Technical Guideline

SHOFU ZR Lucent Supra

GUIDE

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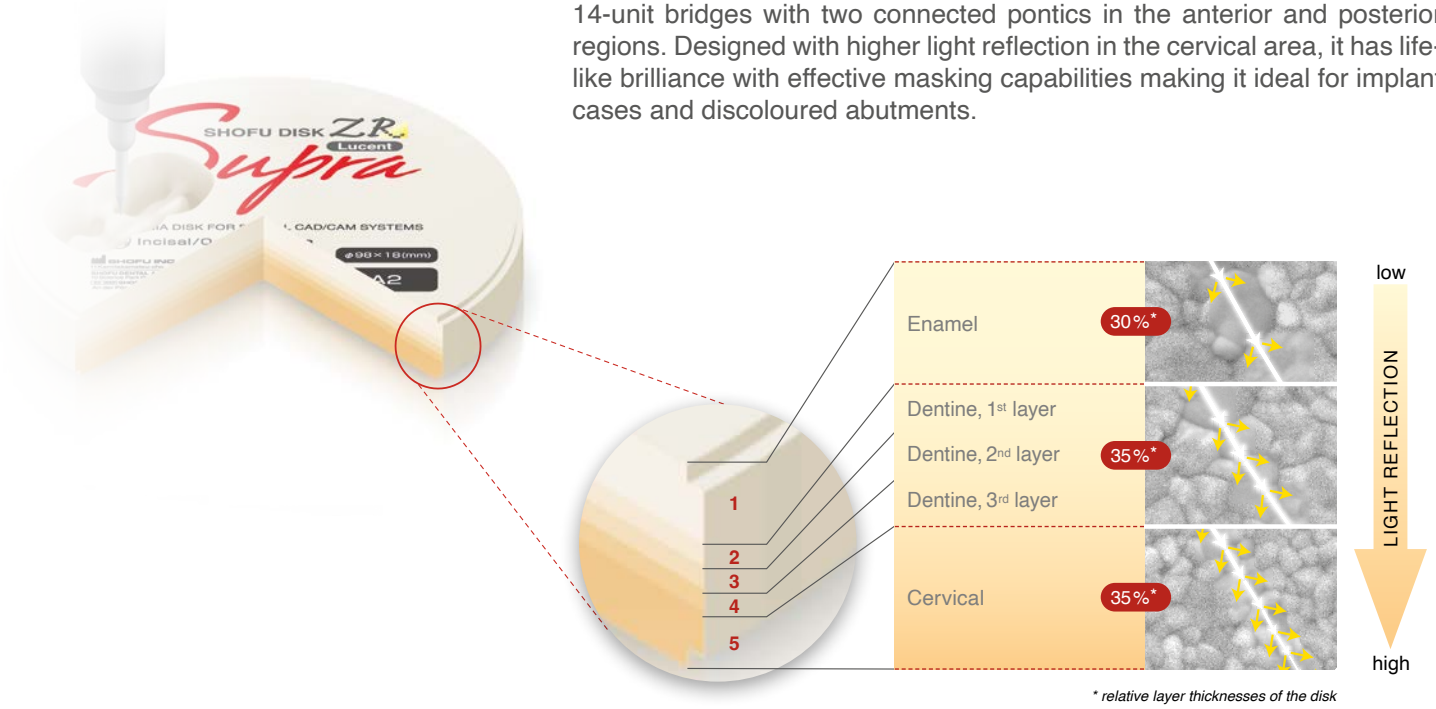
SHOFU ZR Lucent Supra is a premium multi-layered zirconia that harmonizes remarkable strength with life-like aesthetics to fulfil aesthetic and functional needs. The multi-layered, high-strength CAD/CAM zirconia disk features a seamless gradation of translucency that increases from the cervical towards the enamel zone while maintaining outstanding flexural strength across all layers.

With flexural strength above 1400 MPa in the cervical zone, **SHOFU ZR Lucent Supra** is ideal for a wide spectrum of clinical indications including 14-unit bridges with two connected pontics in the anterior and posterior regions. Designed with higher light reflection in the cervical area, it has life-like brilliance with effective masking capabilities making it ideal for implant cases and discoloured abutments.



* relative layer thicknesses of the disk

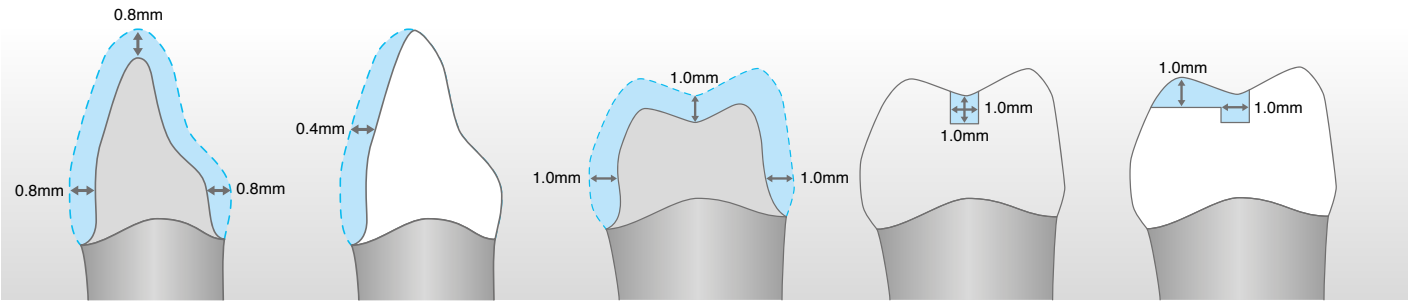
Indications

- Anterior / Posterior Crowns
- Veneers
- Inlays / Onlays
- Long span bridges with upto 14 units with 2 connected pontics

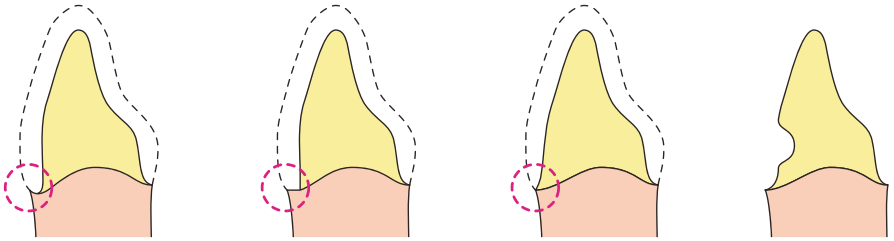
Technical Specifications

Diameter	98 mm with groove
Thickness	14 mm, 16mm, 18 mm, 22 mm
Shades	Pure White, W0, W2, A1, A2, A3, A3.5, B1, B3, C1, C3, D2
Flexural strength, sintered (DIN-ISO 6872:2015)	Enamel: (30%) 1,034 MPa Dentine: (35%) 1,163 MPa Cervical: (35%) 1,454 MPa
Vickers hardness, unsintered (HV 0.2) (DIN-ISO 6507:2005)	Enamel: HV 45 Cervical: HV 65
Sintering temperature	1,450 °C
Translucency (shade A2 / thickness 0.5 mm)	Enamel: 44% Dentine: 40% Cervical: 37%
Coefficient of thermal expansion (25 - 500 °C)	10.5 x 10-6K^{-1}

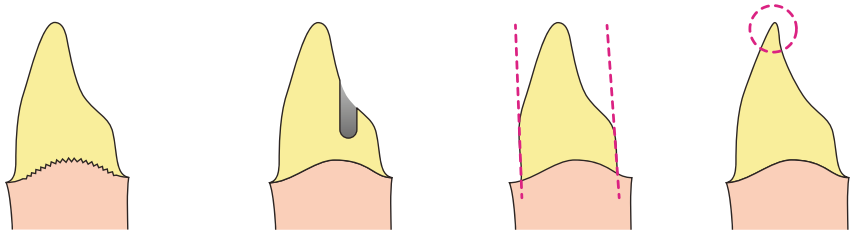
Preparation Guideline



Avoid the following errors during tooth preparation for precise scanning, designing and milling.



J-margins *Deep shoulders* *Knife edges* *Under cut*



Serrated margins *Guide grooves* *Non--tapered abutments* *Sharp edge*

Design Recommendations

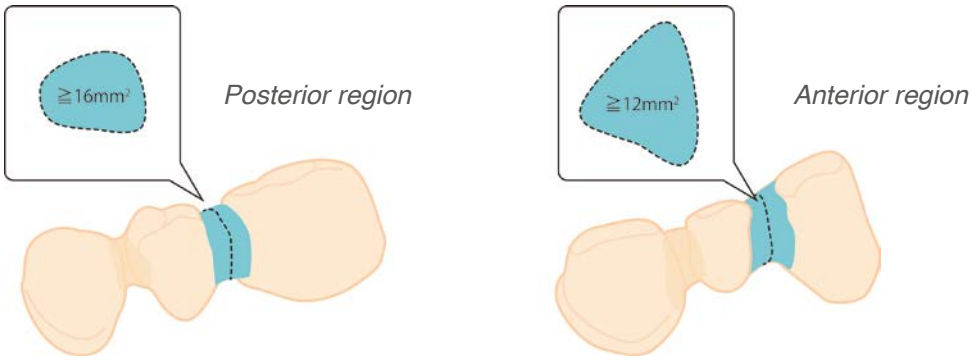
Thickness Guidelines

Anterior Tooth	Crown I Bridge	0.8mm over
	Veneer	0.4mm over
Molar Tooth	Crown I Bridge	1.0mm over
	Inlay	1.0mm over
	Onlay	1.0mm over

Guideline for Cross-Sectional Area of Connectors

Anterior Tooth	3 Bridge 4 Bridge over	12mm^2 over
Posterior Tooth	3 Bridge 4 Bridge over	16mm^2 over
Number of Connecting Pontics		2 teeth (maximum)

Connector Dimensions



Design the largest possible dimension, extended in vertical direction rather than horizontal direction. In anterior restorations where it may not be possible to extend in a bucco-lingual direction, extend the connector dimension in a cervico-incisal direction.

Distance between the abutment teeth is critical. With increasing distance, mechanical stresses and masticatory forces will be greater on the framework.

CAD/CAM Processing

01 Shrinkage Factor (%)

Each disk has specific shrinkage factor, which is labelled on the disk. Shofu ZR Lucent Supra disk has a shrinkage factor of 1.231 so an oversizing value of 23.10% should be selected in the CAD software during design stage.

1.231 x 100 = 123.10 (+23.10%)

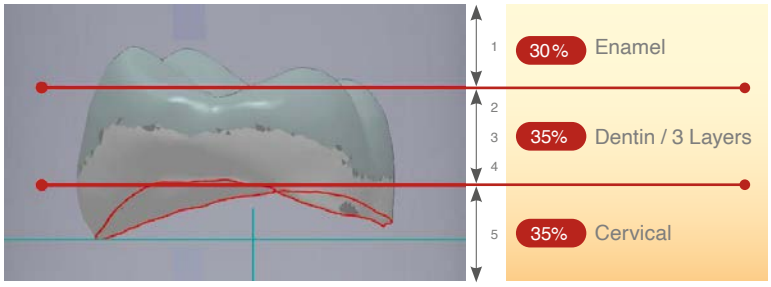
** In case of Zirkon Zahn system, calculations to be adjusted as follows:
100: 1.231= 81.23 (- 18.77 %)

02 Alignment of Disk

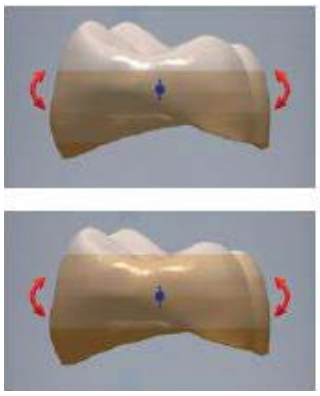
A square marking recess on the top of the disk provides the correct position for placement in the holder. Mark the position on the holder with a pen before removing the disk.

03 Nesting of Restoration

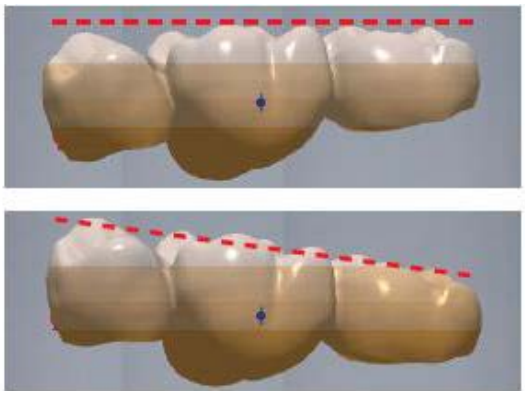
Position the restoration as centrally as possible to optimize the translucency attributed to the gradation of layers.



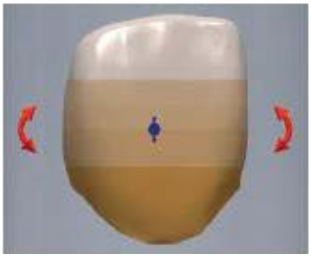
Chroma and value can be adjusted by shifting the position of the restoration along the vertical axis (Z- axis). Shifting towards the cervical aspect will increase chroma and opacity. Shifting the position of the restoration towards the incisal side along the vertical axis will increase value (lighter in colour) and translucency of the restoration. Tilting along the horizontal axis may cause disharmonious shade gradient.



Z-axis position



Tilted position



Central position

04 Milling

Select the parameters for multilayer zirconia when processing the disk in CNC milling machine as these apply gentler forces on the disk than monolayer milling parameters. Shofu ZR Lucent Supra should undergo dry milling and coolants of any kind should be avoided as it may change the colour and reduce translucency of the material. The disk should be kept dry while handling it.

05 Separation of Restoration

Separate the milled restoration from the disk with a sharp carbide or fissure carbide bur, avoiding vibrations as far as possible. Remove excess sections by smoothening with a silicone polisher (Softcut PB). Remove any zirconium oxide dust either with a soft brush or with a blast of oil-free compressed air.

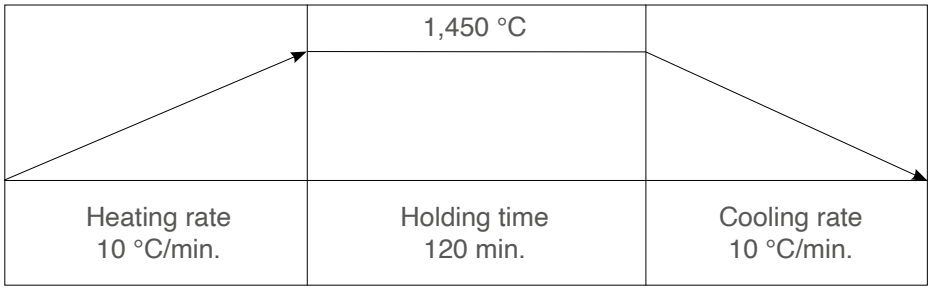
Colouring liquids are not necessary with multilayered zirconia as they are pre-shaded with a true-to-nature gradation. Do take note that infiltration of the zirconia with colouring liquids which may be acidic and opaque, reduce the strength of the zirconia disk after sintering.

06 Sintering

Sinter the restoration in a high-temperature sintering furnace.

Recommended Firing Schedule:

Heat the furnace from room temperature to 1450 °C at a rate of 10 °C/ min, hold temperature for 2 hours and cool down to room temperature at the rate of 10 °C/ min. Depending on the furnace, cooling down of the furnace may occur naturally, without a special firing schedule from approximately 600 °C.



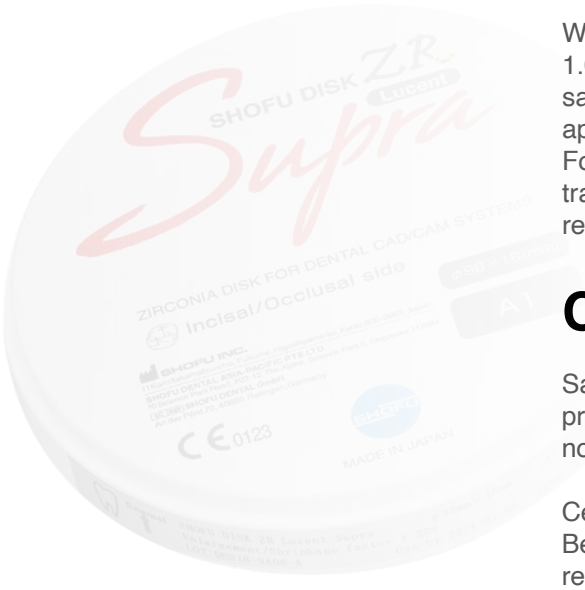
Any increase or decrease in the heat rate per minute will influence the translucency and impact the physical properties of the zirconia. “High-speed” sintering is not recommended.

Sintering accessories should be kept clean and free of dust to avoid contamination of the restoration. Place the restoration on a uniform bed of sintering beads for even heating and shrinkage. The restoration should not be immersed in the bed of sintering beads. Single tooth restorations should be placed on their labial (Anterior) and occlusal (Posterior) surfaces.

Bridges should be placed on the incisal edges for even support during sintering. The pontics must be supported.

07 Finishing

Post-sintering adjustments should be done with Dura-Green DIA (diamond impregnated stones) without overheating or excessive pressure to avoid damage to the restoration or incorporation of surface micro-cracks.



Veneering

Shofu ZR Lucent Supra restorations can be fully, partially or micro-layered with Vintage ZR porcelain depending on the aesthetic requirements of the case.

When designing the restoration, reduce the contour by approx. 0.5-1.0 mm to leave space for veneering porcelain. Prepare the surface by sandblasting with 50 µm Al2O3 at a pressure of approx. 1-2 bar and approximately 10 mm from the blast nozzle. Clean with a steam cleaner. For enhanced adhesion of the subsequent layers, connector firing with a translucent layer, approx. 20 °C above the standard firing temperature, is recommended.

Cementing

Sandblast the intaglio surface of the restoration with 50 µm Al2O3 at a pressure of approx. 1-2 bar and a distance of approx. 10 mm from the blast nozzle and clean with steam cleaner or alcohol.

Cement with adhesive resin cements such as ResiCem combined with BeautiBond X-Treme universal adhesive or Universal Primer to prime restoration surface for predictable adhesion.

Shelf Life and Storage

Store in original package in a dry place, in the right position.
Avoid physical impact and vibrations

For more information

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