

# Tetric® CAD



Instructions for Use

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# Tetric® CAD

## Material

Tetric® CAD is an **esthetic** composite block for the **efficient** fabrication of indirect single-tooth restorations by means of the CAD/CAM technology. Tetric CAD is based on the proven Tetric technology and is the digital supplement to the direct restoratives of the Tetric Evo-Line.

Due to the pronounced chameleon effect, Tetric CAD restorations blend in with the residual tooth structure in an optically pleasing manner. The restoration is polished after milling and then seated using an adhesive cementation protocol. This processing technique is very efficient and leads to an esthetic result quickly and easily.

The blocks are available in the translucency levels MT and HT, in 5 and 4 shades respectively, and in the sizes I12 and C14.



### Physical properties

		Specification	Typical mean value
Biaxial flexural strength	MPa	≥ 100	272
Water absorption	µg/mm <sup>3</sup>	≤ 40	21
Solubility	µg/mm <sup>3</sup>	≤ 7.5	0.0

## Composition

### Tetric® CAD

Cross-linked dimethacrylate, inorganic fillers

## Uses

### Indications

- Veneers
- Inlays
- Onlays (e.g. occlusal veneers, partial crowns)
- Crowns in the anterior and posterior region

### Contraindications

- Bridge constructions
- Conventional and self-adhesive cementation
- Temporary cementation
- Patients with severely reduced residual dentition
- Any other use not listed in the indications

### Important processing restrictions

Failure to observe the following restrictions may compromise the results achieved with Tetric CAD:

- Falling short of the required minimum layer thicknesses
- Milling the blocks in a non-compatible CAD/CAM system
- Deviations from the recommended luting protocol

### Side effects / warnings

If a patient is known to be allergic to any of the ingredients of Tetric CAD, the material should not be used. Do not inhale the composite resin dust during finishing. Use suction equipment and wear a dust mask.

Observe the information in the Safety Data Sheet (SDS).

## Scientific data

Detailed information about the luting composite Variolink Esthetic can be found in the “Ivoclar Vivadent Report No 22” and the “Variolink Esthetic Scientific Documentation”. The “Adhese Universal Scientific Documentation” provides detailed information on the adhesive.



More information is available on the Internet from [www.ivoclarvivadent.com](http://www.ivoclarvivadent.com)!

## CAD/CAM partners

Tetric CAD has to be processed with an authorized CAD/CAM system. For questions regarding the different CAD/CAM systems, please contact the respective cooperation partners.



More information is available on the Internet from [www.ivoclarvivadent.com](http://www.ivoclarvivadent.com)!

## Block concept

Tetric CAD blocks are available in two translucency levels (HT and MT) and the following shades and sizes as Refill containing 5 blocks:

	A-D				
	BL	A1	A2	A3	A3.5
<b>HT (High Translucency)</b>					
I12		●	●	●	●
C14		●	●	●	●
<b>MT (Medium Translucency)</b>					
I12	●	●	●	●	●
C14	●	●	●	●	●

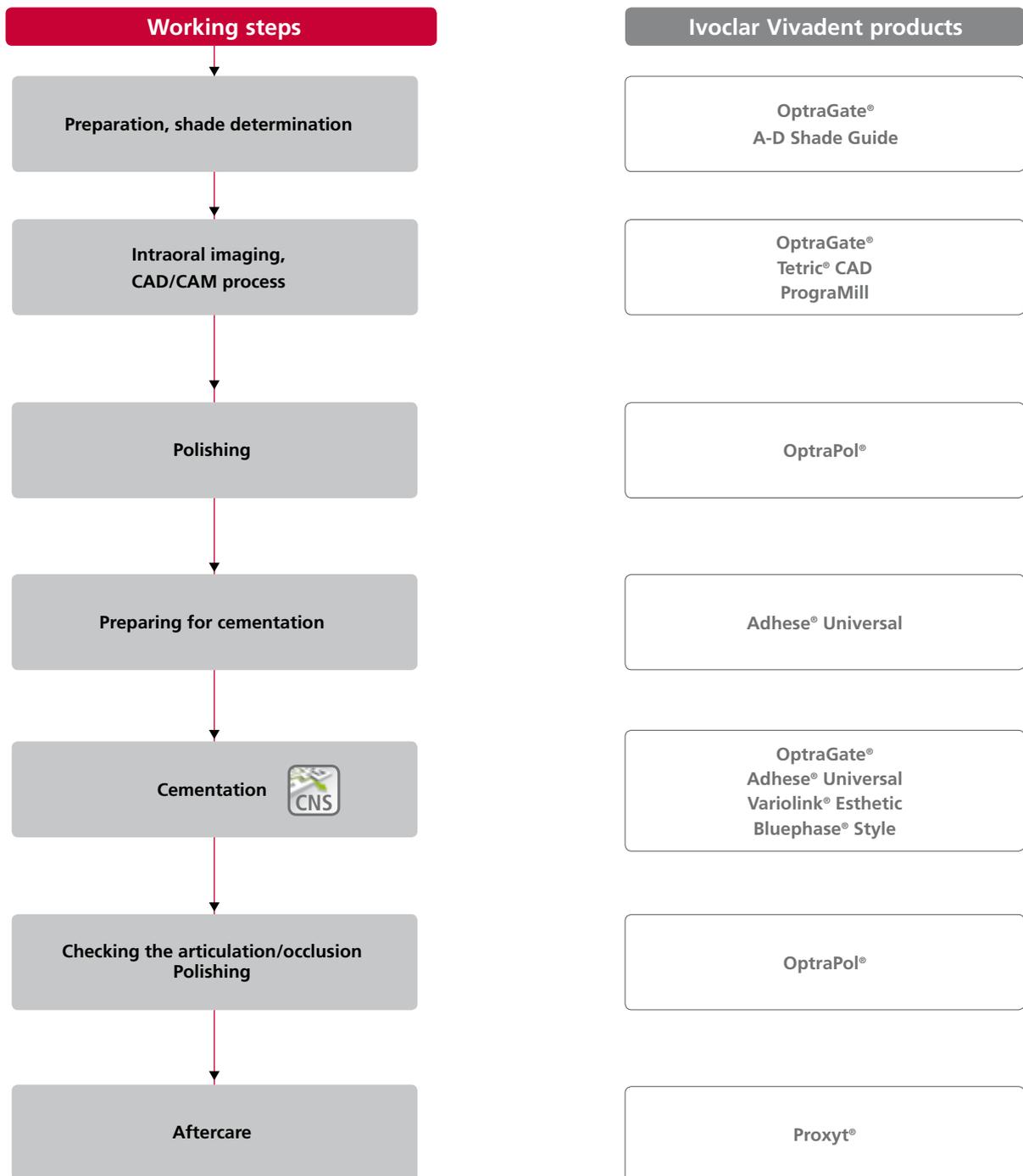


Detailed information on the available block sizes and shades can be found in the "CAD/CAM Block Overview" at [www.ivoclarvivadent.com](http://www.ivoclarvivadent.com).

Basically, all blocks are made of the same material and have the same physical properties. For reasons of esthetics, however, the following indications are recommended for the individual blocks (translucency levels):

	Indications			
	Veneer	Inlay	Onlay (e.g. occlusal veneer, partial crown)	Anterior and posterior crown
<b>HT</b> (High Translucency)	✓	✓	✓	
<b>MT</b> (Medium Translucency)	✓			✓

# Overview of the Clinical Working Steps, Fabrication Process



The range of available products may vary from country to country

## Shade determination

### 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 (e.g. cervical shade). 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.



## Minimum layer thicknesses

The restoration design is key to the success of durable composite restorations. The more attention given to the design, the better the final results and the clinical success will turn out to be. The following minimum layer thicknesses must be observed to fulfil the requirements of the preparation guidelines (page 9–10).

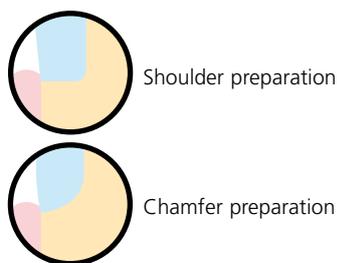
Minimum layer thicknesses of Tetric CAD restorations:

	Mandatory adhesive cementation			
	Veneer	Inlay	Onlay (e.g. occlusal veneer, partial crown)	Crown
incisal/occlusal	1.5 mm	1.5 mm	1.5 mm	1.5 mm
circular	0.3–0.6 mm	–	–	0.8 mm

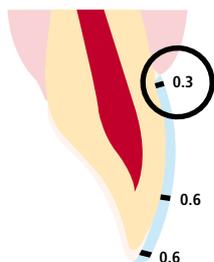
## Preparation guidelines

Successful results can only be achieved with Tetric CAD if the guidelines and minimum layer thicknesses are strictly observed.

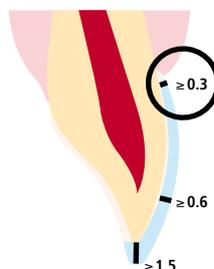
Basic preparation guidelines for composite restorations:



### Veneers

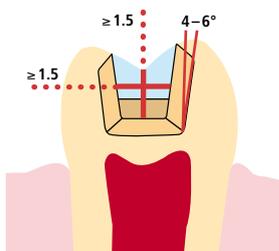


- If possible, the preparation should be located in the enamel.
- The incisal preparation margins should not be located in the area of the abrasion surfaces or dynamic occlusal surfaces.
- Reduce the cervical area by at least 0.3 mm, the labial area by at least 0.6 mm, and the incisal edge by at least 0.6 mm.

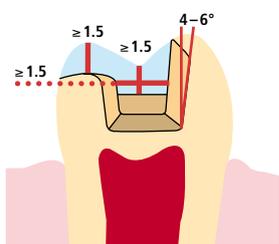


- For preparation with reduction of the oro-incisal edge (labial/incisal reduction), the preparation depth in the cervical area should be at least 0.3 mm, and at least 0.6 mm in the labial area.
- Reduce the incisal edge by at least 1.5 mm.
- The extent of the incisal reduction depends on the desired translucency of the incisal area to be built up.
- The more transparent the incisal edge of the intended veneer, the more pronounced the reduction should be. Discoloured teeth may require more preparation.

### Inlay / Onlay



- 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.
- The walls of the proximal box should be slightly flared (preparation angle 4–6°).
- For inlays/onlays with pronounced, convex proximal surfaces without adequate support by the proximal shoulder, marginal ridge contacts should be avoided.
- Round out internal edges in order to prevent stress concentration within the restoration.



- Do not prepare slice-cuts or feather edges.
- Provide at least 1.5 mm space in the cusp areas for onlays.



# Practical Procedure

## Fabrication of Tetric® CAD restorations

### Starting situation



Starting situation: tooth and filling fracture, 27, distal

### Preparation



After the determination of the tooth shade, preparation is carried out according to the preparation guidelines. The preparation is then ready for the digital impression with the help of an intraoral scanner. A core build-up was fabricated to avoid undercuts.

### Scanning and processing using CAD/CAM

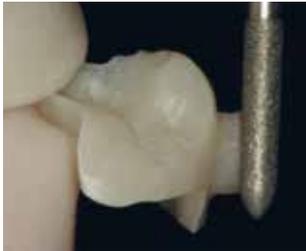


For information on scanning and CAD/CAM processing, please refer to the respective Instructions for Use and the manuals of the respective CAD/CAM system. The instructions by the manufacturer must be observed.

## Finishing

For finishing composites, appropriate grinding instruments are indispensable.

Observe the following procedure for finishing Tetric CAD restorations:



Smooth out the attachment point of the block with fine-grain diamonds paying particular attention to the proximal contacts. If necessary, carry out individual shape adjustments and smooth out the surface structure created by the CAD/CAM.



Polish proximal areas and larger surfaces extraorally to a high gloss (e.g. using OptraPol®) prior to cementation.

## Try-in of the restoration



Insert the restoration using glycerine paste (e.g. Liquid Strip or Variolink® Esthetic Try-In; check the shade to achieve optimum esthetic results) and check the contact points with suitable auxiliaries. If necessary, adjust the occlusion/articulation.

After try-in, use water spray to thoroughly wash the Try-In paste and/or the glycerine paste off the restoration and dry the restoration with oil- and moisture-free air.

## Conditioning/surface treatment of the Tetric® CAD restoration

Conditioning of the composite surface in preparation for cementation is critical for generating a sound bond between the cementation material and the composite restoration.



In order to achieve a sufficient bond to the luting composite, it is mandatory to sandblast the restoration surface. Adhese® Universal must be used to condition the restoration surface!



**Do not etch using hydrofluorid acid (HF) or phosphoric acid gel.**



Sandblast the bonding surface with 50–100 µm aluminium oxide at 1–1.5 bar pressure.



Clean the restoration in an ultrasonic unit with 70% ethanol. Thoroughly rinse with water spray and dry with oil-free air.



Apply Adhese Universal on the conditioned surface and scrub it in for 20 seconds.



This time must not be shortened. Applying Adhese Universal on the tooth surface without scrubbing is inadequate.



Following this, disperse Adhese Universal with oil-/moisture-free compressed air.



Do not light-cure Adhese Universal. Curing takes place together with the luting composite after the restoration has been seated.

## Adhesive cementation

### Pre-treatment of the prepared tooth

#### Isolating and cleaning the preparation



When an adhesive luting protocol with composites is used, safe isolation of the operating field – preferably with a rubber dam, e.g. OptraDam®, or alternatively with cotton rolls and a saliva ejector – is required.



Clean the preparation(s) again using a polishing brush and an oil- and fluoride-free cleaning paste (e.g. Proxyl® fluoride-free) and rinse with water spray. Then lightly dry with water- and oil-free air. Avoid overdrying.

#### Pre-treatment of the preparation and application of the adhesive



Apply phosphoric acid gel (e.g. Total Etch) to the prepared enamel and then flow the etchant onto the prepared dentin. The etchant should be left to react on the enamel for 15–30 seconds and on the dentin for 10–15 seconds.



Adhese Universal is also suitable for the “self-etch” procedure or with “selective enamel etching”.



Then rinse thoroughly with a vigorous stream of water for at least 5 s and dry with compressed air until the etched enamel surfaces appear chalky white.



Starting with the enamel, thoroughly coat the tooth surfaces to be treated with Adhese Universal. The adhesive must be scrubbed into the tooth surface for at least 20 s.



Disperse Adhese Universal with oil- and moisture-free compressed air until a glossy, immobile film layer results. Avoid pooling.

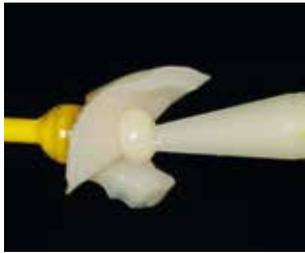


Light-cure Adhese Universal for 10 s using a light intensity of 500 mW/cm<sup>2</sup>.

## Placement of the restoration with Variolink® Esthetic DC



Restorations with a low material thickness <2 mm and sufficient translucency (Tetric CAD HT) can also be placed using the light-curing luting material Variolink Esthetic LC according to the Instructions for Use.



Dispense Variolink Esthetic DC from the automix syringe and apply the desired amount onto the restoration.



Seat the restoration and retain it in place exerting uniform pressure. Light-cure excess material with a curing light for 2 seconds per quarter surface (mesio-oral, disto-oral, mesio-buccal, disto-buccal) at a distance of max. 10 mm. The gel-like excess can then be easily removed with a scaler.



Like all other composites, Variolink Esthetic is subject to oxygen inhibition. In order to avoid this, we recommend covering the restoration margins with glycerine gel/air block (e.g. Liquid Strip) immediately after the removal of excess.



Finally, the adhesive on the Tetric CAD restoration and the luting composite are polymerized together. If a curing unit with a light intensity of min. 1,000 mW/cm<sup>2</sup> is used, light-cure for 10 s per mm of composite and segment. Then rinse off the Liquid Strip and remove the rubber dam.

## Finishing and polishing the completed restoration



After having adhesively cemented the restoration, adjust occlusion/articulation with suitable grinding instruments.



Then polish the restoration (e.g. with OptraPol).

## Fluoridation



Apply a thin layer of Fluor Protector S by means of a Vivabrush or brush. Evenly disperse and dry the varnish with an air syringe.



Clinical state of the restoration after having been in place for one week



**Find your way out of the cement maze**

Detailed information can be found under [www.cementation-navigation.com](http://www.cementation-navigation.com)

## Adjustments

### Optional:

#### Subsequent adjustments

Further adjustments (of e.g. the contact points) may be necessary after the restoration has been completed. These adjustments can easily be made with any composite resin (e.g. Tetric EvoCeram®, Tetric EvoFlow® or SR Nexco®) .

#### Procedure:

- Roughen the area to be repaired using coarse diamonds or sand blast. Then thoroughly rinse with water and dry with water- and oil-free compressed air.
- Apply Adhese Universal on the pre-treated surfaces, leave to react for 20 seconds and then disperse with a strong stream of air.
- Light-cure Adhese Universal for 10 s using a light intensity of  $\geq 500$  mW/cm<sup>2</sup>.
- Subsequently, apply the composite according to the respective instructions for use.



Subsequent adjustments

## General Information

# Frequently Asked Questions

### **How can the accuracy of fit of Tetric CAD restorations be adjusted?**

*If the accuracy of fit is to be adjusted, this can be achieved by changing the parameters in the corresponding CAD software. Additionally, there is the possibility to change the dimensions of the occlusal and proximal contacts.*

### **Can SpeedCEM® Plus be used for the cementation of Tetric CAD restorations?**

*No, SpeedCEM Plus is a self-adhesive luting material and cannot be used.*

### **Can Tetric CAD restorations be adjusted intraorally?**

*Yes, procedure see page 18.*

### **Can Tetric CAD restorations be characterized?**

*Yes, e.g. with IPS Empress Direct Color or SR Nexco Stains.*

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