Tetric® CAD

Instructions for Use

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passion vision innovation

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Product Information

Tetric® CAD

Material

Tetric® CAD is an **esthetic** hybrid ceramic resin 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/mm³	≤ 40	21
Solubility	µg/mm³	≤ 7.5	0.0

Composition

Tetric® CAD

Component	% Weight
Barium glass filler*	64.0
Silicon dioxide*	7.1
Dimethacrylates	28.4
Additives & Pigments	0.5

* Total filler volume: ca. 51 vol-%

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!

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!

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**
HT (**H**igh **T**ranslucency)					
I 12		●	●	●	●
C 14		●	●	●	●
MT (**M**edium **T**ranslucency)					
I 12	●	●	●	●	●
C 14	●	●	●	●	●

Detailed information on the available block sizes and shades can be found in the "CAD/CAM Block Overview" at 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**
Translucency level	**HT** (**H**igh **T**ranslucency)	✓	✓	✓	
	MT (**M**edium **T**ranslucency)	✓			✓

Practical Procedure

Overview of the Clinical Working Steps, Fabrication Process

Working steps	Ivoclar Vivadent products
Preparation, shade determination	OptraGate® A-D Shade Guide
Intraoral imaging, CAD/CAM process	OptraGate® Tetric® CAD PrograMill
Polishing	OptraPol®
Preparing for cementation	Adhese® Universal
Cementation CNS	OptraGate® Adhese® Universal Variolink® Esthetic Bluephase® Style
Checking the articulation/occlusion Polishing	OptraPol®
Aftercare	Proxyt®

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

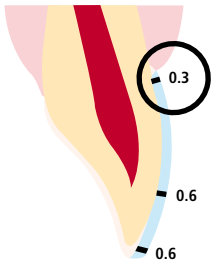
Successful results can only be achieved with Tetric CAD if the guidelines and minimum layer thicknesses are strictly observed.

Basic preparation guidelines for composite restorations:

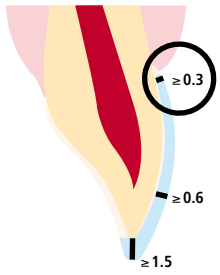
Shoulder preparation

Chamfer preparation

Veneers

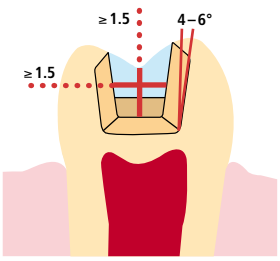


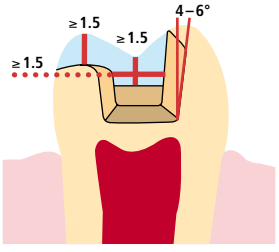
- If possible, the preparation should be located in the enamel.
- The incisal preparation margins should not be located in the area of the abrasion surfaces or dynamic occlusal surfaces.
- Reduce the cervical area by at least 0.3 mm, the labial area by at least 0.6 mm, and the incisal edge by at least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

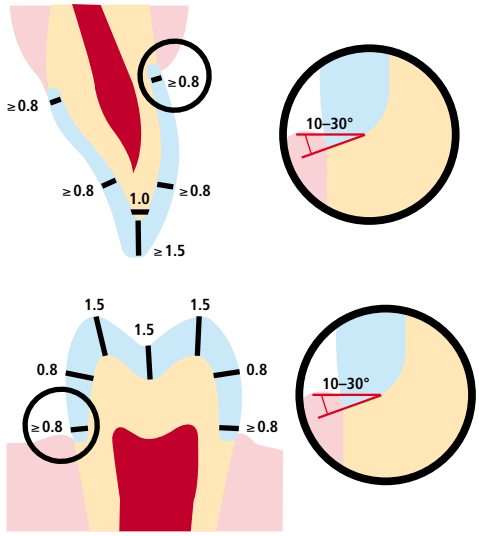
Inlay / Onlay





- 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.

Anterior/posterior crown

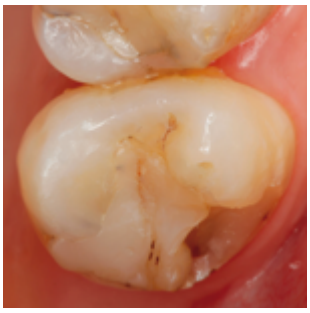


– Evenly reduce the anatomical shape and observe the stipulated minimum thickness.
– Prepare a circular shoulder with rounded inner edges or a chamfer at a degree of approximately 10°–30°.
– Width of the shoulder/chamfer at least 0.8 mm.
– Reduce the incisal and/or occlusal crown third by 1.5 mm.
– Reduce the vestibular and/or oral area by at least 0.8 mm.
– The thickness of the preparation edge, particularly for anterior teeth, should be at least 1.0 mm (milling tool geometry) in order to permit optimum milling during CAD/CAM processing.

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.

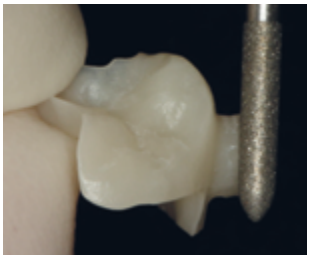
Scanning and processing using CAD/CAM

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.

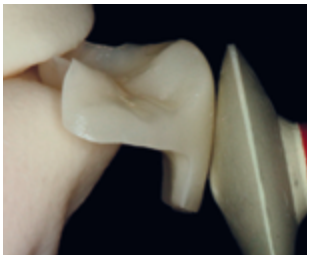
Finishing

For finishing composites, appropriate grinding instruments are indispensable.

Observe the following procedure for finishing Tetric CAD restorations:

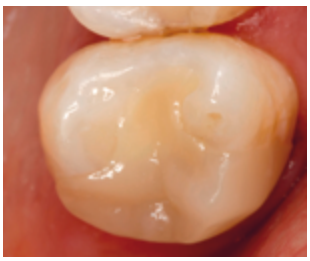


Smooth out the attachment point of the block with fine-grain diamonds paying particular attention to the proximal contacts. If necessary, carry out individual shape adjustments and smooth out the surface structure created by the CAD/CAM.



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.

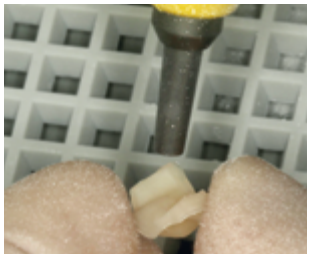
After try-in, use water spray to thoroughly wash the Try-In paste and/or the glycerine paste off the restoration and dry the restoration with oil- and moisture-free air.

Conditioning/surface treatment of the Tetric® CAD restoration

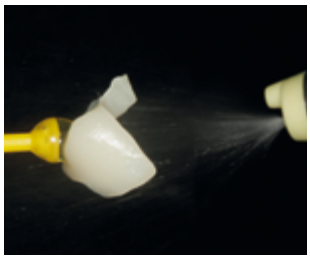
Conditioning of the composite surface in preparation for cementation is critical for generating a sound bond between the cementation material and the composite restoration.

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!

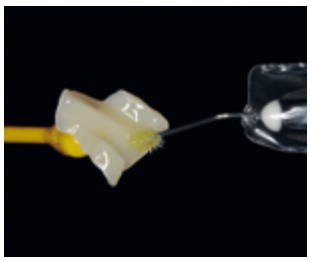
Do not etch using hydrofluorid acid (HF) or phosphoric acid gel.



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

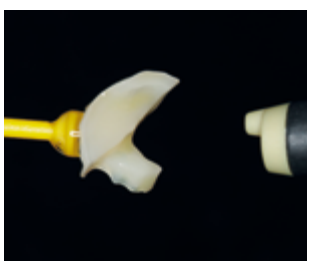


Clean the restoration in an ultrasonic unit with 70% ethanol.
Thoroughly rinse with water spray and dry with oil-free air.



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.

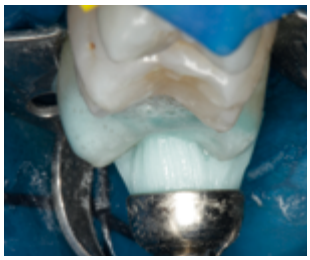
Do not light-cure Adhese Universal. Curing takes place together with the luting composite after the restoration has been seated.

Adhesive cementation

Pre-treatment of the prepared tooth

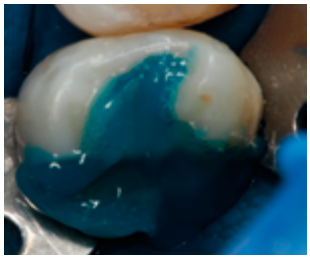
Isolating and cleaning the preparation

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.



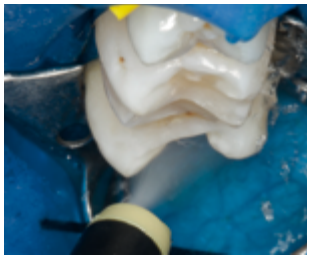
Clean the preparation(s) again using a polishing brush and an oil- and fluoride-free cleaning paste (e.g. Proxyt® fluoride-free) and rinse with water spray.
Then lightly dry with water- and oil-free air. Avoid overdrying.

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.

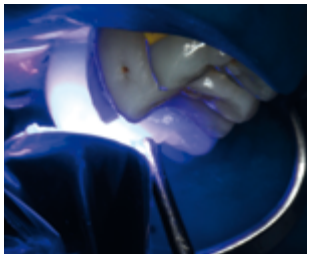
Disperse Adhese Universal with oil- and moisture-free compressed air until a glossy, immobile film layer results. Avoid pooling.

Light-cure Adhese Universal for 10 s using a light intensity of 500 mW/cm².

Placement of the restoration with Variolink® Esthetic DC

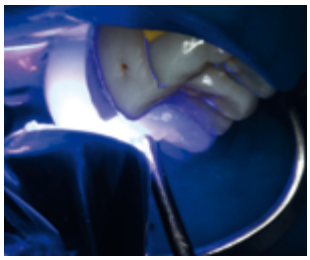
Restorations with a low material thickness <2 mm and sufficient translucency (Tetric CAD HT) can also be placed using the light-curing luting material Variolink Esthetic LC according to the Instructions for Use.

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/cm² 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**

Adjustments

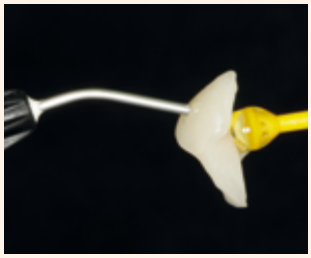
Optional:

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 (e.g. Tetric EvoCeram® or Tetric EvoFlow®) .

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 ≥500 mW/cm^2.
- Subsequently, apply the composite according to the respective instructions for use.



Subsequent adjustments

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.

Ivoclar Vivadent – worldwide

Ivoclar Vivadent AG
Bendererstrasse 2
9494 Schaan
Liechtenstein
Tel. +423 235 35 35
Fax +423 235 33 60
www.ivoclarvivadent.com

Ivoclar Vivadent Pty. Ltd.
1 – 5 Overseas Drive
P.O. Box 367
Noble Park, Vic. 3174
Australia
Tel. +61 3 9795 9599
Fax +61 3 9795 9645
www.ivoclarvivadent.com.au

Ivoclar Vivadent GmbH
Tech Gate Vienna
Donau-City-Strasse 1
1220 Wien
Austria
Tel. +43 1 263 191 10
Fax: +43 1 263 191 111
www.ivoclarvivadent.at

Ivoclar Vivadent Ltda.
Alameda Caiapós, 723
Centro Empresarial Tamboré
CEP 06460-110 Barueri – SP
Brazil
Tel. +55 11 2424 7400
www.ivoclarvivadent.com.br

Ivoclar Vivadent Inc.
1-6600 Dixie Road
Mississauga, Ontario
L5T 2Y2
Canada
Tel. +1 905 670 8499
Fax +1 905 670 3102
www.ivoclarvivadent.us

Ivoclar Vivadent Shanghai Trading Co., Ltd.
2/F Building 1, 881 Wuding Road,
Jing An District
200040 Shanghai
China
Tel. +86 21 6032 1657
Fax +86 21 6176 0968
www.ivoclarvivadent.com

Ivoclar Vivadent Marketing Ltd.
Calle 134 No. 7-B-83, Of. 520
Bogotá
Colombia
Tel. +57 1 627 3399
Fax +57 1 633 1663
www.ivoclarvivadent.co

Ivoclar Vivadent SAS
B.P. 118
74410 Saint-Jorioz
France
Tel. +33 4 50 88 64 00
Fax +33 4 50 68 91 52
www.ivoclarvivadent.fr

Ivoclar Vivadent GmbH
Dr. Adolf-Schneider-Str. 2
73479 Ellwangen, Jagst
Germany
Tel. +49 7961 889 0
Fax +49 7961 6326
www.ivoclarvivadent.de

Ivoclar Vivadent Marketing (India) Pvt. Ltd.
503/504 Raheja Plaza
15 B Shah Industrial Estate
Veera Desai Road, Andheri (West)
Mumbai, 400 053
India
Tel. +91 22 2673 0302
Fax +91 22 2673 0301
www.ivoclarvivadent.in

Ivoclar Vivadent Marketing Ltd.
The Icon
Horizon Broadway BSD
Block M5 No. 1
Kecamatan Cisauk Kelurahan Sampora
15345 Tangerang Selatan – Banten
Indonesia
Tel. +62 21 3003 2932
Fax +62 21 3003 2934
www.ivoclarvivadent.com

Ivoclar Vivadent s.r.l.
Via Isonzo 67/69
40033 Casalecchio di Reno (BO)
Italy
Tel. +39 051 6113555
Fax +39 051 6113565
www.ivoclarvivadent.it

Ivoclar Vivadent K.K.
1-28-24-4F Hongo
Bunkyo-ku
Tokyo 113-0033
Japan
Tel. +81 3 6903 3535
Fax +81 3 5844 3657
www.ivoclarvivadent.jp

Ivoclar Vivadent Ltd.
4F TAMIYA Bldg.
215 Baumoe-ro
Seocho-gu
Seoul, 06740
Republic of Korea
Tel. +82 2 536 0714
Fax +82 2 6499 0744
www.ivoclarvivadent.co.kr

Ivoclar Vivadent S.A. de C.V.
Calzada de Tlalpan 564,
Col Moderna, Del Benito Juárez
03810 México, D.F.
México
Tel. +52 (55) 50 62 10 00
Fax +52 (55) 50 62 10 29
www.ivoclarvivadent.com.mx

Ivoclar Vivadent BV
De Fruittuinen 32
2132 NZ Hoofddorp
Netherlands
Tel. +31 23 529 3791
Fax +31 23 555 4504
www.ivoclarvivadent.com

Ivoclar Vivadent Ltd.
12 Omega St, Rosedale
PO Box 303011 North Harbour
Auckland 0751
New Zealand
Tel. +64 9 914 9999
Fax +64 9 914 9990
www.ivoclarvivadent.co.nz

Ivoclar Vivadent Polska Sp. z o.o.
Al. Jana Pawła II 78
00-175 Warszawa
Poland
Tel. +48 22 635 5496
Fax +48 22 635 5469
www.ivoclarvivadent.pl

Ivoclar Vivadent LLC
Prospekt Andropova 18 korp. 6/
office 10-06
115432 Moscow
Russia
Tel. +7 499 418 0300
Fax +7 499 418 0310
www.ivoclarvivadent.ru

Ivoclar Vivadent Marketing Ltd.
Qlaya Main St.
Siricon Building No.14, 2nd Floor
Office No. 204
P.O. Box 300146
Riyadh 11372
Saudi Arabia
Tel. +966 11 293 8345
Fax +966 11 293 8344
www.ivoclarvivadent.com

Ivoclar Vivadent S.L.U.
Carretera de Fuencarral nº24
Portal 1 – Planta Baja
28108-Alcobendas (Madrid)
Spain
Tel. +34 91 375 78 20
Fax +34 91 375 78 38
www.ivoclarvivadent.es

Ivoclar Vivadent AB
Dalvägen 14
169 56 Solna
Sweden
Tel. +46 8 514 939 30
Fax +46 8 514 939 40
www.ivoclarvivadent.se

Ivoclar Vivadent Liaison Office
: Tesvikiye Mahallesi
Sakayik Sokak
Nisantas' Plaza No:38/2
Kat:5 Daire:24
34021 Sisli – Istanbul
Turkey
Tel. +90 212 343 0802
Fax +90 212 343 0842
www.ivoclarvivadent.com

Ivoclar Vivadent Limited
Compass Building
Feldspar Close
Warrens Business Park
Enderby
Leicester LE19 4SD
United Kingdom
Tel. +44 116 284 7880
Fax +44 116 284 7881
www.ivoclarvivadent.co.uk

Ivoclar Vivadent, Inc.
175 Pineview Drive
Amherst, N.Y. 14228
USA
Tel. +1 800 533 6825
Fax +1 716 691 2285
www.ivoclarvivadent.us

CE 0123

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For dental use only!

Manufacturer:
Ivoclar Vivadent AG, 9494 Schaan, Liechtenstein
www.ivoclarvivadent.com

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