Technical Guide

SR Nexco®

Light-curing composite

Making People Smile

ivoclar


SR Link
ivoclar vivadent
Modelling Liqui
A2
SR Nexco®
2 ml
Exp. 2025-03-25

SR Nexco®

The light-optical properties and large selection of SR Nexco pastes make everyday laboratory tasks easier. Enjoy the individuality offered by the composite's versatile range of applications.

The composition of SR Nexco contains a high proportion of micro-opal fillers to provide optical and esthetic properties based on the natural model. The material's opalescence, fluorescence and translucency reflect the dynamic light effects of natural teeth.[1]

Please observe the regulatory Instructions for Use (www.ivoclar.com/eIFU).

[1] At natural light conditions. The use of artificially generated UV or near UV light may result in a different impression.

Table of Contents

Explanation of symbols

Symbol	Explanation
	Important
	Information
	Contraindication
	Tips and tricks
	Note on polymerization
	See Instructions for Use

Product information

SR Nexco®

Material

SR Nexco® Paste is a purely light-curing lab composite with micro-opal fillers for framework-based and framework-free dental restorations.
As the desired shades can be reproduced even with varying layer thicknesses, a true-to-nature appearance[1] can be achieved for fixed and removable dental restorations, even with artificial gingiva. The high content of inorganic opal fillers affords optimum benefits in terms of abrasion, discolouration, processing and surface gloss.

Types of restorations

Fixed denture prosthetics

- **Framework-based**
  - Crowns
  - 3–14-unit bridges
- **Framework-free**
  - Inlays/onlays/veneers
  - Anterior crowns

Techniques

Modification and customization of denture teeth, denture base materials and Telio CAD.

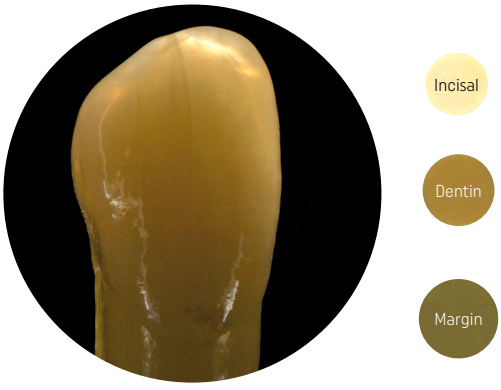
Physical properties

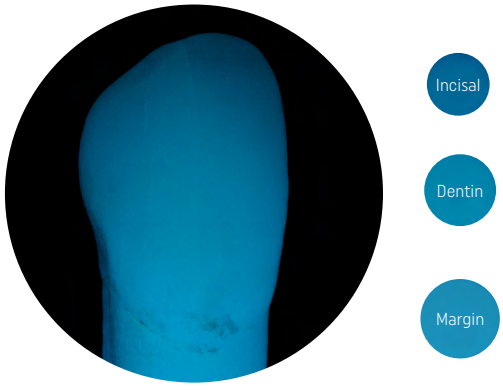
Together with the respective matrix the inorganic micro-opal fillers impart a homogeneous structure to the material. The balanced ratio between these two components results in excellent physical properties achieved with the most popular curing units available on the market.

Esthetic properties

In **transmitted light**, the full range of light-optical properties of SR Nexco Paste becomes evident: The opalescence and translucency of SR Nexco restorations correspond to the dynamic light effects of natural teeth[1]. The light behaviour is very similar to that of natural teeth in all areas: the tooth neck, the dentin areas and the incisal area.

This image taken with **incident light** shows the fluorescence and luminosity of SR Nexco restorations. Natural teeth derive a major part of their brightness effect from their fluorescence. This fluorescence plays an important role in the true-to-nature light[1] behaviour of SR Nexco restorations.





[1] At natural light conditions. The use of artificially generated UV or near UV light may result in a different impression.

SR® Accessories

SR Link, 5 ml

SR Link is a metal- and zirconium oxide-composite bonding agent that provides a covalent bond between the metal or zirconium oxide framework and SR Nexco. The bonding system is suitable for use on frameworks made of

- alloys that contain less than 90% gold, palladium and platinum
- alloys that contain less than 50% copper and/or silver
- base metal alloys
- titanium and titanium alloys
- zirconium oxide

SR Modelling Liquid, 5 ml

SR Modelling Liquid is used to wet the dental technician's instruments during modelling and as a modelling aid (wetting of the brush to disperse the material, etc.). SR Modelling Liquid must not be used as a bonding agent for the purpose of modifying the consistency or for subsequent adjustments. Use SR Modelling Liquid only in very low quantities.

SR Gel, 30 ml

SR Gel is a glycerine-based masking gel that is impervious to oxygen. The gel is applied to the restoration before polymerization to minimize the formation of an inhibition layer on the surface of the veneering composite. Consequently, the gel ensures complete curing of the restoration surface. Do not apply too thick a layer of SR Gel.

SR Model Separator, 10 ml

SR Model Separator is suitable for separating working dies during the fabrication of metal-free restorations and for separating adjoining stone surfaces during lab composite veneering.

SR Retention Adhesive, 20 ml

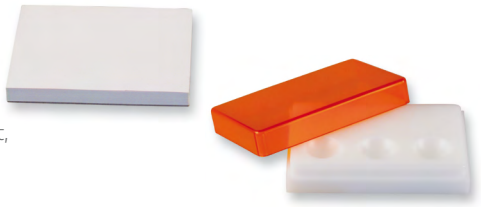
This adhesive varnish is utilized to affix microretention beads to the restoration surfaces after contouring.

SR Micro Retentions, 15 ml

- Microretentions, 200–300 µm

SR Mixing Pad, small
SR Mixing Plate

Depending on the material to be processed, the SR Mixing Pad or SR Mixing Plate may be used. The pad is mainly used to process liquid SR Nexco materials so that time-consuming cleaning of the plate can be avoided. By contrast, the plate is used to mix the more viscous composite materials. The light-protective cover of the plate extends the working time of the materials.



Universal Polishing Paste, 100 ml

The Universal Polishing Paste enables quick and efficient polishing of composite and metal restorations. The paste is particularly suitable for prepolishing and main polishing of SR Nexco veneers.

Universal Holder

The Universal Holder is used to handle disposable brushes, thereby facilitating the working procedures in the dental laboratory.

Disposable Brushes, 50 pcs.

The disposable brushes are particularly suitable for the application of liquid materials, such as SR Model Separator, SR Link and SR Nexco Opaquer.

VivaBrush G

VivaBrush G brushes are used for removing the inhibition layer after polymerizing the opaquer and liner.

Cannulas, 10 pcs.

These application tips can be attached to Liner, Opaquer and Stains syringes. They help achieve more accurate dosing and cleaner application procedures as the extrusion pressure can be controlled.

Cannula Caps, 20 pcs.

The cannula caps prevent the material from drying out or polymerizing prematurely while it is in the cannula and protect it from contamination.

Light-curing conditioner

Modifications and customizations of denture teeth, denture base materials and Telio CAD restorations can be carried out using an MMA-based light-curing conditioner to bond light-curing materials to PMMA (heat- or cold-curing polymers and resin denture teeth) and to SR Nexco.

Practical procedure

Shade determination – tooth shade, die shade

Shade determination of the natural tooth

After tooth cleaning, the tooth shade of the non-prepared tooth and/or the adjacent teeth is determined with the help of a shade guide. Individual characteristics have to be considered when determining the tooth shade. If a crown preparation is planned, for example, the cervical shade should also be determined. In order to achieve the best possible true-to-nature results, shade determination should be carried out in daylight. Furthermore, the patient should not wear clothes of intensive colours and/or lipstick.

Die shade selection

Based on the IPS Natural Die shade guide, a die for a framework-free restoration is fabricated. This die is used as control die in conjunction with the restoration to check the shade.

Practical procedure

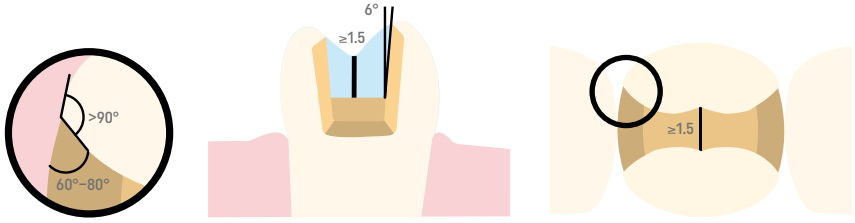
Preparation guidelines and minimum layer thicknesses

Successful results can only be achieved with SR Nexco veneering material if the guidelines and minimum layer thicknesses are strictly observed.

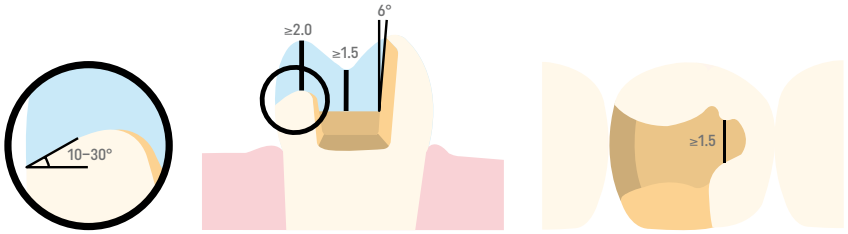
As framework-free SR Nexco restorations are placed using an adhesive cementation method, a tooth-conserving and defect-oriented preparation technique can be used.

Inlays and onlays

Static and dynamic antagonist contacts must be taken into consideration. The preparation margins must not be located on centric antagonist contacts. A preparation depth of at least 1.5 mm and an isthmus width of at least 1.5 mm must be observed in the fissure area. Prepare the proximal box with slightly diverging walls and observe an angle of >90° between the proximal cavity walls and the prospective proximal inlay surfaces. For inlays with pronounced, convex proximal surfaces without adequate support by the proximal shoulder, marginal ridge contacts should be avoided. Round out internal edges and transitions in order to prevent stress concentration within the composite material. Eliminate the proximal contacts on all sides. Do not prepare slice-cuts or feather edges.

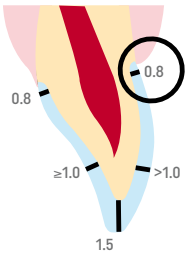


For onlays, provide at least 2 mm of space in the cusp areas. On the vestibular side, prepare a bevel (10°–30°) to improve the esthetic appearance of the transition between the composite and the tooth. Onlays are indicated if the preparation margin is less than approximately 0.5 mm away from the cusp tip, or if the enamel is severely undermined.



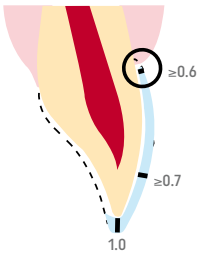
Anterior crown

Evenly reduce the anatomical shape and observe the stipulated minimum thicknesses. Prepare a circular shoulder with rounded inner edges or a pronounced chamfer of at least 0.8 mm. In the anterior region, reduce the labial and/or palatal/lingual surfaces by at least 1.0 mm. Reduce the incisal crown third by at least 1.5 mm. Design transitions in such a way that no angles or edges are present.



Veneer

If possible, the preparation should be entirely located in the enamel. Either design a classical preparation with oro-incisal, chamfer-type embrasure of the incisal edge, or a simple incisal reduction without embrasure of the incisal edge. Make sure that the incisal preparation margin is not located in the area of the abrasion surfaces. The extent of the incisal reduction depends on the desired translucency of the incisal area to be built up. The more transparent the incisal edge of the intended veneer, the more pronounced the incisal reduction should be. The incisal edge should be reduced by at least 1.0 mm. By preparing orientation grooves using a depth marker, controlled enamel reduction can be achieved. The minimum preparation thickness is > 0.6–1.0 mm, depending on the preparation technique selected. Elimination of the proximal contacts is not required. Discoloured teeth may require more preparation. In the cervical area, prepare a chamfer.



Practical procedure

Working times/curing depths

Working times

SR Nexco materials are sensitive to light. The working time depends on the layer thickness, shading and the existing lighting conditions. Light shades react faster than dark shades. The times listed below represent mean values at a light intensity of 3000 lux, which corresponds to the light encountered in a well-lit working space. Bear the maximum time limits in mind, when extruding the veneering material from the syringe.

	SR Nexco	Time
Low viscosity	SR Nexco Liner SR Nexco Opaquer SR Nexco Stains	2–25 min
High viscosity	SR Nexco Margin SR Nexco Dentin SR Nexco Incisal SR Nexco Effect SR Nexco Gingiva	4–25 min

Curing depths

Due to their light sensitivity, the curing depth of the SR Nexco materials (precured with a handheld curing light or in a curing unit) depends on the shade and above all the layer thickness. Light and translucent shades cure more readily because light can penetrate them more easily compared to darker and more opaque shades. These values must be taken into consideration during the layering of the different materials.

SR Nexco	Curing depths*
SR Nexco Opaquer	0.05 mm
SR Nexco Stains	0.2–0.8 mm
SR Nexco Paste Incisal, Dentin, Effect	2.0 mm
SR Nexco Paste Margin, Gingiva, Intensive Gingiva	1.0 mm

***Curing depths**

- Precuring: 40 seconds in the PrograPrint Cure
- Polymerization and final polymerization: 5 minutes in the PrograPrint Cure

Practical procedure

Framework-free restorations (inlay/onlay)

Model isolation

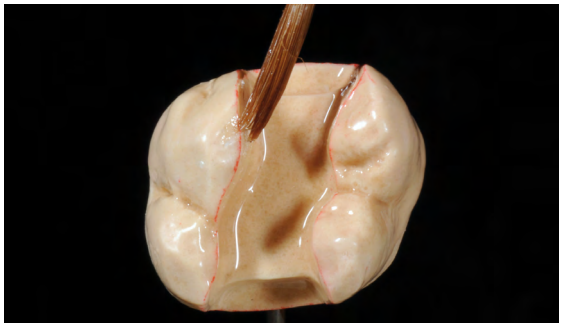
Applying the sealer

Fabricate a master model or model with detachable segments based on the impression or digital scan, using an analog or digital technique. Expose and mark the preparation margins. Block out undercuts with blocking-out wax or blocking-out resin to ensure that the restoration can be removed after the polymerization process without damaging the die. Basically, the application of a sealer is recommended to harden the surface and to protect the stone die. However, the sealer layer must not result in any changes of the dimensions of the stone die. It is not mandatory to utilize a spacer, as two coats of SR Model Separator will be applied. If you use a spacer, check as to whether it is compatible with SR Model Separator.

Fabrication of a die coated with sealer as the working basis

Sealing the dies and adjoining parts of the model

SR Model Separator is applied in two thin coats. Apply the first coat generously and make sure that all areas of the die are well covered. Watch out for sharp edges (incisal edges) in particular. Then allow to react for 3 minutes. After the reaction time, apply a second layer in a thin coat, invert the model and allow to dry for 3 minutes. Additionally, apply SR Model Separator to adjoining model surfaces that may come into contact with SR Nexco including counterbite, allow to react for a short time, and then disperse excess material with oil-free compressed air.



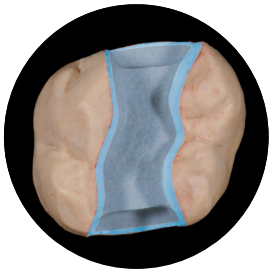
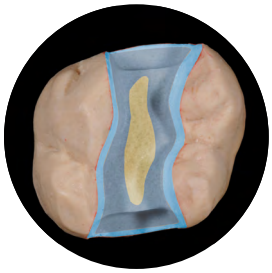
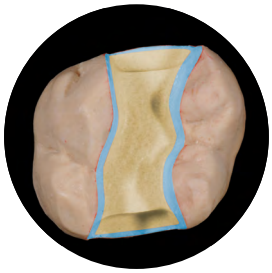
Apply first coat of SR Model Separator generously, watch out for sharp edges, and allow to react for 3 minutes. Isolate model areas.

Liner application

SR Nexco Liner combination table

	BL		A					B				C				D		
Tooth shade	BL3	BL4	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
Liner	BL	BL	1	2	2	3	4	1	2	3	3	1	5	5	4	5	5	5

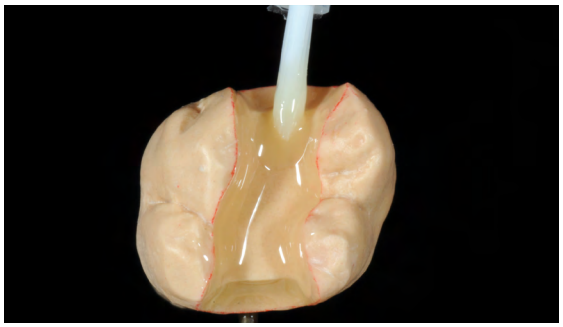
Procedure for

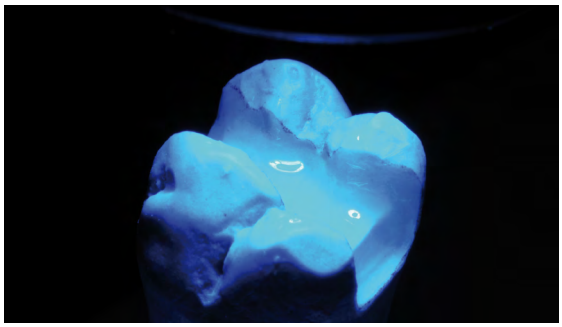
non-discoloured cavities	slightly discoloured cavities	severely discoloured cavities
– Apply Liner clear to the cavity walls and the cavity floor (dentin area) for an optimum chameleon effect. – Apply Liner incisal in the marginal areas (course of natural enamel) to achieve a harmonious transition between the shade of the restoration and natural tooth structure without grey lines.	– Mask dark areas using a Liner in an appropriate shade (1–5). – Coat the remaining portions of the cavity, except the marginal areas, with Liner clear. – Apply Liner incisal in the marginal areas (course of natural enamel) to achieve a harmonious transition between the shade of the restoration and natural tooth structure without grey lines.	– Mask the entire cavity, except the marginal areas, using a Liner in a corresponding shade (1–5). – Apply Liner incisal in the marginal areas (course of natural enamel) to achieve a harmonious transition between the shade of the restoration and natural tooth structure without grey lines.
		

Liner clear Liner incisal Liner 1–5

1st Liner application (clear, 1–5)

Extrude the desired amount of the ready-to-use Liner paste from the syringe and spread it out slightly on the mixing pad using a disposable brush. First, apply the Liner to the cavity walls and cavity floor in a thin coat and precure each segment with a handheld curing light or in a curing unit. Make sure to fully cover all areas, as the Liner provides an essential bonding surface to the luting composite. Do not cover marginal areas at this stage (course of natural enamel).

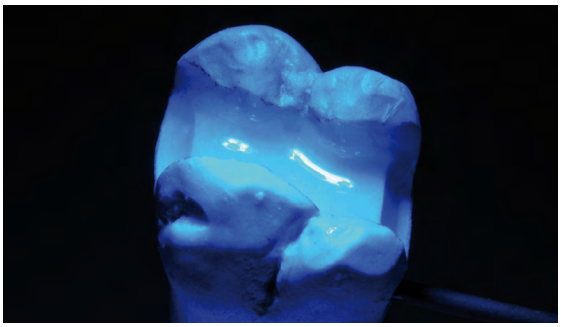




Generously cover the cavity walls and floor with the 1st liner layer and precure each segment with a handheld curing light or in a curing unit.

2nd Liner incisal application in the marginal area

After the application of the first Liner layer to the cavity walls and floor, apply Liner incisal in the marginal areas so that all cavity surfaces are coated with Liner. Apply Liner incisal up to the preparation margin in order to ensure a reliable bond between the preparation margins and the luting composite. This measure helps to reduce premature discolouration between the restoration margins and tooth structure.



Apply Liner incisal to the marginal areas or along the course of the natural enamel and precure each segment with a handheld curing light or in a curing unit.

Polymerization parameters see page 63

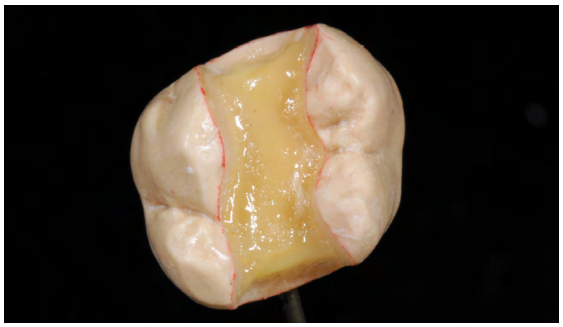
- **The entire inner surface of the restoration has to be covered with SR Nexco Liner. The layer thickness of the Liner should be at least 150 µm. Thin out the Liner towards the preparation margin.**
- **Do not separate polymerized SR Nexco Liner from the die.**

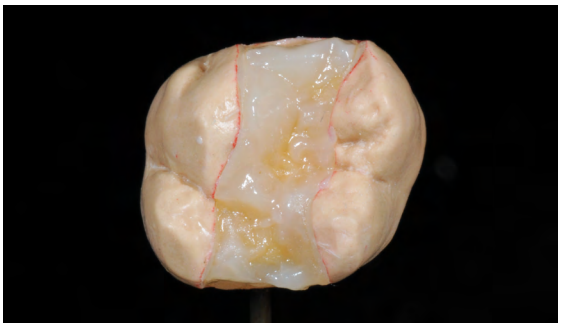
Removing the inhibition layer after polymerization of the Liner

Thoroughly remove the resulting inhibition layer using a disposable sponge (do not use a solvent); make sure that the Liner surfaces are free of residue. Make sure that the Liner shows a mat surface.

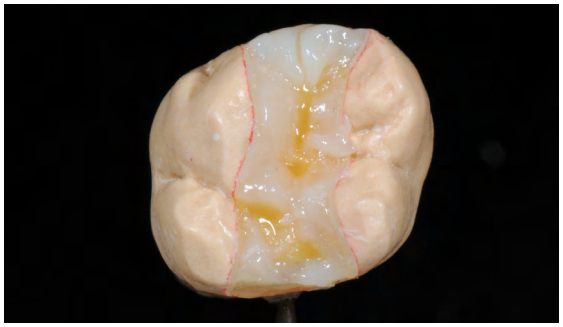
Inlay/onlay layering

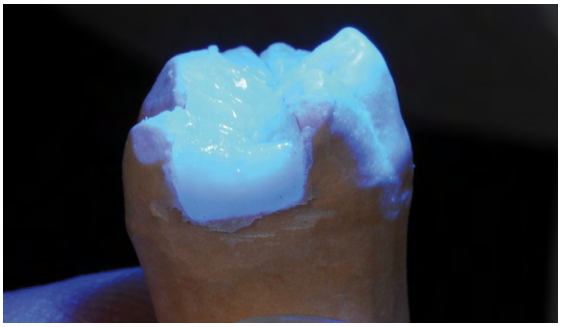
Adapt the first layer firmly (press into place) to ensure an effective bond between the Liner and lab composite and precure each segment with a handheld curing light or in a curing unit. The shade effect in the interdental area and cavity may be increased by means of Occlusal Dentin orange. Slightly emphasize the marginal ridges and cusps with Dentin. Subsequently, begin the process of building up the cavity with Dentin materials. Make sure to provide adequate space for the subsequent application of Incisal and Effect materials. The translucency of the restoration may be increased by means of coloured Transpa materials, such as Transpa orange-grey and Transpa brown-grey. Layer SR Nexco Paste layering materials step by step and precure each individual layer. After building up and precuring the dental plateau, apply characterizations with SR Nexco Stains and precure each segment with a handheld curing light or in a curing unit. Next, complete the restoration using Incisal and Transpa materials. The cusp tips and triangular ridges may be coated with a fine layer of Opal Effect 3 and 4. Adapt firmly and create smooth, rounded transitions between the layers using SR modelling instruments or synthetic brushes.





Increase the shade effect in the interdental and cavity area with Occlusal Dentin. Outline the marginal ridges with Dentin and create a plateau with various Dentin materials. In between, precure each segment with a handheld curing light or in a curing unit.





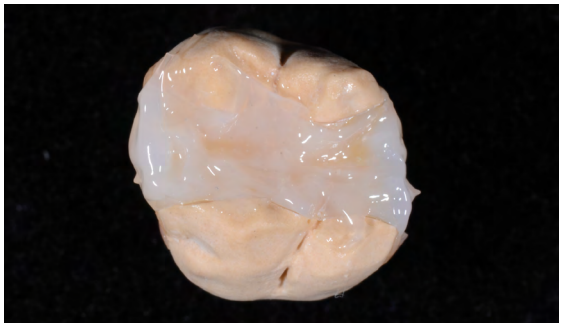
Apply characterizations with SR Nexco Stains, precure with a handheld curing light or in a curing unit and cover with Incisal and Transpa materials.

Design a lifelike occlusal morphology and precure all areas with a handheld curing light or in a curing unit.

- It is essential to observe the stipulated curing depth and maximum layer thickness of the individual materials during the layering procedure.
- If the maximum layer thickness is exceeded, break up large portions into several increments and precure each increment.
- SR Nexco Stains always have to be covered with layering material (e.g. Incisal, Transpa).

Final polymerization

After the layering procedure has been completed, all layers must be precured. To make sure that this is the case, you may precure each segment one more time with a handheld curing light or in a curing unit. Next, apply SR Gel on the entire veneering surface ensuring that all areas are fully covered and the layer is not too thick.

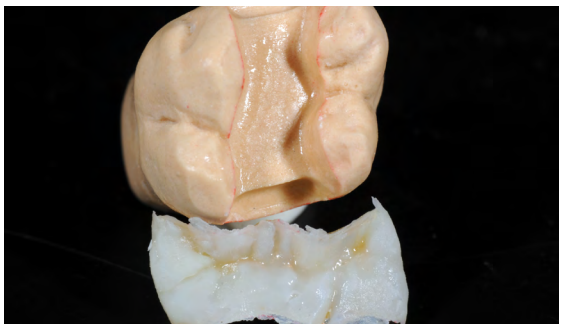


Apply a covering, but not too thick, layer of SR Gel and secure the dies on the object holder in the correct position.

Polymerization parameters see page 63

Finishing/polishing

After completion of the polymerization procedure, completely remove SR Gel from the restoration using running water and/or a steamer. Carefully remove the restoration from the die. If the restoration is removed at a later stage, it is advisable to warm up the stone die by means of steam/hot water. Finish the restoration with cross-cut tungsten carbide burs and fine diamonds. It is advisable to use low speed and light contact pressure. Make sure to rework the entire restoration to remove the inhibition layer of approximately 30 microns from all surfaces. Carefully taper the margins of the restoration, lightly grind the margins, and adjust proximal and occlusal contact points. Subsequently, recreate a lifelike tooth shape and surface structure. The inhibition layer must be removed from the entire SR Nexco surface.



Remove SR Gel and carefully remove the restoration from the die. Remove the inhibition layer and finish the surface with cross-cut burs.

Polishing

Finishing

Carefully smooth the ridges on the occlusal surface and proximal surfaces with rubber polishers and silicone polishing wheels. Pay particular attention to the margins in order to avoid rendering them too short.

Prepolishing and high-gloss polishing

The restorations are prepolished and polished to a high gloss using a goat hair brush, cotton or leather buff and Universal Polishing Paste. Use low speed and light contact pressure for prepolishing and high-gloss polishing. Adjust the pressure at the handpiece, not with the polishing motor. In order to optimally polish the occlusal surfaces, we recommend modifying the goat hair brushes to become star-shaped so that only the desired areas can be polished due to the smaller size of the brush. Depending on the type of high gloss desired, leather buffing wheels can be used to achieve a high shine, while cotton buffers are used to achieve a lesser degree of lustre.

Results

Preparing for cementation

Adhesive cementation is mandatory for framework-free SR Nexco Paste restorations.

In order to achieve an excellent bond with the luting composite, the cavity contact surface of the restoration has to be carefully blasted with Al_2O_3 (80–100 µm) at 1 bar/15 psi pressure in the laboratory. Following the try-in in the dental practice and subsequent cleaning, the cavity contact surface is again roughened with a 50–100 µm diamond directly prior to the adhesive cementation. This is followed by conditioning (e.g. with Monobond® Plus) to enable a chemical bond.

Practical procedure

Framework-free restorations (anterior crown)

Model isolation

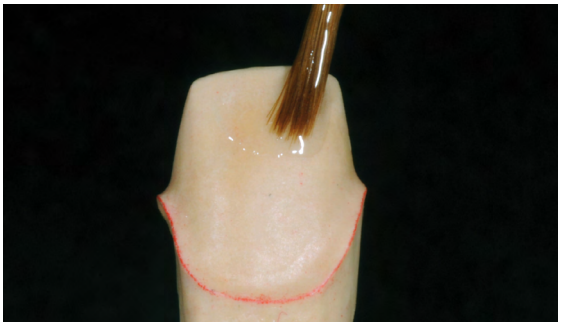
Applying the sealer

Fabricate a master model or a model with detachable segments according to the impression or digital scan in the usual manner. Expose and mark the preparation margins. Block out undercuts with blocking-out wax or blocking-out resin to ensure that the restoration can be removed after the polymerization process without damaging the die. Basically, the application of a sealer is recommended to harden the surface and to protect the stone die. However, the sealer layer must not result in any changes of the dimensions of the stone die. It is not mandatory to utilize a spacer, as two coats of SR Model Separator will be applied. If you use a spacer, check as to whether it is compatible with SR Model Separator.

Sealing the dies and adjoining parts of the model

SR Model Separator is applied in two thin coats. Apply the first coat generously and make sure that all areas of the die are well covered. Watch out for sharp edges (incisal edges) in particular. Allow the layer to react for 3 minutes. After the reaction time, apply a second layer in a thin coat, invert the model and allow to dry for 3 minutes. Additionally, apply SR Model Separator to adjoining model surfaces that may come into contact with SR Nexco including counterbite, allow to react for a short time, and then disperse excess material with oil-free compressed air.

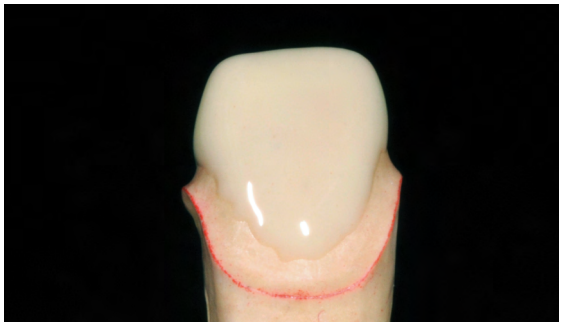
Fabrication of a die coated with sealer as the working basis

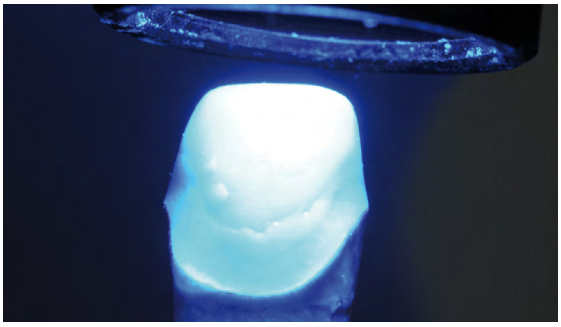


Applying two layers of SR Model Separator

Liner application

Extrude the desired amount of the ready-to-use Liner paste from the syringe and spread it out slightly on the mixing pad using a disposable brush. First, apply the Liner thinly on the die surfaces. Make sure to fully cover all areas, as the Liner provides an essential bonding surface to the luting composite. The Liner layer must be at least 150 microns thick and each segment must be precured with a handheld curing light or in a curing unit.





The Liner layer must be at least 150 µm thick and precured with a handheld curing light or in a curing unit.

Procedure for non-vital, discoloured tooth preparations

- Mask the entire die with Liner to block out the dark colour of the underlying tooth stratum and, at the same time, to attain an adequate degree of brightness.
- Additionally, Stains white may be applied locally to the Liner surface to further increase the degree of brightness.

Polymerization parameters see page 63

- The entire die surface has to be covered with an SR Nexco Liner .layer of a thickness of at least 150 µm. Thin out the Liner towards the preparation margin.
- Do not separate polymerized SR Nexco Liner from the die.
- If desired, the translucency of the Liners 1–5 may be increased by using Liner clear or Liner incisal.

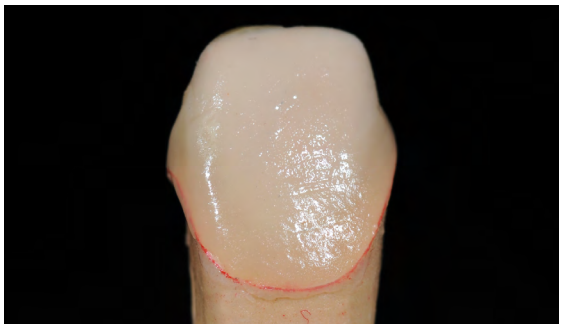
Removal of the inhibition layer

Thoroughly remove the resulting inhibition layer using a disposable sponge (do not use a solvent); make sure that the Liner surfaces are free of residue. Make sure that the Liner shows a slightly shiny surface.

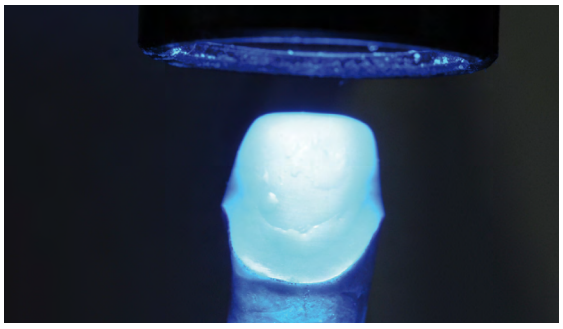
Liner incisal may be applied to the marginal area to facilitate the transmission of light in the cervical area. This measure provides a harmonious transition between the gingiva and the restoration.

Anterior crown layering

Adapt the first layer firmly (press into place) to ensure an effective bond between the Liner and lab composite and precure each segment with a handheld curing light or in a curing unit. The shade effect in the interdental area and palatal fossa may be increased by means of Stains orange or Occlusal Dentin orange. Build up the labial surface using various Dentin materials. Reproduce areas of higher brightness with Opal Effect 3 (cervical). Apply the appropriate Transpa materials to the dentin core. Build up and precure the incisal extension using Opal Effect materials (OE1 and OE2). Mimic mamelons using Mamelon materials or Stains and precure. Next, complete the restoration step by step using Incisal and Transpa materials. Build up the palatal ridges using Dentin materials. The triangular ridges may be coated with a fine layer of Opal Effect 3 and 4. Adapt firmly and create smooth, rounded transitions between the layers using SR modelling instruments or synthetic brushes. With such or similar individual layering patterns, you can achieve an esthetic outcome customized to the patient using SR Nexco.

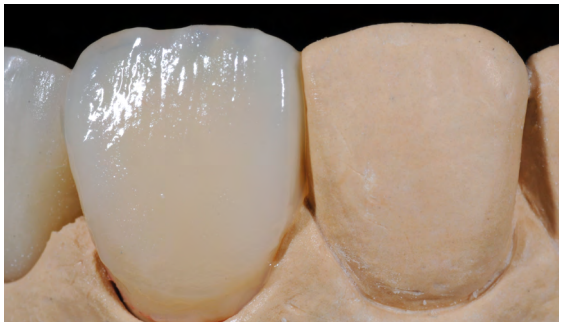


Add Dentin material to the marginal areas. Use Stains and Occlusal Dentin materials to enhance the shade effect in the palatal area.



In between, precure with a handheld curing light or in a curing device. Outline mesial and distal ridges with Opal Effect materials.

Outline the ridges from the palatal aspect with Opal Effect 2 and cover with Incisal material. Apply Mamelon materials or Stains and precure.



Complete the labial tooth contours with Incisal and Transpa materials.
Precure the layers with a handheld curing light or in a curing unit.

- It is essential to observe the stipulated curing depth and maximum layer thickness of the individual materials during the layering procedure.
- If the maximum layer thickness is exceeded, break up large portions into several increments and precure each increment.
- An optimum shade reproduction is achieved if the SR Nexco layer is 1 mm thick.

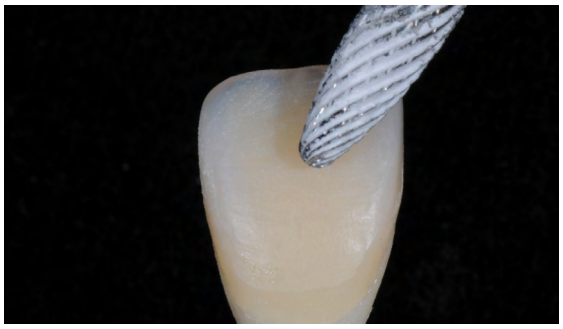
Final polymerization

After the layering procedure has been completed, all areas must have been precured with a handheld curing light or in a curing unit. To make sure that this is the case, you may precure each segment again. Next, apply SR Gel on the entire veneering surface, ensuring that all areas are fully covered and the layer is not too thick.

Polymerization parameters see page 63

Finishing/polishing

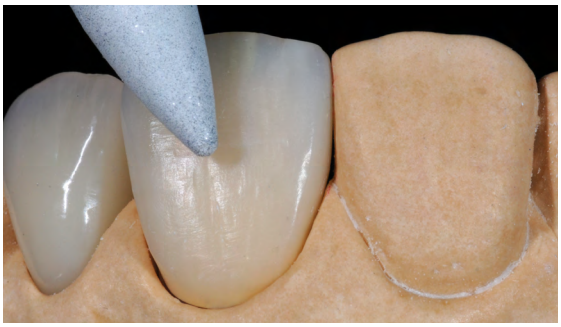
After completion of the polymerization procedure, completely remove SR Gel from the restoration using running water and/or a steamer. Carefully remove the restoration from the die. If the restoration is removed at a later stage, it is advisable to warm up the stone die by means of steam or hot water. Finish the restoration with cross-cut tungsten carbide burs and fine diamonds. It is advisable to use low speed and light contact pressure. Make sure to rework the entire restoration to remove the inhibition layer of approximately 30 microns from all surfaces. Carefully taper the margins of the restoration, lightly grind the margins, and adjust proximal contact points. Subsequently, recreate a lifelike tooth shape and surface structure. The inhibition layer must be removed from the entire SR Nexco surface.



Polishing

Finishing

Carefully smooth the surfaces with rubber polishers and silicone polishing wheels. Pay particular attention to the margins in order to avoid rendering them too short.



Prepolishing and high-gloss polishing

The restorations are prepolished and polished to a high gloss using a goat hair brush, cotton or leather buff as well as Universal Polishing Paste. Use low speed and light contact pressure for prepolishing and high-gloss polishing. Adjust the pressure at the handpiece, not with the polishing motor. Depending on the type of high gloss desired, leather buffing wheels can be used to achieve a high shine, while cotton buffers are used to achieve a lesser degree of lustre.

Results

Preparing for cementation

Adhesive cementation is mandatory for framework-free SR Nexco Paste restorations.

In order to achieve an excellent bond with the luting composite, the cavity contact surface of the restoration has to be carefully blasted with Al_2O_3 (80–100 µm) at 1 bar/14.5 psi pressure in the laboratory. Following the try-in in the dental practice and subsequent cleaning, the cavity contact surface is again roughened with a 50–100 µm diamond directly prior to the adhesive cementation. This is followed by conditioning (e.g. with Monobond® Plus) to enable a chemical bond.

Fixed, metal-supported restorations

Framework design

The following points must be observed for the design of frameworks veneered with lab composite:

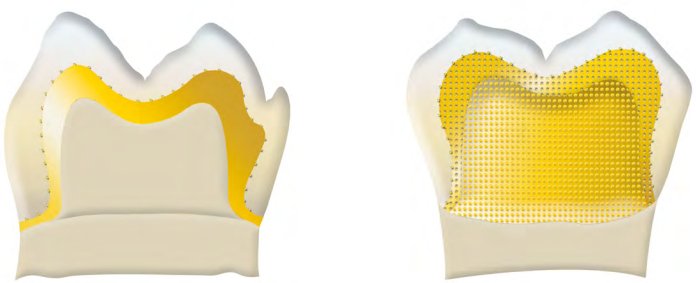
1. Framework design for full-coverage veneers (ideal space conditions)

With full-coverage veneers, the framework has to reflect the shape of the tooth in a reduced form. Design the framework in such a way that it supports the cusps, resulting in a virtually even layer thickness of the lab composite. In this way, the masticatory forces occurring during functional chewing are exerted on the framework rather than on the veneering composite. In case of unfavourable preparations, the missing tooth structure has to be compensated by the design of the framework and not the lab composite. Furthermore, an even layer thickness facilitates the creation of a harmonious shade effect while full-coverage veneering provides a maximum level of esthetic beauty and function. All areas of the framework should be smooth and rounded to prevent delamination and cracking. Angles and edges should be rounded out already in the wax-up or on the design and not in the metal in order to avoid undermining the minimum framework thickness. The thickness of the metal framework must not be less than 0.3 mm for single crowns and not less than 0.5 mm for bridge abutments after finishing.

Anterior crowns

Premolar crowns

Molar crowns



2. Framework design for partial veneers (limited space conditions)

A different framework design is required for partial veneers (e.g. telescope and conus crowns). As the space in the occlusal, palatal and lingual area in particular tends to be limited in many cases, this area of the restoration must be designed in the metal in such a way that cracks or delamination cannot occur because of inadequately thin layer thicknesses of the lab composite. In this design, the transition between the metal framework and the lab composite should be clearly defined and it should incorporate a right angle finish line. The transition areas between the metal framework and the veneering composite must not be located in the contact point areas, nor on surfaces involved in masticatory functions. A chamfer or wraparound technique is required in partial veneer preparations to provide adequate support for the veneer. Observe the palatal area in upper canines (canine guidance) and the occlusal area in posterior teeth. To obtain a balance between esthetic and functional properties, it is advisable to reduce the mesial corner of the occlusal surface in upper posterior teeth in particular to attain a harmonious esthetic appearance, especially when the buccal corridor is exposed. The thickness of the metal framework must not be less than 0.3 mm for single crowns and not less than 0.5 mm for bridge abutments after finishing. For further information, please refer to the Instructions for Use of the alloy being used.

Anterior crowns

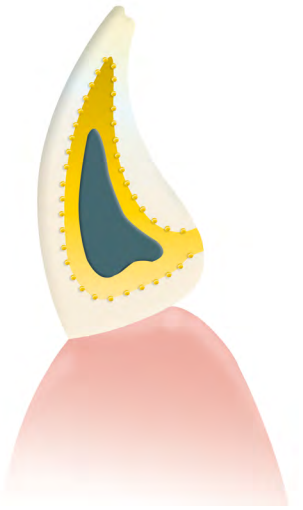
Premolar crowns

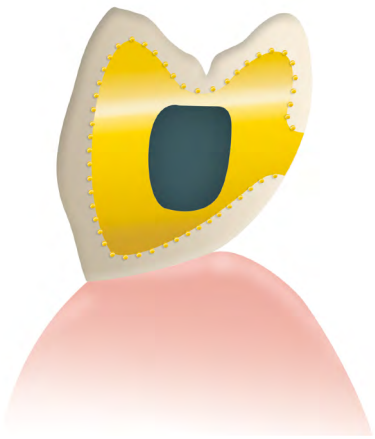
Molar crowns

3. Design of the bridge pontic

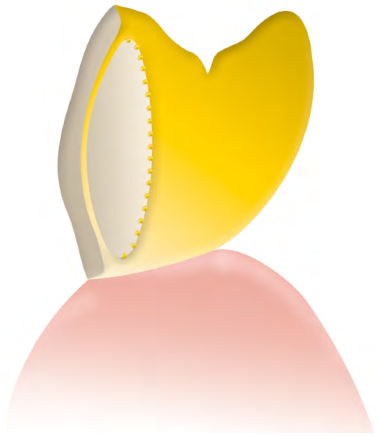
Bridge pontics are designed taking esthetic and functional aspects as well as oral hygiene into account. The pontic rest on the alveolar ridge should consist entirely of metal (polished to a high gloss) or composite material. The transition between metal and lab composite should always be located in areas where oral hygiene is ensured in an ideal way. If enough space is available, the rest should consist of composite material. In order to ensure adequate stability between the bridge pontic and bridge abutment, a palatal and/or lingual scallop is recommended. If space is limited, the contact area is made of metal polished to a high gloss. The palatal or lingual restoration surfaces are designed in metal for reasons of stability. In order to avoid inclusion at the bridge pontic due to massive cast parts, the bridge pontic should be hollowed out. A wax wire is placed in the hollowed space (ample space available) and formed in such a way that it is level with the abutment teeth. This measure provides additional retention and helps achieve an even shade effect in the bridge pontic and abutment.

Sufficient space



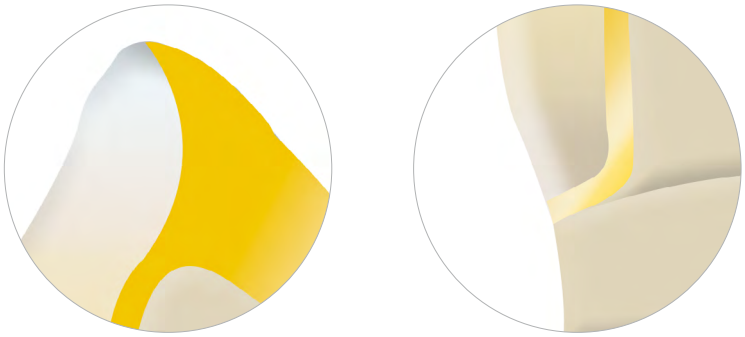


Limited space



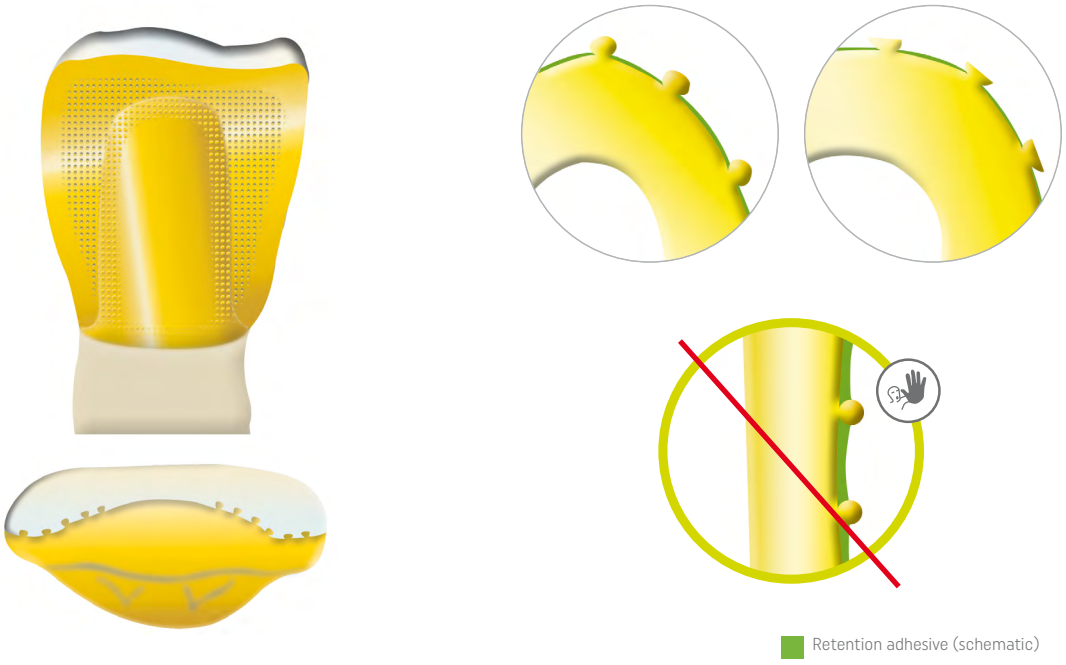
4. Interface between metal and composite

The interface between the metal framework and the lab composite must be clearly defined, incorporate a right angle finish line and use a chamfer or wraparound technique whenever possible. The transition areas between the metal framework and the lab composite must not be located in the contact point areas nor on surfaces involved in masticatory functions. Furthermore, make sure that the interface between metal and lab composite in the cervical area does not come into contact with the gingiva, particularly if a tapered crown margin is designed (i.e. no metal margin). In this way, irritation of the gingiva can be prevented. The interface in the interdental area must be designed in such a way that cleaning of these difficult-to-access areas is possible.



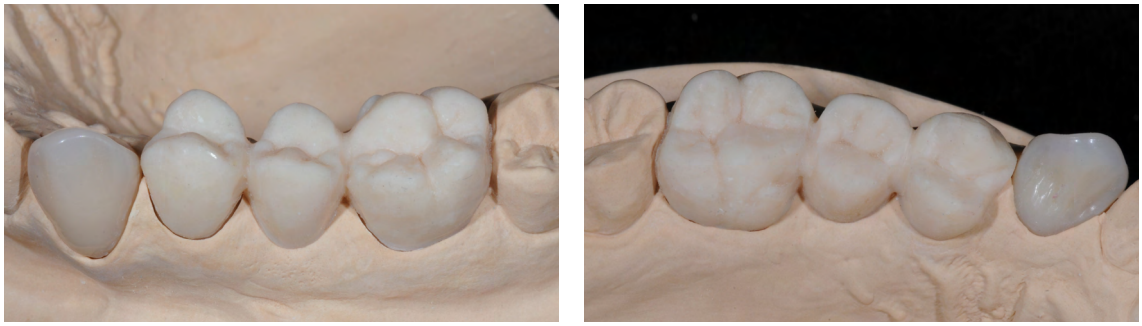
5. Correct application of retention beads

It is generally advisable to apply retention beads to provide mechanical retention in addition to the chemical bond with SR Link. If space is limited, it may not always be possible to apply retention beads or they may only be applied in certain areas. Therefore, retention beads can be applied locally to the bonding surfaces without compromising the space available or the esthetic appearance of the restoration in particular. The retention adhesive should be applied in as thin a coating as possible so that the retention beads are not completely immersed in adhesive and enough surface area for mechanical retention is provided. After casting, the retention beads may be reduced by half of their size (equator) to preserve a sufficiently large retentive area.



Metal framework fabrication

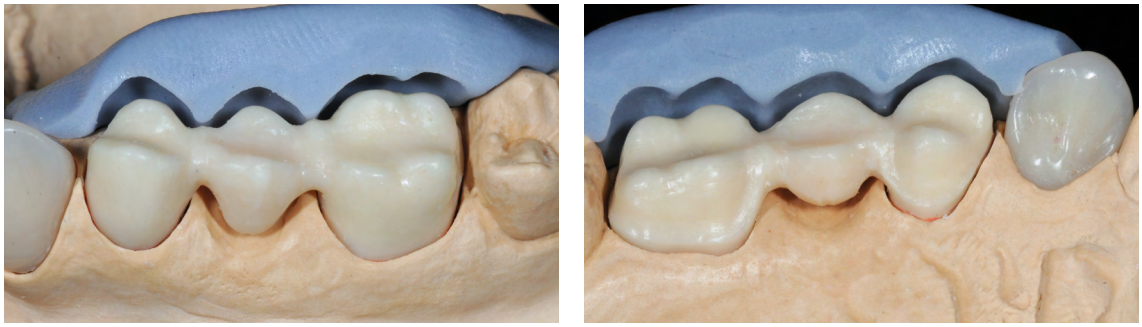
There are two types of frameworks, i.e. frameworks for full-coverage veneers (ideal space) and frameworks for partial veneers (limited space). It is generally advisable to create or design a full wax-up and then fabricate a silicone key using analog techniques. You will need the silicone key to check the space conditions during contouring. When fabricating the frameworks, make sure that the minimum wall thickness after finishing is 0.3 mm for single crowns and 0.5 mm for bridge abutments. These dimensions are the prerequisite for a stable metal framework and a durable bond between the metal and composite. If the stipulated framework and connector dimensions are not observed, delamination and cracking may occur.



Full contouring of the anatomical tooth shape

Contouring

The framework reflects the reduced anatomical tooth shape (see page 26 for tooth shape-supporting contouring). As a result, the lab composite can be applied in an even layer and will consequently be appropriately supported. The requirements of the different alloys have to be taken into account.



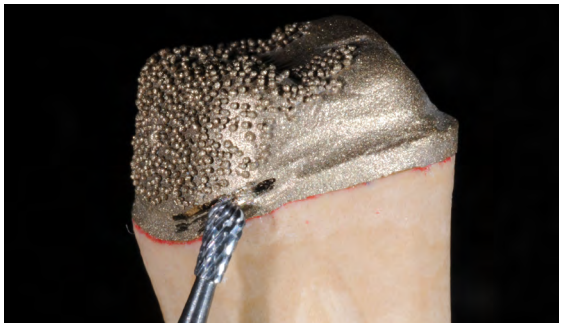
Reduced anatomical tooth shape and verification using the silicone key or software

If the metal framework is too small, the veneering composite is not adequately supported, which may lead to cracks, delamination and esthetically compromised results due to the variations in layer thickness. Mechanical retentions are generally beneficial and advisable, as they support the chemical bond between metal and composite.

Casting and finishing

After having cast the framework, carefully divest, sandblast/pickle and fit it on the model. After separating, the metal framework is finished using tungsten carbide burs. If softer alloys are used, it is recommended to work with limited contact pressure. A correct marginal design is paramount to attaining a reliable composite-metal bond. If possible, create a tapered chamfer or wraparound design in the cervical area. You are recommended to polish those parts of the restoration which are not veneered with SR Nexco (e.g. palatal or lingual areas, metal scallops, etc.) before you start the veneering work or before the framework is conditioned. If this is done after veneering, the quality may be compromised.

Carefully divest, blast/pickle and fit the framework on the model.

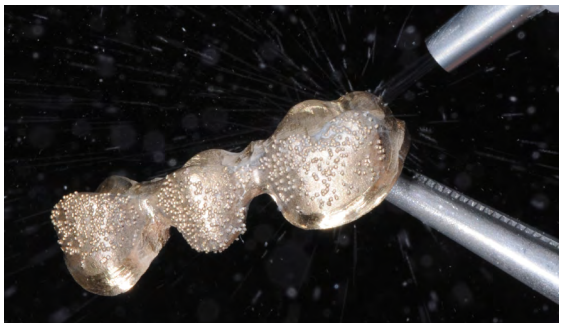


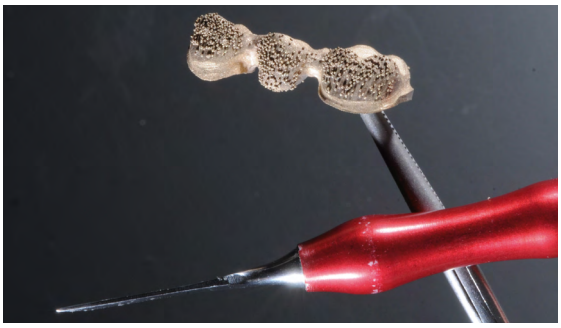
Create the cervical margin as a tapered chamfer using a tungsten carbide bur.

Conditioning the framework

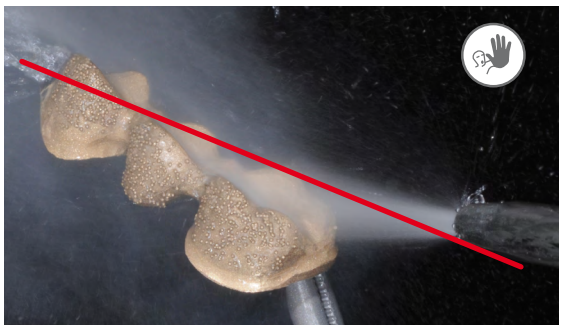
Conditioning with SR Link

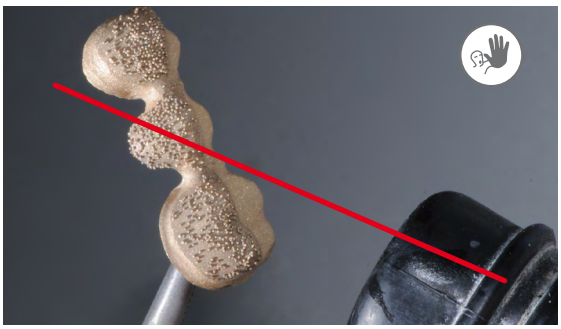
After finishing, carefully blast the framework with aluminium oxide Al_2O_3 (80–100 µm) at 2–3 bar (29–43.5 psi) pressure (see Instructions for Use of the corresponding alloy). Sandblasting improves the mechanical bond. It roughens and thus substantially increases the surface of the alloy. After blasting, remove blasting medium residue from the framework by tapping off and not by cleaning with steam or an air gun. Apply SR Link immediately after having tapped off the residue. Apply SR Link with a clean disposable brush and allow it to react for 3 minutes. Do not "soak" metal surface in SR Link.

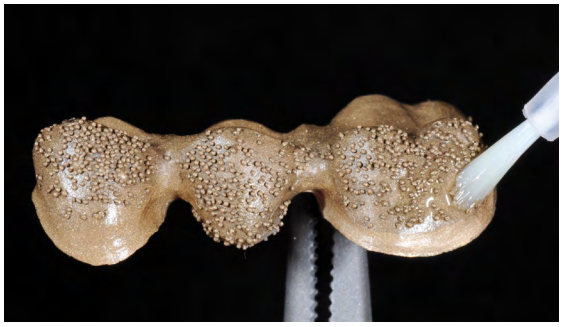




Carefully blast the framework with Al_2O_3 (80–100 µm) and 2–3 bar (29–43.5 psi) pressure and tap off with an instrument.





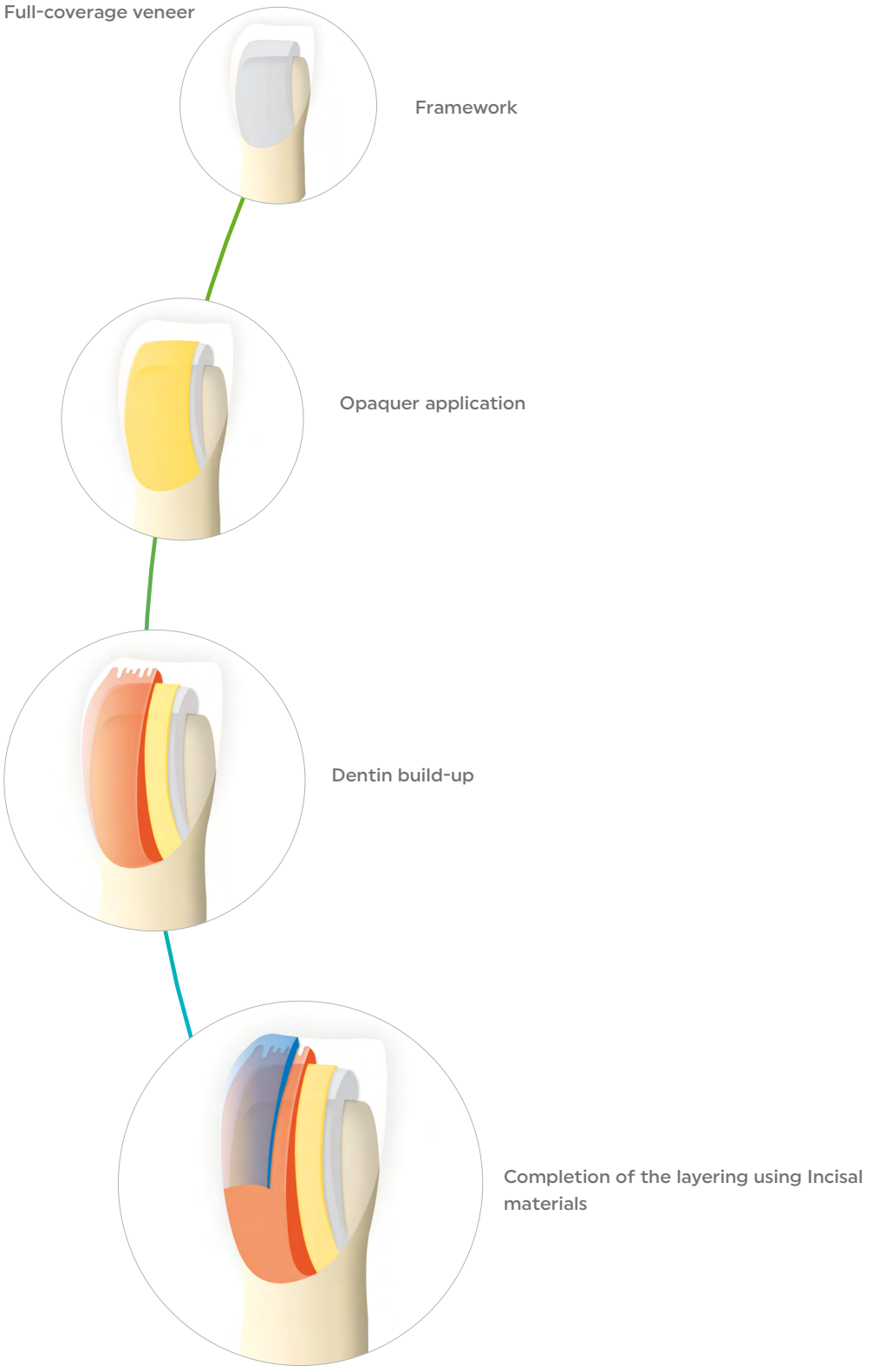


Immediately after the blasting procedure, tap off blasting medium residue, apply SR Link using a disposable brush and allow to react for 3 minutes.

- When using SR Link, do NOT clean the framework with steam or with an air gun after blasting.
- Do not touch the surfaces once they have been cleaned!
- Do not use SR Link in conjunction with alloys that contain more than 50% silver and/or copper or alloys with more than 90% gold, palladium and platinum.

Layering diagram

In order to achieve an appropriate shade match, a minimum layer thickness of 1 mm is required.
The brightness value of the restorations varies depending on the layer thickness of the Incisal material.

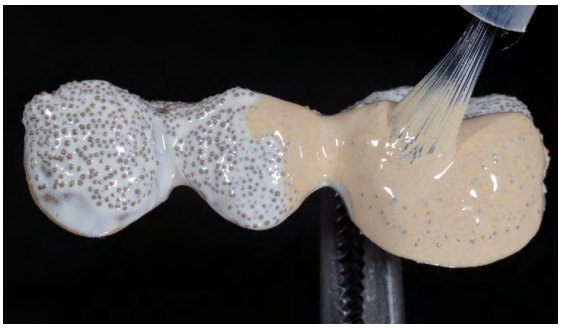


Opaquer application

1st Opaquer application

Extrude the desired amount of the ready-to-use Opaquer paste from the syringe and spread it out slightly on the mixing pad using a disposable brush. Apply the first opaquer layer (wash) thinly using a brush. Make sure to thoroughly smooth out any roughness and the retention beads (microretention) on the metal surface, since the wash layer represents the most important bond between the metal and the composite. Subsequently, precure each segment with a handheld curing light or in a curing unit.

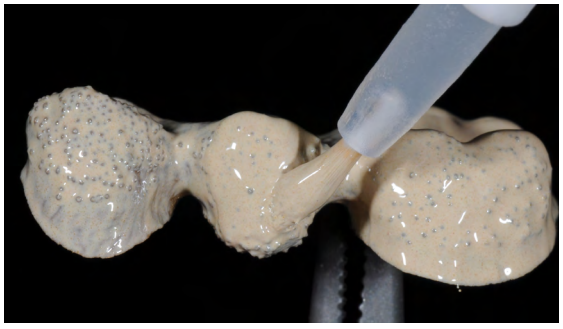
Apply the first Opaquer layer (wash) thinly using the brush. Level or fill retentions or roughness and subsequently precure with a handheld curing light or in a curing unit.



If SR Nexco Retention Flow is used, thinly apply the first Opaquer layer (wash) on the surface with a brush and precure with a handheld curing light or in a curing device.

2nd Opaquer application

Apply the second opaquer layer in such a way that the metal framework and the retention beads in particular are entirely covered with opaquer, i.e. as much as necessary and as little as possible. After that, precure each segment of the opaquer with a handheld curing light or in a curing unit and then polymerize the opaquer in the curing unit.



Entirely cover the retention beads with the second opaquer layer and precure each segment with a handheld curing light or in a curing unit.

Procedure for the bridge pontic with Pontic Fill

Apply the second opaquer layer in such a way that the framework is completely covered and precure each segment with a handheld curing light or in a curing unit. Next, build up the hollowed out space on the bridge pontic to the level of the abutment teeth using Pontic Fill and precure with a handheld curing light or in a curing unit. Subsequently, apply an opaquer layer directly to the inhibition layer of Pontic Fill, precure with a handheld curing light or in a curing unit and then polymerize directly in the curing unit.

Polymerization parameters see page 63

- To obtain a smooth transition between the metal and composite, thin out the opaquer at the metal margin.
- If a smooth surface is preferred, lightly tap the top of the surface with a spatula.
- Using a probe, check opaquer for complete polymerization in critical areas and cure again as necessary.

Cervical, dentin and incisal layering

Sealing the model

Isolate all areas of the model which may come into contact with SR Nexco prior to the dentin and incisal layering. This step helps to prevent the lab composite from sticking to the model. Use SR Model Separator to seal adjoining parts of the model (e.g. stone die and pontic rests). Apply SR Model Separator in a thin layer, allow to react for a short time, and remove excess with oil-free compressed air.

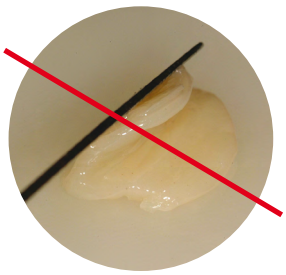
Removing the inhibition layer

Thoroughly remove the resulting opaquer inhibition layer using a disposable sponge (do not use a solvent); make sure that the Opaquer surfaces are free of residue and that the Opaquer shows a slightly shiny surface.

Characterizing the Opaquer

After the inhibition layer has been removed, you may individualize and modify the shade of sections of the Opaquer surface with SR Nexco Stains. It is advisable to apply a thin layer of Stains in the marginal and interdental area, particularly if space is limited, to enhance the in-depth shade effect. Subsequently, precure SR Nexco Stains with a handheld curing light or in a curing unit.

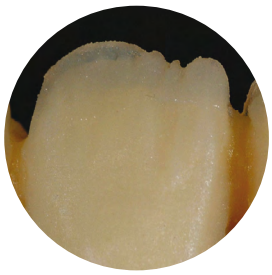
Tips regarding the different layers



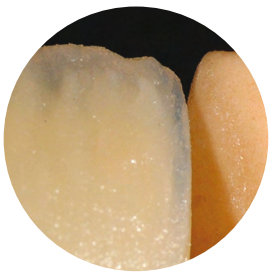
Before layering, avoid mixing and overlapping the pastes to prevent air from being trapped. Do not dilute the pastes with SR Modelling Liquid or low-viscosity components. As a general rule, use only small amounts of SR Modelling Liquid.

It is advisable to apply pastes that have a high level of opacity, e.g. Mamelon light, to the pontic rest to ensure adequate shade stability. After that, layer these areas using Margin and Dentin materials.

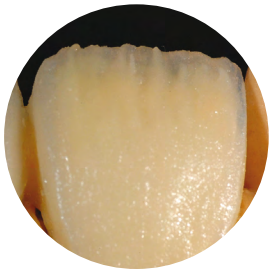
It is recommended to build up the veneer segment by segment (tooth by tooth), separately from each other, and then to precure. Finally, the individual veneers are joined.



Opal Effect pastes provide a true-to-nature opalescent effect in the incisal third. Opal Effect 1 is applied to the cut-back dentin as extension of the dentin core and then precured.



Use the shaded Transpa materials to complete and enhance the vitality in the incisal area. Transpa blue is suitable for the mesial and distal aspects.



Use Mamelon materials to create a lifelike shade effect in the incisal third. They are applied on the completed incisal plateau. Create smooth transitions. Avoid edges, since they may look like stubs after polymerization and the mamelons may appear too pronounced.

Dentin/incisal layering

The layering procedure of the individual SR Nexco Paste materials is carried out either in accordance with the layering diagram (shade guide layering) or individually. Adapt the first layer firmly (press into place) to ensure an effective bond between the composite and the opaquer surface and precure each segment with a handheld curing light or in a curing unit. Margin material may be applied in a half-moon shape to cervical areas, pontics and crown margins that are thinning towards the metal. Pontic Fill is particularly suitable for the pontic area. Adapt firmly and create smooth, rounded transitions between the layers (Margin–Dentin–Mamelon–Incisal) using SR modelling instruments or synthetic brushes.

After that, build up the dentin layers step by step and precure each segment with a handheld curing light or in a curing unit. The shade effect in the interdental area may be enhanced by means of chromatic materials, such as Occlusal Dentin orange. Design the dentin core in such a way that the mamelon shape remains outlined. Make sure to provide adequate space for the subsequent application of the Incisal and Transpa materials. The mamelons can be individually designed with either Mamelon material or SR Nexco Stains. Next, complete the restoration step by step using Incisal and Transpa materials.

The coordinated consistency of the material ensures that modelled contours are maintained and enables easy layering. The Incisal materials are coordinated with the Dentin materials so that delicate transitions can be designed. Precure the individual layers segment by segment using a handheld curing light or a curing unit.

Stabilize pontic areas with Pontic Fill. Apply Occlusal Dentin to increase the occlusal shade effect.

Precuring with a handheld curing light or in a curing unit. Completing the dentin core.

Stains applied into the fissures and covered with Incisal material.

An optimum shade reproduction is achieved if the SR Nexco layer is 1 mm thick.

Final polymerization

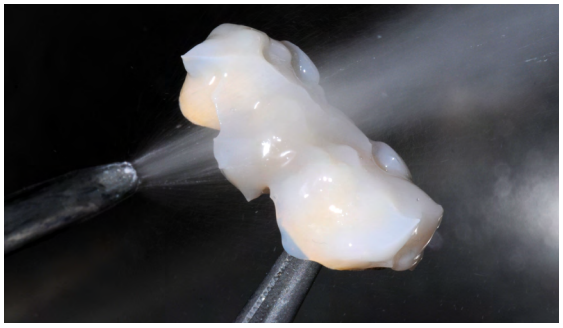
After the layering procedure has been completed, all layers must have been precured. To make sure that this is the case, you may precure each segment one more time with a handheld curing light or in a curing unit. Next, apply SR Gel on the entire veneering surface ensuring that all areas are fully covered and the layer is not too thick.

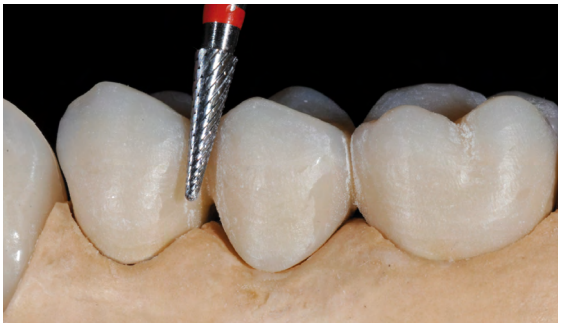
Polymerization parameters see page 63

Finishing/polishing

Finishing

After completion of the polymerization procedure, completely remove SR Gel from the restoration using running water and/or a steamer. Finish the restoration with cross-cut tungsten carbide burs, fine diamonds and flexible discs. It is advisable to use low speed and light contact pressure. Make sure to rework the entire restoration to remove the inhibition layer of approximately 30 microns from all surfaces. Fit the restoration on the model and adjust proximal and occlusal contact points. Subsequently, recreate a lifelike tooth shape and surface structure. The inhibition layer must be removed from the entire SR Nexco surface.





Remove SR Gel. Using cross-cut burs and discs, remove the inhibition layer and create a lifelike shape.

Polishing

Finishing

Smooth out the surface (convex areas) of the natural structures, as well as the marginal ridges with rubber polishers and silicone polishing wheels so that they exhibit an extra lustre after high-gloss polishing. Silicone polishing wheels are also ideally suitable for finishing metal-composite interfaces.

Polish the restoration using customary polishers, such as rubber polishers and silicone wheels.

Prepolishing and high-gloss polishing

The restorations are prepolished and polished to a high gloss using a goat hair brush, cotton or leather buff and Universal Polishing Paste. Use low speed and gentle contact pressure for prepolishing and high-gloss polishing. Adjust the pressure with the handpiece, not the polishing motor. In order to optimally polish the interdental areas and occlusal surfaces, we recommend modifying the goat hair brushes to become star-shaped so that only the desired areas will be polished due to the smaller size of the brush. Depending on the type of high gloss desired, leather buffing wheels can be used to achieve a high shine, while cotton buffers are used to achieve a lesser degree of lustre.

– Microroughness on the finished veneering surface is conducive to plaque accumulation. Therefore, polish carefully.
– Pay particular attention to crown margins, interdental areas, occlusal surfaces and the basal rest of pontics.

Results

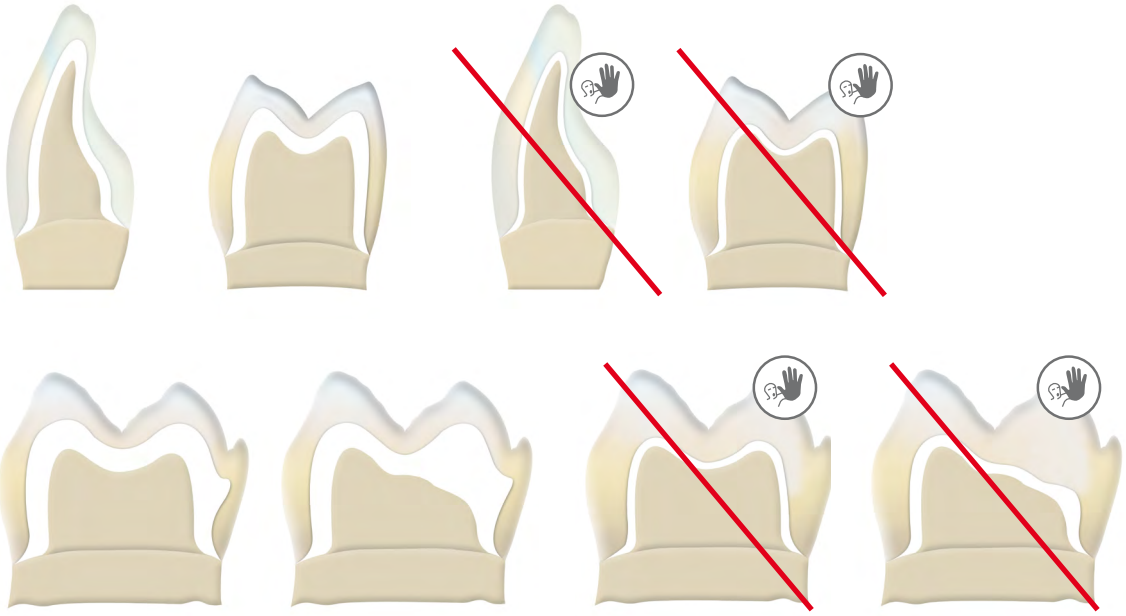
Practical procedure

Fixed, zirconium oxide-supported restorations

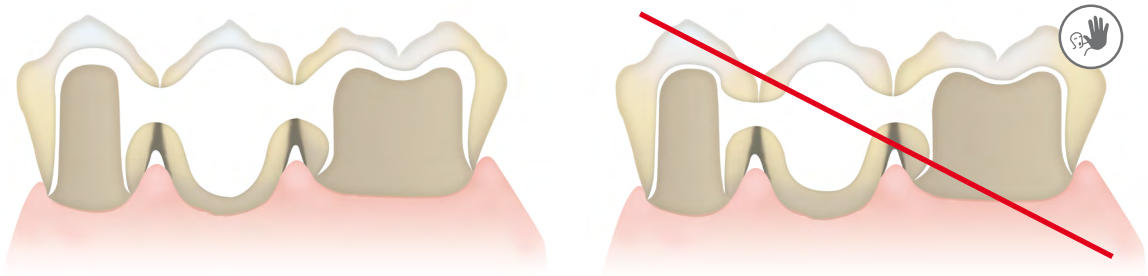
Framework design

Design the framework in a reduced supported shape. As a result, the composite can be applied in an even layer and will consequently be appropriately supported.

Anterior and posterior crowns



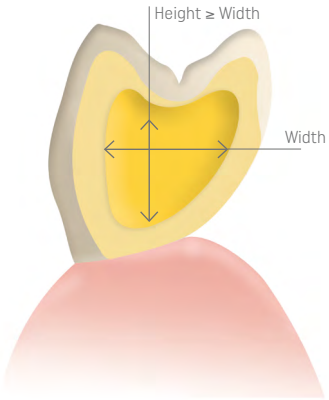
Bridges



Framework stability

Always observe the relation between width and height as well as the suitable dimensions when designing the connectors.

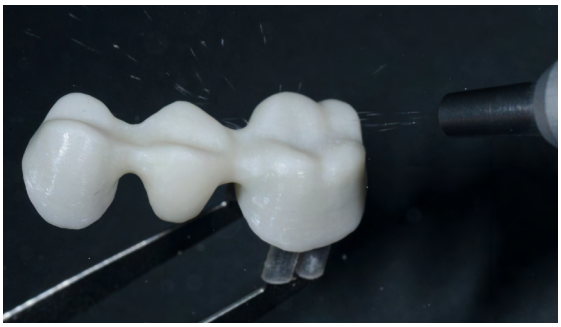
In general, the following applies: Height ≥ Width



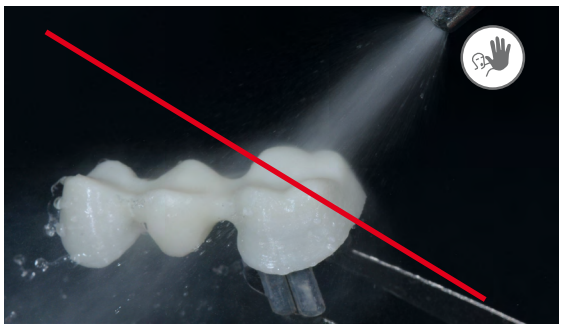
Framework fabrication

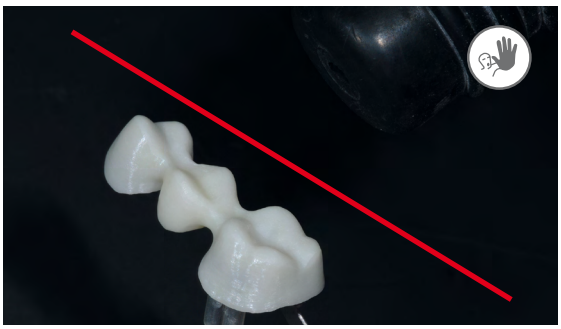
Design the framework in a reduced, supporting shape. As a result, the composite can be applied in an even layer and will consequently be appropriately supported.

Zirconium oxide framework conditioning (ZrO_2)



Carefully blast the previously sintered framework with Al_2O_3, 80 – 100 microns at max. 1 bar (14.5 psi) pressure.





When using SR Link, do NOT clean the framework with steam or with an air gun after blasting. Do not touch the surfaces once they have been cleaned!

- Do NOT blast the zirconium oxide framework with an air gun or clean with steam after sand blasting!
- Do NOT touch the cleaned surface!
- After that, SR Link must be applied.

Conditioning with SR Link

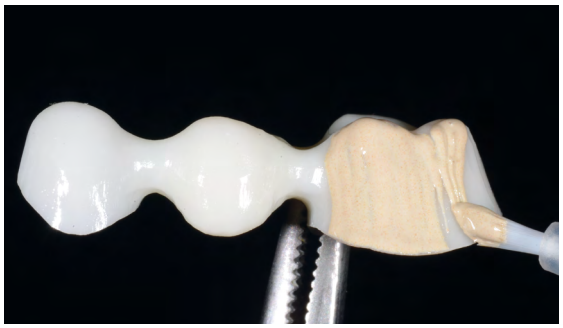
Apply SR Link immediately after having tapped off the blasting medium residue. Use a clean disposable brush to apply SR Link to the veneering surfaces and allow to react for 3 minutes. Do not "soak" zirconium oxide surface in SR Link.

Apply SR Link immediately after the blasting procedure and allow it to react for 3 minutes.

Do NOT blast the zirconium oxide framework with compressed air or clean with water after sandblasting when using SR Link! Do not touch the surfaces once they have been cleaned!

Opaquer application

1st/2nd Opaquer application



Apply the first opaquer layer (wash) thinly using a brush and precure with a handheld curing light or in a curing unit.

Apply the second opaquer layer in a covering coating and precure with a handheld curing light or in a curing unit. Then, polymerize in a curing unit.

Polymerization parameters see page 63

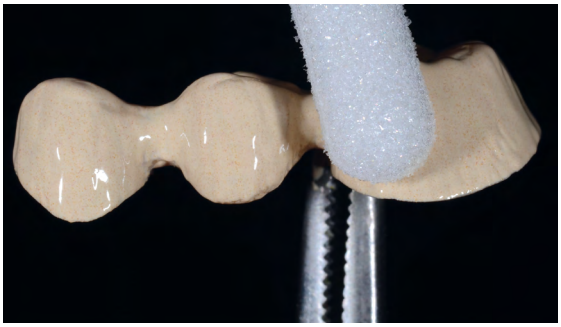
Dentin/incisal layering

Sealing the model

Isolate all areas of the model which may come into contact with SR Nexco prior to the dentin and incisal layering. This step helps to prevent the lab composite from sticking to the model. Use SR Model Separator to seal adjoining parts of the model (e.g. stone die and pontic rests). Apply SR Model Separator in a thin layer, allow to react for a short time, and remove possible excess with oil-free compressed air.

Removing the inhibition layer

Thoroughly remove the resulting opaquer inhibition layer using a disposable sponge (do not use a solvent). Make sure that the opaquer surfaces are free of residue and that the Opaquer shows a slightly shiny surface.



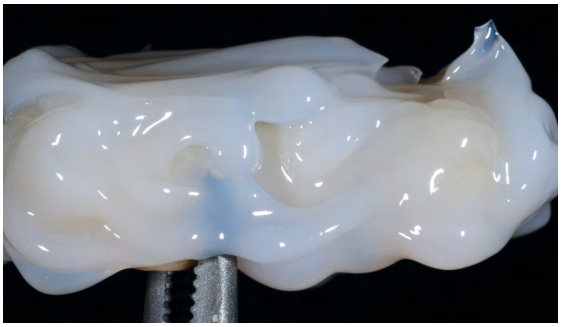
Dentin/incisal layering

The layering procedure of the individual SR Nexco Paste materials is carried out either in accordance with the layering diagram (shade guide layering) or individually. Precure the individual layers segment by segment with a hand-held curing light or in a curing unit.

Tips on individual layering can be found on page 36.

Final polymerization

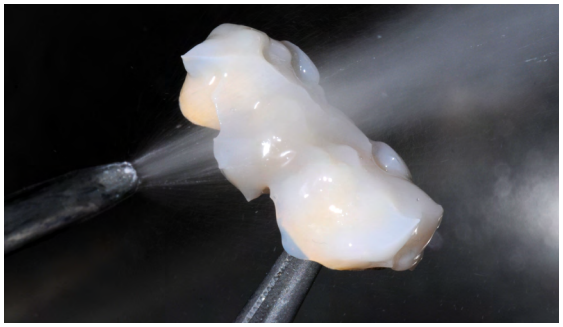
Apply a fully covering but not inappropriately thick coat of SR Gel on the entire veneering surface. Then, conduct final polymerization.



Polymerization parameters see page 63

Finishing/polishing

Finishing



Remove SR Gel. Using cross-cut burs and discs, remove the inhibition layer and create a lifelike shape.

Make sure to rework the entire restoration to remove the thin inhibition layer from the entire surface.

Polishing

Finishing

Finish the restoration using customary polishers, such as rubber polishers and silicone wheels.

Prepolishing and high-gloss polishing

The restorations are prepolished and polished to a high gloss using a goat hair brush, cotton or leather buff and Universal Polishing Paste.

– Microroughness on the finished veneering surface is conducive to plaque accumulation. Therefore, polish carefully.
– Pay particular attention to crown margins, interdental areas, occlusal surfaces and the basal rest of pontics.

Results

Practical procedure

Framework-supported combination dentures

Procedure for combination dentures

Veneering with SR Nexco before setting up and completing the denture saddles

1. Fabricate the primary and secondary components (e.g. telescope crowns).
2. Fabricate the model casting (e.g. transversal connector, sublingual saddle bar).
3. Connect the secondary components with the model casting by adhesive joining, soldering or laser technique.
4. Veneer the secondary components with SR Nexco Paste.
5. Polymerize, finish and polish the SR Nexco veneer.
6. Mask the retentions of the model casting with SR Nexco Gingiva Opaquer.
7. Set up and complete the denture with cold-curing denture base material (e.g. ProBase Cold).

Masking the model cast retentions with Gingiva Opaquer

Conditioning with SR Link

After finishing the model casting, carefully blast the retentions with aluminium oxide (Al_2O_3), 80 – 100 microns at 3 bar (43.5 psi) pressure (see Instructions for Use of the corresponding alloy). Sandblasting improves the mechanical bond. This measure roughens and thus substantially increases the surface of the metal. After blasting, remove blasting medium residue from the framework by tapping off and not by cleaning with steam or an air gun. Apply SR Link immediately after having tapped off the residue. Apply SR Link with a clean disposable brush and allow it to react for 3 minutes. Do not "soak" metal surface in SR Link.

Carefully blast the retentions with Al_2O_3, 80 – 100 microns at max. 3 bar (43.5 psi) pressure; then remove any residue by careful tapping with an instrument.

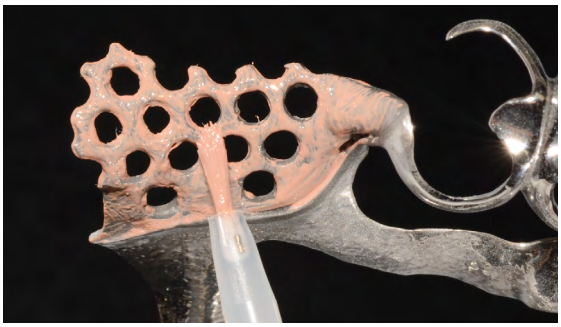
Apply SR Link immediately after the blasting procedure using a disposable brush and allow to react for 3 minutes.

– When using SR Link, do NOT clean the framework with steam or with an air gun after blasting.
– Do not touch the surface once it has been cleaned!

Applying Gingiva Opaquer

1st Gingiva Opaquer layer (wash)

Extrude the desired amount of the ready-to-use Opaquer paste from the syringe and spread it out slightly on the mixing pad using a disposable brush. Apply the first opaquer layer (wash layer) thinly using a disposable brush. Make sure to thoroughly smooth out any roughness on the metal surface, since the wash layer represents the most important bond between metal and composite. Subsequently, precure the wash segment by segment using a handheld curing light or a curing unit.



Apply the first Opaquer layer (wash) thinly with a disposable brush and level/fill any roughness and precure with a handheld curing light or in a curing unit.

Polymerization parameters see page 63

2nd Applying Gingiva Opaquer

Apply the second opaquer layer in such a way that the metal framework is entirely covered with Opaquer, i.e. as much as necessary and as little as possible. After that, precure the opaquer segment by segment with a handheld curing light or in a curing unit. Then, place the framework directly on an object holder (without model) and polymerize in the curing unit.

Apply a fully covering 2nd Opaquer layer and precure each segment with a handheld curing light or in a curing unit.

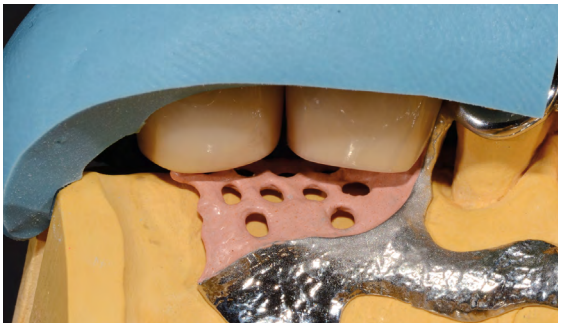
When positioning the model casting on the object holder, make sure that enough light can reach them (no shadow casting). After polymerization, check the curing depth with a probe. If necessary, repeat the polymerization process in the curing unit.

Polymerization parameters see page 63

Preparing for completion

After polymerization check the degree of curing with a probe. Then, remove the inhibited layer using the monomer of the corresponding denture base material and a disposable sponge. This is necessary to prevent streak formation in the composite while completing the restoration. Make sure that the Opaquer shows a slightly shiny surface. The monomers of cold-curing denture base materials, such as ProBase® Cold, are best suited to remove the inhibition layer.

It is recommended to secure the denture teeth to the model casting by means of a cold-curing denture base resin material. Heat polymerization may negatively influence the bond between the metal framework and the SR Nexco veneering material.

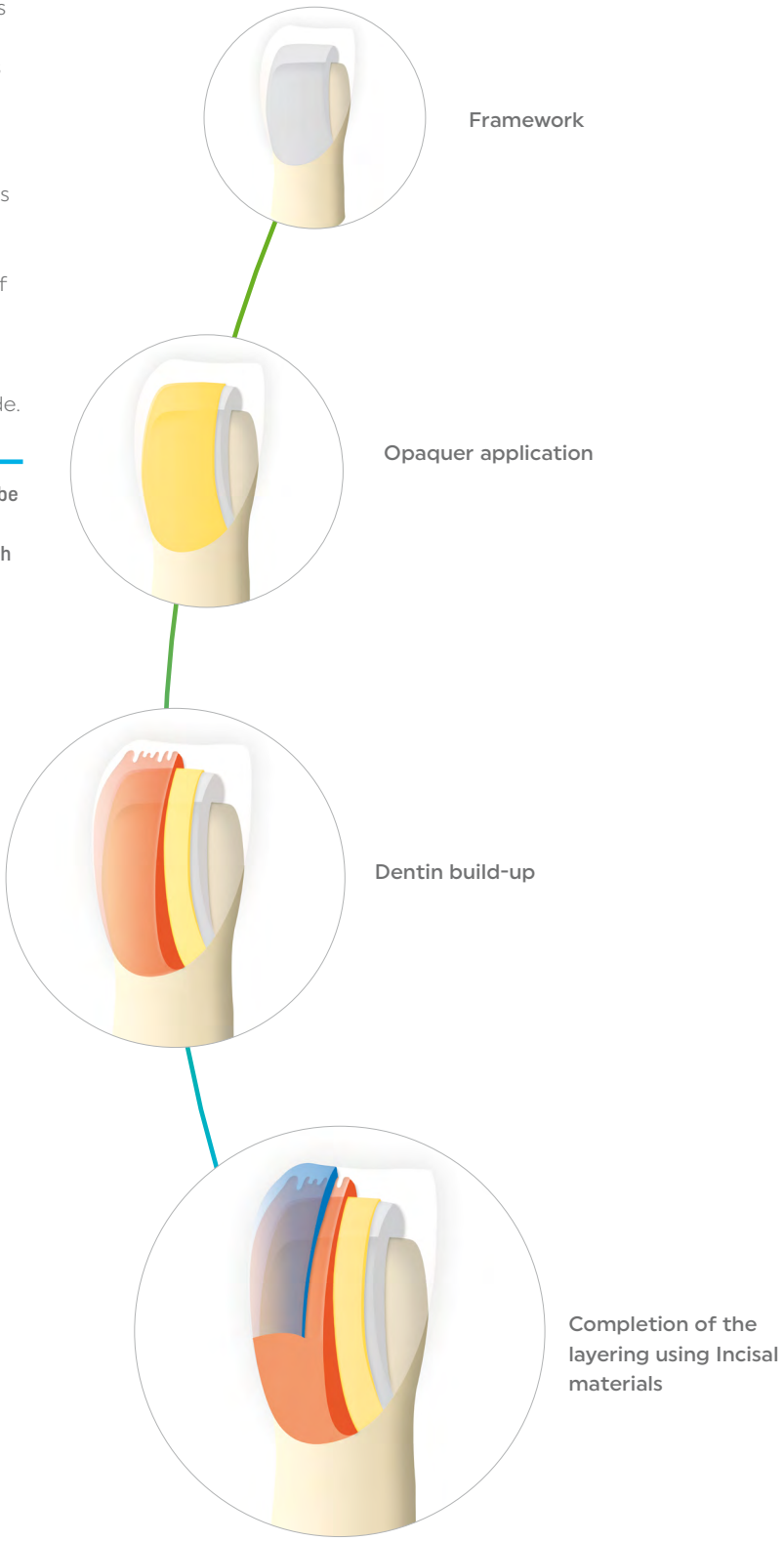


Matching the shade of SR Nexco® to the shade of SR Phonares II

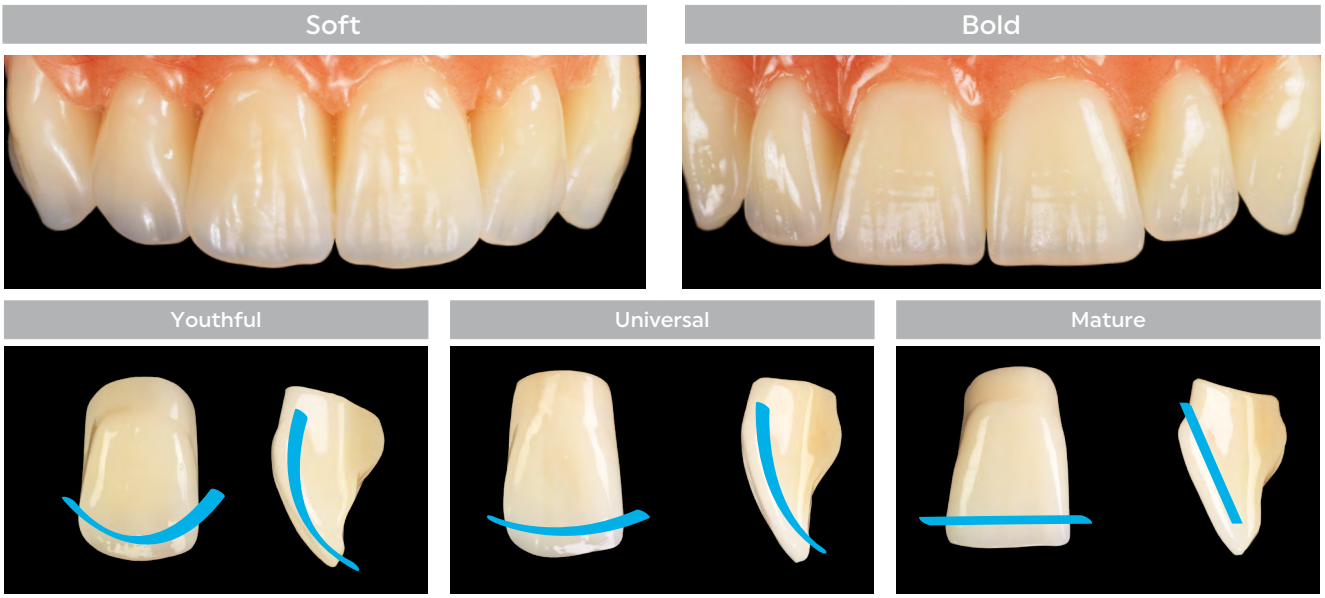
In combination denture prosthetics, matching the shade of composite veneers and denture teeth is very important. As the shades of SR Nexco and SR Phonares II are coordinated, matching shades can be achieved in an efficient manner.

SR Phonares II teeth represent a generation of true-to-nature esthetics in the field of denture prosthetics. The texture of the vestibular surfaces reproduces the natural wavelike pattern of the enamel surface. The perikymata (horizontal growth lines) ensure the true-to-nature vitality of the tooth shapes. In order to achieve matching shades, we recommend that the individual SR Nexco Pastes should be applied in accordance with the layering diagram of the A–D shade guide.

The Incisal Pastes of SR Nexco Paste have to be selected individually in line with the selected SR Phonares II denture teeth in order to match the shade of SR Nexco to the shade of SR Phonares II. The brightness value of the restorations varies depending on the layer thickness of the Incisal material.



As the tooth mould concept of SR Phonares II has been designed to match the age and characteristics of the individual patient, the incisal layer thickness may vary.



Practical procedure

Modification and characterization of denture teeth

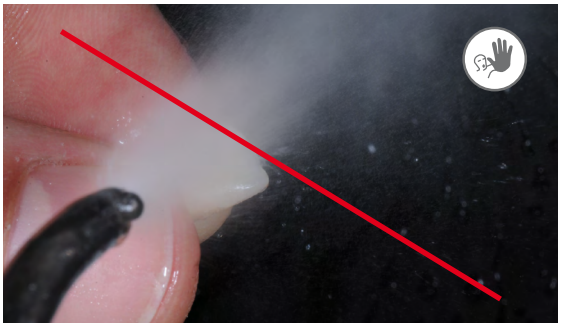
Modifications and customizations of denture teeth can be carried out using an MMA-based light-curing conditioner to bond light-curing materials to PMMA (heat- or cold-curing polymers and resin denture teeth) and to SR Nexco.

Conditioning the surface

Blast the surface to be characterized with Al_2O_3 (80 – 100 µm) at 2 bar (29 psi) pressure. Remove residue with oil-free air. Do not clean with steam! Apply the conditioner in a thin layer according to the manufacturer's instructions and allow it to react. Then, polymerize in the curing unit following the manufacturer's instructions. Do not destroy the inhibition layer. After this, you can apply the SR Nexco veneering material.

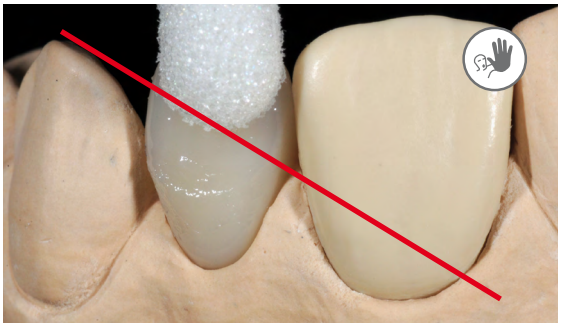
Create the cut-back. Blast the surface with Al_2O_3 (80 – 100 µm) at 2 bar (29 psi) pressure.

Remove residue with oil-free air.



Do not clean with steam!

Apply the conditioner in a thin layer according to the manufacturer's instructions and allow it to react. Then, polymerize in the curing unit following the manufacturer's instructions.



Do not destroy the inhibition layer.

Characterization and customization using e.g. Effect, Dentin and Incisal materials

Characterize with Effect shades and adjust the shape and shade. Cover with Incisal material.

Final polymerization

Apply a covering but not inappropriately thick coat of SR Gel and conduct the final polymerization..

Polymerization parameters see page 63

Finishing/polishing/outcome

Carefully smooth out the surfaces with rubber polishers and silicone polishing wheels.

Pre-polishing is done with goat hair brushes and Universal Polishing Paste.

High-gloss polishing is achieved with a cotton buffing wheel.

The applied SR Nexco material is more wear resistant than PMMA denture teeth, for instance. This fact must be taken into account during finishing and polishing. If this is not observed, a "step" may develop in the transition areas between SR Nexco and PMMA resin during polishing, for example.

Practical procedure

Restorations with gingiva portions

The SR Nexco Paste Gingiva shades are coordinated with the Ivoclar Gingiva concept of IPS InLine®, IPS Style® Ceram and IPS e.max® Ceram. In this way, the shade design of true-to-nature gingiva components, particularly in conjunction with implant superstructures, is possible according to the same method with all veneering systems.

In addition, SR Nexco offers the shades Basic Gingiva BG34 and Intensive Gingiva 5. Especially in implant prosthetics and in conjunction with metal-ceramic restorations, the use of SR Nexco Paste permits an efficient treatment concept.

Framework design

The framework design should be carefully planned and created using either a wax-up and silicone keys or software. This ensures that the SR Nexco veneering material features an even layer thickness. Make sure that the soft-tissue contacts consist entirely of SR Nexco, so that SR Nexco Paste Gingiva can be used to supplement the restoration in case of subsequent tissue recession.

Framework design by means of a wax-up and reduced shape.

Completed framework.

Conditioning the framework

Conditioning with SR Link

After finishing, carefully blast the framework with aluminium oxide Al_2O_3 (80–100 µm) at 2–3 bar (29– 43.5 psi) pressure (see Instructions for Use of the corresponding alloy). Sandblasting improves the mechanical bond. It roughens and thus substantially increases the surface of the object. After blasting, remove blasting medium residue from the framework by tapping off and not by cleaning with steam or an air gun. Apply SR Link immediately after having tapped off the residue. Apply SR Link with a clean disposable brush and allow it to react for 3 minutes. Do not apply too much SR Link to metal surfaces.

Framework blasted with Al_2O_3 (80–100 µm) at 2–3 bar (29–43.5 psi) pressure and wetted with SR Link.

- When using SR Link, do NOT clean the framework with steam or with an air gun after blasting.
- Do not touch the surfaces once they have been cleaned!
- Do not use SR Link in conjunction with alloys that contain more than 50% silver and/or copper or alloys with more than 90% gold, palladium and platinum.

Opaquer application and layering of the dental portions

First, the dental framework portions are covered with two layers of the tooth-coloured Opaquer in paste form and intermediately cured. Final polymerization is conducted in the curing unit. After removing the inhibition layer with a disposable sponge, the dental portions are completed with SR Nexco Paste.

First Opaquer layer as wash, second Opaquer application in a covering layer

Layering of the dental portions with Dentin, Effect and Incisal materials

Basically, the dental veneers may be created first, before the gingival portions are designed. Optionally, the dental veneers and the gingival portions may also be created simultaneously.

Opaquer application to veneer the gingival portions

Applying Gingiva Opaquer

Extrude the desired amount of the ready-to-use Opaquer paste from the syringe and spread it out slightly on the mixing pad using a disposable brush. Apply the first Opaquer layer (wash) thinly using the brush. If retention beads are used, make sure to thoroughly smooth out or fill up any roughness on the metal surface, since the wash layer represents the most important bond between the metal and the composite. Subsequently, precure the wash layer tooth by tooth with a handheld curing light or in a curing unit. Apply the second Opaquer layer. The metal framework should now be entirely covered with Opaquer. Make sure to apply as much material as necessary and as little material as possible. Subsequently, polymerize in the curing unit.

Apply the first Gingiva Opaquer layer (wash) thinly with a brush and precure with a handheld curing light or in a curing unit. Entirely cover the gingival area with the second Opaquer layer and polymerize in the curing unit.

Polymerization parameters see page 63

- If a metal margin has been designed, thin out the Opaquer towards the metal margin to ensure a clean transition between metal and composite.
- If a smooth surface is preferred, lightly tap the top of the surface with a spatula.
- Using a probe, check opaquer for complete polymerization in critical areas and cure again as necessary.

Gingiva layering

After the application and the polymerization of the SR Nexco Gingiva Opaquer, you can directly begin with the application of SR Nexco Gingiva materials. Given the variations in gingival thickness, vascularity, and pigmentation, the gingiva exhibits a significantly diverse range of shades. This effect has to be recreated with SR Nexco. A lifelike esthetic appearance is created by applying individual layers with different Gingiva shades.

First, apply Basic Gingiva BG34 as the basic material to the entire area from the papilla contours to the model. To achieve an appropriate depth effect, Gingiva materials with a more intensive shade may be layered. In the process, papilla and the spaces between the alveolas can be layered in a lifelike fashion. To achieve a natural-looking outcome, use brighter, more translucent materials towards the surface. Subsequently, precure each individual layer with a handheld curing light or in a curing unit.

Apply Basic Gingiva BG34 in combination with IG2 and IG4 as the basic material. Customize with Intensive Gingiva.

Complete with translucent Gingiva materials.

Final polymerization

To minimize the inhibition layer, apply a covering, but not too thick, layer of SR Gel prior to polyermization in the curing unit. The final finishing of SR Nexco Gingiva is limited to minor adjustments of shape and polishing of the surface.

Polymerization parameters see page 63

Finishing/polishing

Finishing

After completion of the polymerization procedure, completely remove SR Gel from the restoration using running water. Use customary tungsten carbide burs and polishers to rework and finish the surface and the surface texture. The inhibition layer must be removed from the entire SR Nexco surface.

Finish with cross-cut tungsten carbide burs and stippling instruments. Subsequently, polish with Universal Polishing Paste.

Polishing

To finish the surface, polish the surface in the usual manner with rubber polishers and silicone polishing wheels. The restorations are prepolished and polished to a high gloss using a goat hair brush, cotton or leather buff and Universal Polishing Paste. Use low speed and light contact pressure for prepolishing and high-gloss polishing. Adjust the pressure with the handpiece, not the polishing motor.

- **Microroughness on the finished veneering surface is conducive to plaque accumulation. Therefore, polish carefully.**
- **Make sure to polish crown margins, interdental areas, occlusal areas, gingiva portions and direct basal gingiva rests carefully to a high gloss.**

Results

General information

Cementation

Esthetic cementation options are crucial for achieving a harmonious shade effect in lab composite restorations. Depending of the areas of application, SR Nexco restorations can be seated using either adhesive, self-adhesive or conventional cementation. The following materials are recommended for cementation:

Material	SR Nexco (framework-free)	SR Nexco (metal-supported)		SR Nexco (zirconium oxide-supported)	
Area of application	Inlays, onlays, veneers, anterior crowns	Crowns, bridges		Crowns, bridges	
Cementation method	adhesive	adhesive	self-adhesive/ conventional*	adhesive	self-adhesive/ conventional*
Blasting	Al_2O_3 at max. 1 bar	Al_2O_3 according to the instructions of the alloy manufacturer		Al_2O_3 80–100 µm at max. 1 bar	
Conditioning	Adhese Universal: scrubbing for 20 s	60 s with Monobond® Plus	–	–	
Cementation	Variolink® Esthetic Multilink® Automix	Variolink® Esthetic	Speedcem® Plus, ZirCAD® Cement	Variolink® Esthetic	Speedcem® Plus, ZirCAD® Cement

The range of available products may vary from country to country.
* No conditioning is required for conventional cementation.

Zinc oxide-containing temporary cements are appropriate for the temporary cementation of framework-supported long-term temporaries with a maximum wear period of 12 months.

Please observe the corresponding Instructions for Use.

Polymerization table

Polymerization method	Material*	PrograPrint Cure program	Curing time	Peak wavelength	Light intensity
Intermediate curing / precuring (per layer)	Opaquer Liner Dentin PonticFill Incisal Effect Margin Gingiva Stains	SR Nexco	40 s	405 nm/ 460 nm	86 mW/cm² / 68 mW/cm²
Polymerization	Opaquer Gingiva Margin	SR Nexco	5 min		
Final polymerization	Final restoration	SR Nexco	5 min		

* layer thicknesses, see "Curing depths", page 12

The product is purely light-curing and can be light cured with commercially available curing units. The curing units must have at least a light spectrum with two peaks at 405 nm (86 mW/cm²) and at 460 nm (68 mW/cm²). At this light intensity, a curing time of at least 40 seconds is required for precuring and a curing time of 5 minutes for polymerization and final polymerization. During the curing process, temperatures exceeding 50 °C (122 °F) should be avoided on the object.

Please observe the regulatory Instructions for Use (www.ivoclar.com/eIFU).

Subsequent adjustments

Subsequent adjustments, e.g. during cut-back or after final polymerization in the lab

Adjustments with SR Nexco components

1. Roughen the areas to be adjusted with a coarse diamond or carefully blast with aluminium oxide Al_2O_3 (80–100 µm, disposable blasting medium) at 2 bar (29 psi) pressure. Blasting improves the mechanical bond. This measure roughens and thus substantially increases the surface.
2. After blasting, remove blasting medium residue with oil-free compressed air.
3. Do not apply Connector, Bonder or Modelling Liquids to the sandblasted surfaces.
4. Immediately after blasting, apply the SR Nexco materials and precure each segment with a handheld curing light or in a curing unit.
5. Cover the entire veneer evenly with a thin layer of SR Gel.
6. Place the restoration on the object holder.
7. Conduct final polymerization (see Polymerization table).
8. After final polymerization, remove SR Gel under running water.
9. Finish and polish the restoration as described above.

Combination table

SR Nexco								
A–D	BL3	BL4	A1	A2	A3	A3.5	A4	B1
SR Nexco Liner	BL		L1	L2	L2	L3	L4	L1
SR Nexco Opaquer	BL3	BL4	A1	A2	A3	A3.5	A4	B1
SR Nexco Paste Margin			M1	M2	M2	M3	M4	M1
SR Nexco Paste Pontic Fill								
SR Nexco Paste Dentin	BL3	BL4	A1	A2	A3	A3.5	A4	B1
SR Nexco Paste Incisal	BL		I1	I2	I3	I4	I5	I1
SR Nexco Paste Effect	Occlusal Dentin	orange	brown	Mamelon	light	yellow-orange	Opal Effect	OE 1
SR Nexco Stains			clear		white		chilli	
SR Nexco Paste Gingiva	Gingiva Opaquer	pink	Basic Gingiva	BG34	Gingiva	G1	G2	G3


B2
B3
B4
C1
C2
C3
C4
D2
D3
D4
L2
L3
L3
L1
L5
L5
L4
L5
L5
L5
clear
incisal
B2
B3
B4
C1
C2
C3
C4
D2
D3
D4
M2
M3
M3
M1
M5
M5
M4
M5
M5
M5
Pontic Fill
B2
B3
B4
C1
C2
C3
C4
D2
D3
D4
I2
I3
I4
I2
I3
I4
I5
I2
I3
I4
OE 2
OE 3
OE 4
Transparent
blue
brown-grey
orange-grey
clear
red
orange
maroon
mahogany
blue
G4
G5
Intensive Gingiva
IG1
IG2
IG3
IG4
IG5

Frequently Asked Questions

Are the SR Nexco materials radiopaque?	No, the SR Nexco materials feature only a low radiopacity.
Is it possible to use SR Modelling Liquid as bonding agent?	No. SR Modelling Liquid must only be used for the wetting of instruments. The material has an unfavourable effect on the bond and might cause the restoration to fail if used excessively.
Is it possible to use SR Modelling Liquid as glaze?	No. It is intended for use during modelling and must not be used as glaze.
Is it possible to use SR Modelling Liquid to dilute the consistency?	No. The strength of the material would then no longer be warranted and the material would be internally inhomogeneous. As a result, the restoration would fail.
On which framework materials can SR Link be used?	– On alloys that contain up to 90% gold, palladium and platinum – On alloys that contain up to 50% copper and/or silver – On base metal alloys – On titanium and titanium alloys – On zirconium oxide (ZrO_2)
Can SR Link be used on high-gold and copper-free bio alloys and electroformed (galvano) frameworks?	Given the high precious metal content (Au, Pt, Pd, Ag) of bio alloys and the fine gold content (99.9%) of galvano frameworks SR Link cannot be used. Generally, the bond achieved on alloys containing copper is superior to the one on copper-free alloys.
What needs to be given particular attention during the blasting procedure (conditioning)?	A grain size of 80 – 100 microns for the Al_2O_3 has to be used. The blasting pressure depends on the alloy used. For zirconium oxide restorations, the blasting pressure must not exceed the maximum of 1 bar (14.5 psi).
Is it possible to mix SR Nexco pastes (high and low viscosity) with each other?	High- and low-viscosity pastes must not be mixed with each other as this would cause bubble formation and due to the different strength values. SR Nexco must not be mixed or processed with other veneering materials.
Up to what thickness is it possible to layer SR Nexco?	A layer thickness of 2 mm in the incisal and occlusal area must not be exceeded.
Is it possible to apply SR Nexco Stains to the surface?	SR Nexco Stains must always be covered with layering materials such as Incisal or Transpa materials, the reason being that they are not wear-resistant and they would promote the accumulation of plaque.
Is it necessary to use Connector and Bonding Liquids for subsequent adjustments of SR Nexco veneers	Roughening and blasting is sufficient to apply subsequent supplements to completed SR Nexco restorations.
Which devices may be used to polymerize SR Nexco?	SR Nexco can be cured in the PrograPrint Cure and in the most common curing units. The curing units must have at least a light spectrum with two peaks at 405 nm (86 mW/cm2) and at 460 nm (68 mW/cm2). At this light intensity, a curing time of at least 40 seconds is required for precuring and a curing time of 5 minutes for polymerization and final polymerization. During the curing process, temperatures exceeding 50 °C (122 °F) should be avoided on the object.
What happens if the indicated curing depths are not observed?	If the indicated curing depths are not observed, the material cannot thoroughly cure, which may result in chipping.
At what distance from the curing light should the segments be precured?	The smaller the distance between the light and the objects, the more thorough the polymerization of the material will be.
Must SR Gel always be used?	For the polymerization of SR Nexco, SR Gel must always be used. If this is not done, the inhibited layer will be too thick, which may lead to clinical failure.

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