

**Is TriLor only Digital?** TriLor comes in puck form that accommodates most milling machines and indication. Those who are analog can still benefit from TriLor's qualities with the TriLor Arch, a clever and easy way to fabricated implant supported bars, manually.

***MILLING QUESTIONS:***

**We are currently using imes-icore (350i, 550i, and 650i), can I mill TriLor® with the imes-icore?**

Yes, the imes-icore enjoys robust spindles that can certainly handle the TriLor materials. They can mill either dry or wet, does not matter for the material, but wet may extend the life of the tooling.

**Can you use Roland milling units with the TriLor?**

Roland DGA has been validated to mill the TriLor® material, specifically validated for the Roland DWX-52D powered by CIMSISTEM- MillBox Version 2019 03-11-2020. "The testing of TriLor material went very smooth and we are happy to report that we encountered no complications. The tools have shown no excessive wear and the restorations look similar in sharpness and quality."

**I have a vhf milling machine, can I mill TriLor?**

Vhf has validated the mill of TriLor on their milling machines and with the newest update in their CAM software, TriLor or (Fiberglass resins) will be an available strategy. vhf has a new tool specifically made for the milling of TriLor.

**Are the K5 and the K5 Plus both validated for vhf and TriLor?**

Yes, the K5 is validated for TriLor. The difference with the K5 and the K5 Plus, is that the K5 plus has an automatic puck changer, where the K5 is one disk at a time. Both machines are validated.

**Can TriLor be milled with Amann Mill?**

Amann has great mills and tend to lean towards a more closed protocol. You can mill with the carbide tools that you have, which will necessitate more frequent tooling change to properly mill TriLor®. We advise tooling change after each arch.

When using the Amann mill, select PMMA or Resin Composite mill strategy when milling TriLor. The only challenge at times is the speed of the AG spindle, which is fast and may bind to the composite material since the speed generates heat while grinding. **It is suggested to reduce the speed or even mill the TriLor wet to attempt and reduce heat generation.** Also, please ensure that there is at least 4mm space around the all on x bar while milling, this will help avoid any premature collisions with the tools and bar. Diamond tools will last longer and reduce any heat during milling, but are more costly, so carbide tooling can be used, but you will need to replace them more frequently

***BONDING QUESTIONS:***

**Is the bonding step necessary when bonding TriLor to Composite?**

Yes, every bit helps

**What is the bonding process for TriLor? Here is a run-down of the process after milling TriLor:**

Sandblast

Steam

Air dry

Make your restorations using your conventional methods (zir, lithi)

Now you're ready to put them together!

Add dip wax to your glazed restoration in the areas that you're not going to have cement

Apply ceramic primer to the restoration

Apply composite primer to the TriLor

Air dry

Cement crown---use the right cement color!

Clean up excess cement

Sandblast

Add composite primer to TriLor areas

Add ceramic primer around areas that ceramic will touch the TriLor

Apply composite

Cure

Air Barrier around composite work

Final cure

Contour, etc

Stain glaze

Light Cure

**What bonding material can I use on TriLor?**

Some good Resin Cements I and others have used are RelyX by 3M, Multilink by Bisco, Nexus by Kerr and Panavia by Kurary. Whatever bonding cement you currently use will work, just be sure it doesn't have any geometric changes like shrinkage or expansion that you hadn't accounted for.

Apply the acrylic resin or composite directly to the TriLor®, performing the operative protocol as dictated by the manufacturer of the aesthetic material.

**Adhesion protocols for the TriLor is as follows:**

1. **Acrylic**~ Sandblast the TriLor with AlO<sub>2</sub> at 2 Bar (50 microns-110 micron); Air dry well (Oil and water free line); then wet the TriLor with acrylic resin and bond.
2. **Composite**~ Sandblast the TriLor with AlO<sub>2</sub> at 2 Bar (50 microns-110 micron); Air dry well (Oil and water free line); Prime with composite primer and proceed to apply as you would. Please follow instruction for the composite you use.
3. **Lithium Disilicate**~ Sandblast the TriLor with AlO<sub>2</sub> at 2 Bar (50 microns-110 micron); Air dry well (Oil and water free line); Sandblast the internal part of the crowns, use etching gel (as recommended) and bond with Universal Resin Cement
4. **Ti-Bases**~ Sandblast the TriLor with AlO<sub>2</sub> at 2 Bar (50 microns-110 micron); Air dry well (Oil and water free line); Sandblast the intimate part of the Ti-Base, and bond with Universal Resin Cement.

**Bond and Cement Details**

Esthetic Opportunities

Zirconia, Lithium Disilicate, PMMA, Nano and Composite.

For best results, adhere to material manufacturers supported bonding protocol.

TriLor® Treatment

Sandblast TriLor® contact areas w/ Al<sub>2</sub>O<sub>3</sub> 110 µm/2 bar.

Clean surface with gentle pressurized steam.

All gingival contact areas **should** be sealed (GC OptiGlaze).

Zirconia Bonding

Sandblast intaglio surface with Al<sub>2</sub>O<sub>3</sub> 110 µm/2 bar.

Clean surface with gentle pressurized steam.

Apply Zirconia Primer (mfr. recommended salinate, *i.e. MonoBond Plus, Ivoclar*)

Bond with Dual Cure Cement following manufacturer protocols (mfr. recommended, *i.e. MultiLink, Ivoclar*).

Lithium Disilicate Bonding

Sandblast intaglio surface with Al<sub>2</sub>O<sub>3</sub> 110 µm/2 bar.

Clean surface with gentle pressurized steam.

Etch intaglio surface, Hydrofluoric Acid 5%, 20 seconds.

Rinse for 20 seconds.

Apply Bonding Primer Silane (mfr. recommended, *i.e. MonoBond Plus, Ivoclar*).

Bond with Dual Cure Cement (mfr. recommended, *i.e. Multilink Ivoclar*).

PMMA – Milled Bonding

Sandblast intaglio surface with Al<sub>2</sub>O<sub>3</sub> 110 µm/2 bar.

Clean surface with gentle pressurized steam.

Apply primer silane (mfr. recommended, *i.e. MonoBond Plus, Ivoclar*).

Bond with Dual Cure Cement (mfr. recommended, *i.e. Multilink Ivoclar*).

Composite/ Nano-Ceramic – Milled Bonding

Sandblast intaglio surface with Al<sub>2</sub>O<sub>3</sub> 110 µm/2 bar.

Clean surface with gentle pressurized steam.

Apply primer silane (mfr. recommended, *i.e. MonoBond Plus, Ivoclar*).

Bond with Dual Cure Cement (mfr. recommended, *i.e. Multilink Ivoclar*).

Composite –Build-up Bonding

Sandblast intaglio surface with Al<sub>2</sub>O<sub>3</sub> 110 µm/2 bar.

Clean surface with gentle pressurized steam.

Apply Bonding Adhesive (mfr. recommended, *i.e. SR Connect, Ivoclar*).

Build-up Composite directly to TriLor®.

**GENERAL QUESTIONS:**

**What is the min vertical thickness on a thimble frame?**

The minimum thickness for the TriLor material is **3.5mm** however a thimble can typically range 6-8 mm, so the vertical restorative space the patient exhibits will provide for the thimble thickness, which is a reduction of 1.0mm to accommodate a crown. Meaning 3.5mm is the minimum thickness, but it won't be very retentive for a crown to be cemented on it, so it's best to have the thimble 1.0mm less than the final size of the crown.

As far as minimum thicknesses, the indication for that with **TriLor is 3.5mm**, meaning it should not be reduced to less than 3.5mm in order to maintain its geometric stability; nonetheless, when doing a thimble type of substructure be careful at the preparations and particularly at the gingival third to not go below 3.5mm. Rather in CAD design, you want to have it 1mm less than the final design. That allows a uniform thickness on your crown and/or over-denture; the more uniform overall, the better support it enjoys. Also, as I am sure you know, the Anterior-Posterior spread really has to be adhered to and I would be on the more cautious side to prevent any failures. It is a fantastic product that is very strong, but maintaining thicknesses will provide you with greater yield strength and stability.

**Is TriLor® approved for permanent restorations?**

Yes

**What is the flexural strength?**

540 Mpa

**What is the Tensile strength?**

380 Mpa

**What pink composite do you prefer?**

GC Gradia is a nice composite, there are many light cured composites on the market with great results. As long as they are light cured, they will work with TriLor®

**What workflow/modules do I use for Trilor in a 3 Shape Scanner?**

If you are doing a partial framework you would use the RPD module in your 3 Shape or if a crown or bridge use the Crown and Bridge design module; if it's a all-on-X then you will need the implant and bar module. If you have the Complete Restorative software you should have both modules.

**3Shape TriLor Library and material files available for import.** After designing the bar, simply copy and append, clear out the order form and design the individual restorations.

**All on X from Prep:** Make sure your implant system is in the library, go to bridge Smile library and choose anatomical crown design in order to create a Toronto (Thimble) style bridge, that will subsequently get individual crowns either in LiSi or Zirconia or any all-ceramic restorations.

**All on X:** Bar design for wrap around denture can be used in the normal design and set up fashion, but minimum thickness needs to be adhered of 3.5mm or 9mm<sup>2</sup>

**What colors are available in TriLor Puck and Arch?**

Bone color best indicated for all restorative options including thimble style bar. Pink color, ideal for wrap around denture bar implant supported prosthetics. The pink colored puck eliminates the need for opaque and provides for greater thickness under the denture

**Can you add a cantilever to the posterior of a TriLor bar?**

Yes. Up to one molar width and follow the Anterior/Posterior spread to avoid any fulcrum effects on the implant and reinforce connector width and height from abutment to pontic.

**Can I use TriLor to make a 12 unit bar, with 4 implants and Zirconium crowns, pink gingiva**

It all depends on the distance between the most anterior to the most posterior implant site(s), which is called the A/P spread; and the bar should not encompass greater than a 2 pontic distance. It further depends on the patients bite and if they have any paranormal functions, like bruxer or clencher. Not knowing much about the case, it would be difficult to truly assess it's success, but if done right and all indications are considered; it will be a success.

Ideally, if the implant sites are the laterals and the first premolars and the bar will only extend to the first molar and made sure to comply or exceed with all thickness measures, it should function well. Individual Preparations need to be 3.5mm or greater and be careful to overly narrow the anterior thimbles. Furthermore, the wall of the multi-unit connection should be 1.5 mm or greater to absorb the forces adequately.