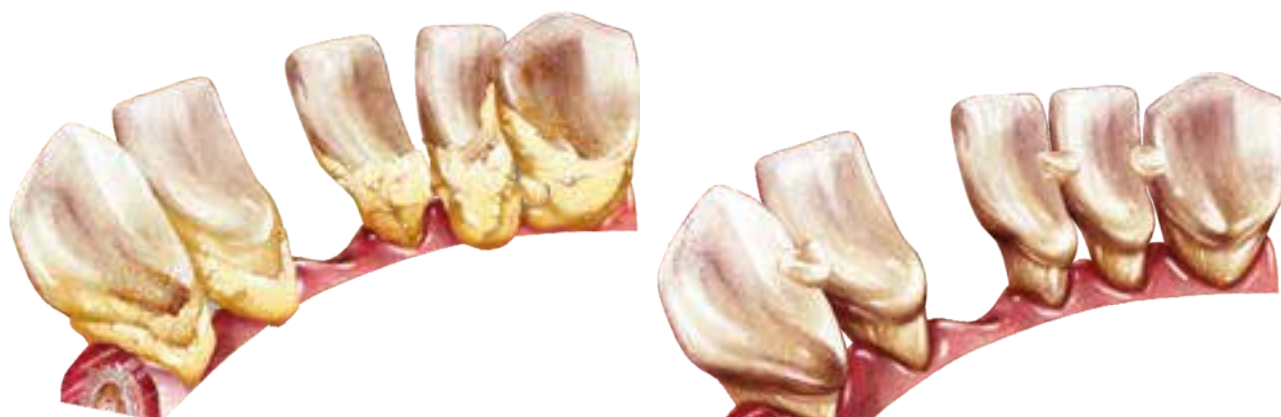
Stabilising splint in place: chewing forces are now evenly spread; further tooth mobilisation has been prevented. With proper oral hygiene, such teeth can remain completely stable for many years. Natural teeth have been preserved without implant surgery.

SOLUTION - STAGE II

RESULT

SPLINT-BRIDGE - MOBILE TEETH WITH A SINGLE-TOOTH RESTORATION

PROBLEM



PREPARATION

Teeth are stabilised in order to ensure their correct positioning during the splinting procedure. Small drops of flowable composite should be applied into interdental spaces around the area intended for splinting.

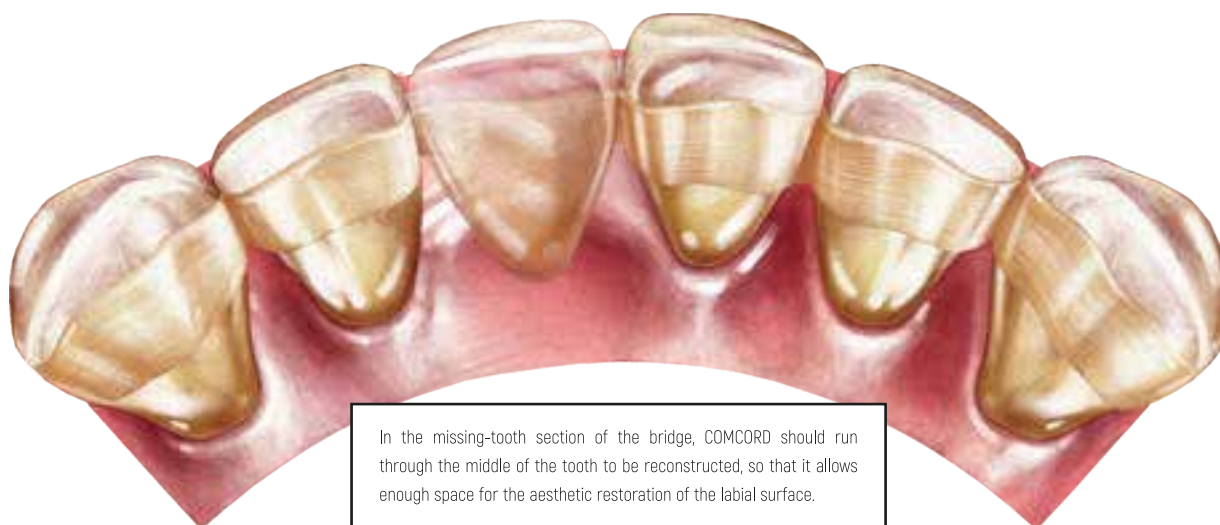
SOLUTION - STAGE I



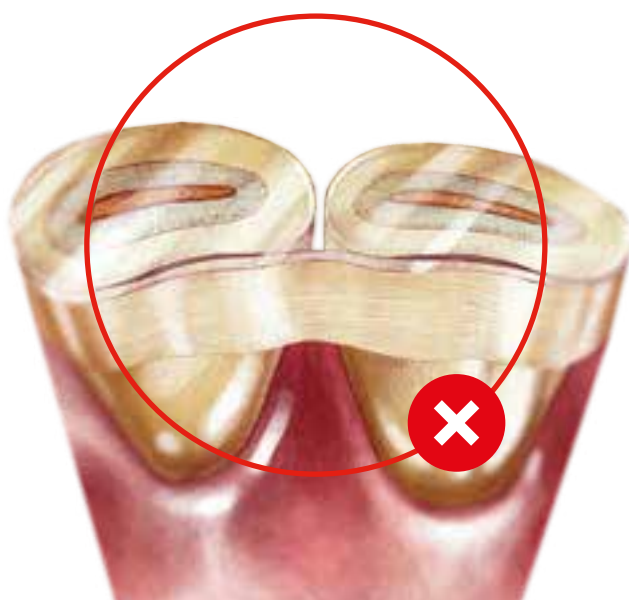
SOLUTION - STAGE II



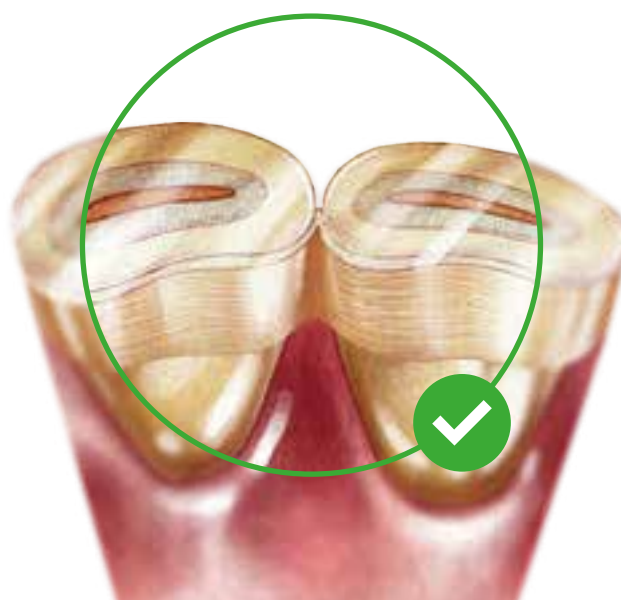
RESULT



In the missing-tooth section of the bridge, COMCORD should run through the middle of the tooth to be reconstructed, so that it allows enough space for the aesthetic restoration of the labial surface.



Placing COMCORD only on one surface of each tooth, does not guarantee the highest strength restoration. For the greatest durability and the best mechanical performance, insert COMCORD deeply into interdental spaces so it fits snugly on three surfaces of each splinted tooth (see the image on the right).



COMCORD is positioned into the interdental spaces; this ensures the maximum stability and durability of the splint.

INDICATIONS

- splinting of loose or avulsed teeth
- support for permanent composite restorations such as fillings, crowns, bridges, onlays and inlays
- composite bridges: conventional, Maryland and Rochette types
- orthodontic retainers

GENERAL INSTRUCTIONS FOR USE

1. Prepare teeth in the normal way.
2. Isolate the gingiva in order to protect it from the contact with unpolymerised COMCORD:
 - a) if using an indirect method, as in the case of a bridge or a crown, protect the teeth with vaseline or a rubber dam, take an impression and cast a model;
 - b) if using a direct method, as in the case of splinting, isolate the operating field from blood and saliva contamination, etch, dry and apply a bonding system.
3. Polymerise in sections no longer than 5-8 mm [approximately the width of your light guide], referring to the polymerisation table:

| Lamp power density | < 500 mW/cm ² | 500 - 2000 mW/cm ² | > 2000 mW/cm ² |
|--------------------|--------------------------|-------------------------------|---------------------------|
| Curing time | 40 s | 20-30 s | 10 s |

COMCORD is sensitive to visible light. To avoid accidental polymerisation, release the product from the plastic former in sections, making sure the protective covering shields the unpolymerised part of COMCORD from light. COMCORD should only be handled using instruments. Do not touch it with your fingers or contaminate it in another way.

COMCORD can be used to form the external layer of composite restorations, regardless of their size and shape. An unlimited number of COMCORD layers can be built up provided the occlusal space is sufficient and the outer layer of the device remains undisturbed. The composite layer covering the filament core of COMCORD is approximately 0.3 mm. A single, external fracture of a filament will not affect the strength of layered COMCORD restorations; however, in order to maintain a smooth surface, the damaged part should be covered with a thin layer of composite or glaze.

COMCORD can be used for direct reconstruction of contact points. The shape of the reinforcement is not important. Optimal mechanical strength of the work is ensured by running COMCORD along the entire length of the restoration.

COMCORD can be used alone or it can be placed in one or several layers.

COMCORD is compatible with any composite material based on dimethacrylate resins. In the case of temporary splinting, mark a clear boundary between COMCORD and the tooth by placing a contrasting coloured composite, such as Colourflow, as the first layer. This will assist subsequent removal of the splint.

PRODUCT USE

1. Open the aluminum pouch and remove the device. Place it with the protective covering to the light. Do not remove COMCORD from the white plastic former.
2. Measure out, and if necessary cut off, the appropriate length of COMCORD together with the plastic former. We recommend cutting the device with disposable blades after having placed it on a hard surface. Store the remaining part in the aluminum pouch.
3. Grasp the end and hold it firmly, slowly pull COMCORD out of the plastic former. Note: COMCORD can only be pulled out of the plastic former by one of the orange ends, never by the end which has been previously cut.
4. Remove the protective covering from COMCORD in sections and start placing it.
5. Begin by placing COMCORD at one of its ends in either the deepest, or the most distant, from the labial/buccal surface, part of the prepared tooth. Polymerise in accordance with the polymerisation table provided. Continue to place the remaining, unpolymerised part, section by section, removing the protective covering and polymerising the product until it runs to the opposite side of the preparation. If necessary, join two pieces of COMCORD by overlapping them by 2 mm - this will maintain the strength of the restoration.
6. Subsequently, either further layers of COMCORD or layers of composite can be built up on the prepared reinforcement, in accordance with clinical requirements. The best results are obtained by combining COMCORD with the following materials: Create, Silkflow, Colourflow, Colourant, Glaze - for more information visit our website at www.dentallifesciences.com
7. When using the in direct method, cement the restoration in position - for more information visit our website at www.dentallifesciences.com
8. Adjust to the bite and aesthetics of the neighbouring teeth.

PRECAUTIONS

Protect the gingiva from the contact with an unpolymerised product. Avoid contact of an unpolymerised product with skin, eyes and soft tissues of the mouth. In case of such contact, rinse with plenty of water. In case of any symptoms, consult a doctor giving information about the product. In case of allergy, stop using the product. In case of delayed allergic reaction, remove the restoration. In case of swallowing or aspiration into the respiratory tract, seek immediate medical attention.

LIMITATIONS IN USAGE, INTERACTIONS

Ensure sufficient polymerisation of COMCORD, especially in places which are difficult to access. Insufficiently polymerised product can be allergenic. Do not use in direct contact with materials containing eugenol. These materials disrupt polymerisation and may affect the mechanical properties of the restoration.

STORAGE

Store the material at a temperature between 3°C and 28°C [37-82 °F]. After opening, COMCORD retains all its properties for up to 12 months if it is stored at a temperature between 3°C and 5°C [37-41 °F].

CONTRAINDICATIONS AND WARNINGS

Use in accordance with the manufacturer's instructions. Do not use in patients with a known allergy to methacrylates. Keep out of reach of children. Keep the material away from sources of heat. Protect from light. Do not use after the expiry date. Instruct the patient on proper oral hygiene. For use by dentists and dental technicians only.



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