

**STRONGEST
IN ITS
CLASS**



Grandio blocs / Grandio disc

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86% FILLED NANO-CERAMIC HYBRID CAD/CAM MATERIAL



Grandio blocs/Grandio disc

OPTIMAL TOOTH-LIKE PHYSICAL PROPERTIES FOR ENHANCED PERFORMANCE

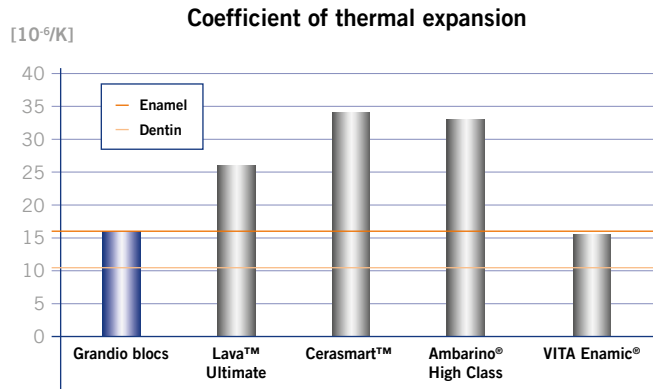
Resin-based restoratives have been employed for permanent restorations for many years providing optimal properties for everyday use throughout the world and backed by a multitude of studies. In the realm of CAD/CAM restoratives there is a large diversity of materials available for use ranging from silicate ceramics and lithium disilicate to hybrid ceramics, zirconium dioxide and composite. Material characteristics similar to those of natural tooth structure such as dentin-like modulus of elasticity, low shrinkage, and high filler rates are proven to benefit current resin-based restorations in regards to marginal integrity and longevity. Today VOCO introduces Grandio blocs and Grandio disc, a highly filled (86%) CAD/CAM restorative block and disc that is based on a Nano-ceramic Hybrid technology. This technology offers these tooth-like physical properties, with maximum long-term strength as a restorative with benefits for the patient while also delivering key advantages for the practitioner.

Similar to natural tooth structure

The modulus of elasticity is a measure of the resistance that a material exerts against its deformation. In the best case scenario, it should be the same as that of natural tooth structure.

Grandio blocs and Grandio disc also achieve this with ease, and thus offer not only extremely high strength, but also the similarity to natural tooth structure desired by practitioners.

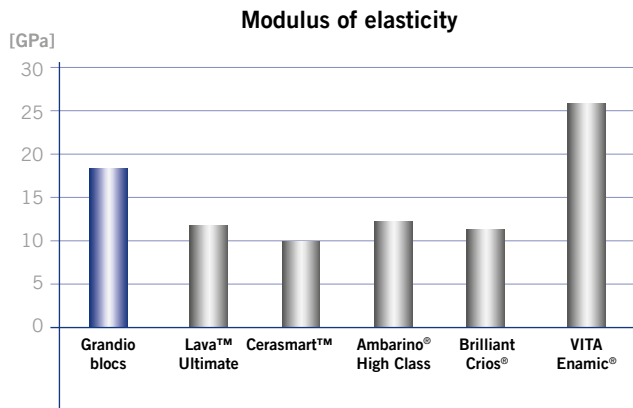
Like most materials, composite restoratives expand when heated and contract when they cool down. This behavior is also true of human dentition, when one consumes warm/hot food followed by a cool drink. If the expansion of the restoration is greater than that of the tooth itself, a tensile force develops at the interface where tooth structure meets restorative – i.e. the adhesive layer. The study conducted by Wolter et al. revealed that Grandio blocs comes closer than any other blocks to the values recorded for natural tooth structure (cf. Xu et al., 1989).



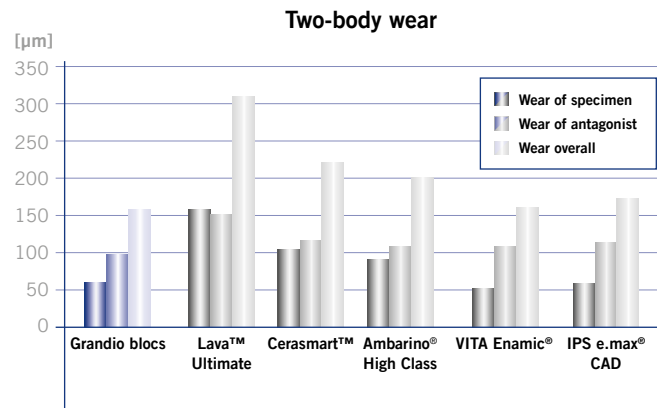
Source: H. Wolter et al., Fraunhofer ISC Würzburg, report to VOCO, 2016

Antagonist-friendly

The two-body wear test shows that Grandio blocs demonstrates similarly low wear to lithium disilicate and is also antagonist-friendly.



Source: Spintzyk, S.; Geis-Gerstorfer, J. et al, 4th EuroBioMat, Weimar, 2017



Source: J. Geis Gerstorfer et al., University of Tübingen, report to VOCO, 2016

Grandio blocs/Grandio disc

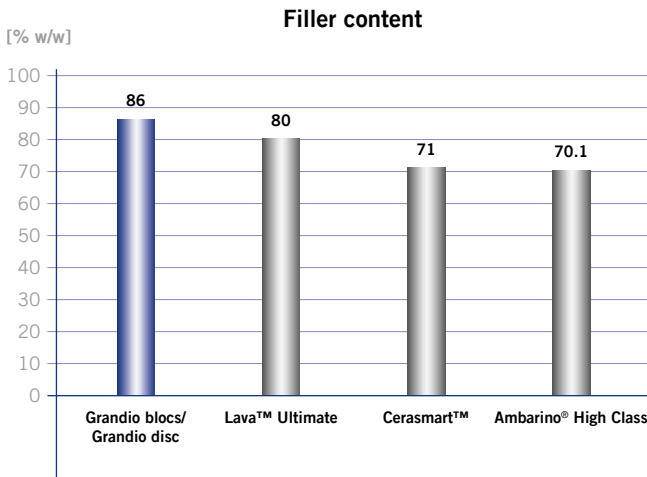
HIGHLY FILLED FOR MAXIMIZED STRENGTH

Strongest in Class

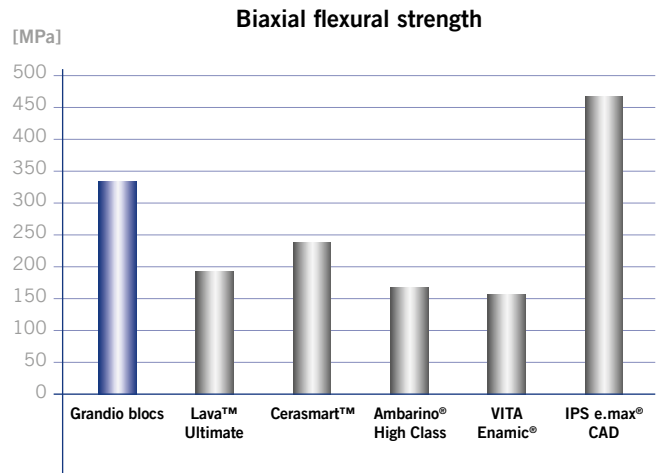
Overall, the study results presented within this brochure demonstrate that VOCO's Nano-ceramic Hybrid CAD/CAM material is stronger than the composite-based CAD/CAM materials currently available on the market.

Extraordinary strength

In a study conducted by the University of Tübingen into biaxial flexural strength, a value of 333 MPa was recorded for Grandio blocs. This result was far superior to the composite-based blocks. With this extraordinary strength and the highest filler content, at 86 % by weight, Grandio blocs maximizes it's durability as a restoration.



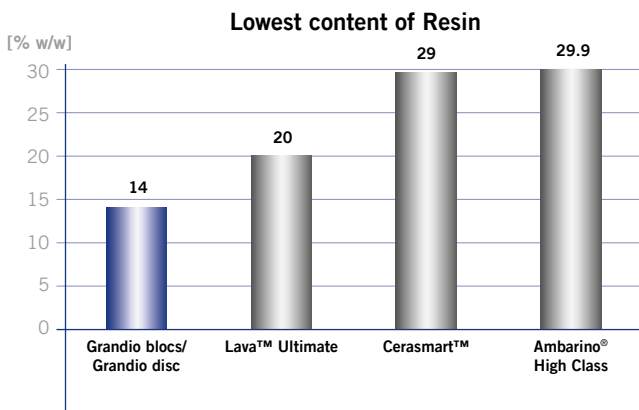
Source: Manufacturer's specifications



Source: J. Geis Gerstorfer et al., University of Tübingen, report to VOCO, 2016

At 86 % by weight, our CAD/CAM material boasts the highest filler content compared to the composite-based blocks/discs. This is achieved through VOCO's proprietary nano-technology and guarantees outstanding strength and stability.

Overall, Grandio blocs and Grandio disc based on the Nano-ceramic Hybrid technology, offer an optimized combination of strength and tooth-like physical properties that make the Grandio blocs and Grandio disc easier for the practitioner to work with, saving time and money while offering the patient a long-lasting restoration with durability and uncompromised esthetics.



Source: in accordance with manufacturer information

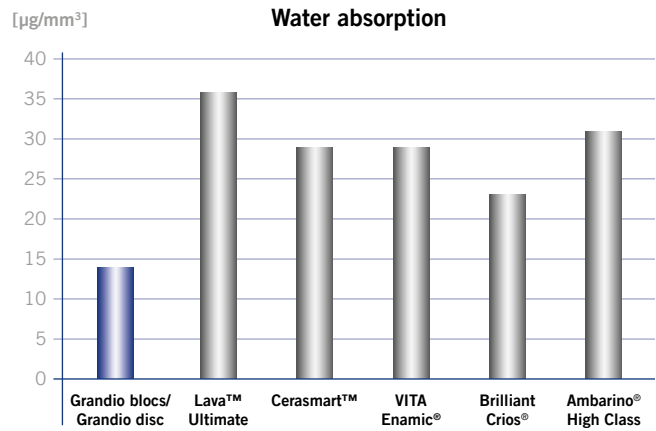


Grandio blocs/Grandio disc

ENGINEERED PHYSICAL PROPERTIES FOR BETTER LONGEVITY AND ESTHETICS

Water absorption

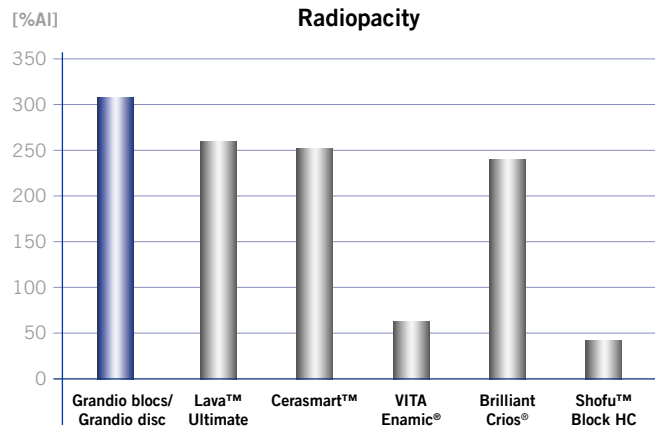
Comparatively, Grandio blocs and Grandio disc have extremely low water absorption which provides a higher quality of overall performance for better longevity, especially when combined with their enhanced tooth-like physical properties.



Source: acc. ISO 4049, VOCO, 2017

High radiopacity for easy identification

Grandio blocs and Grandio disc offer very high radiopacity (308 % Al) compared to other brands available on the market. This adds to Grandio blocs and Grandio disc ease-of-use in regards to identification during the review of radiographs.



Source: acc. ISO 4049, VOCO, 2017

Before



Initial situation teeth 36 and 37

After



Cemented Restorations



Final Restorations with characterization of the fissures.

Source: Dr. Jongki Hadi, Indonesia

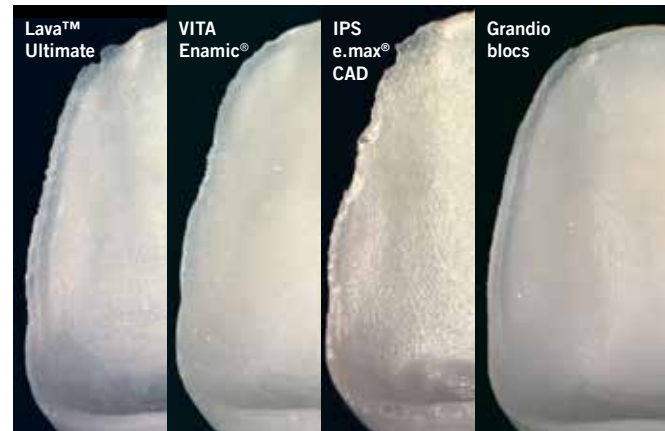
Grandio blocs/Grandio disc

NANO-CERAMIC HYBRID – ADVANTAGES THAT MATTER

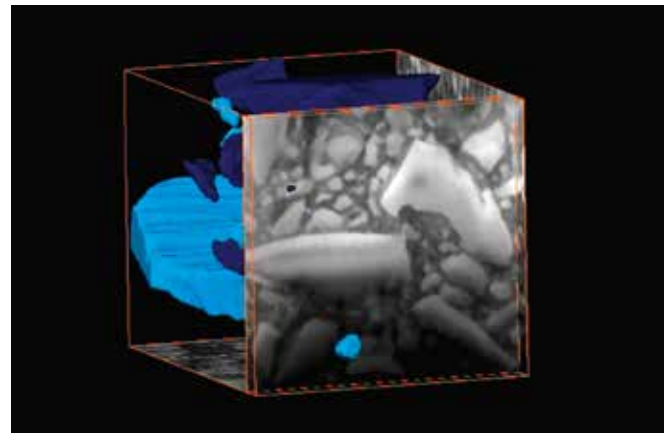
In addition to its outstanding physical values, Grandio blocs/Grandio disc also offer a whole range of additional advantages, which makes these materials an ideal alternative to ceramics:

- Thinner crown margins**
 The use of VOCO's Nano-ceramic Hybrid materials make it possible to mill even thin tapered edges with precision and without the risk of chipping or breakages. This means precision-fit restorations that are also easy to polish both inside and outside the mouth.
- No firing saves time**
 Compared to the use of lithium disilicate, VOCO's Nano-ceramic Hybrid materials eliminates the need for the firing process. As a completely polymerized Nano-ceramic Hybrid restoration, they can be immediately placed following the milling procedure saving time and money. This enables you to truly offer your patients a complete restoration in just one simple visit.
- Simple characterization with standard composite**
 Grandio blocs and Grandio disc come in monolithic shades and can be customized just like ceramics. For this, the low-viscosity Nano-hybrid material GrandioSO Flow and the high-viscosity Nano-hybrid GrandioSO Heavy Flow are particularly well suited, as they provide exact shade matching. Characterization can then follow based on user's capabilities.
- Easy intra-oral repair**
 While chips in ceramic restorations require extensive treatment, any defects in VOCO's Nano-ceramic Hybrid materials can be repaired intraorally quickly and easily. This is done by roughening the surface of the defect, applying the adhesive and then correcting the situation with a composite restorative such as GrandioSO.

Edges after grinding



Source: Internal pictures, veneer 0.6 mm

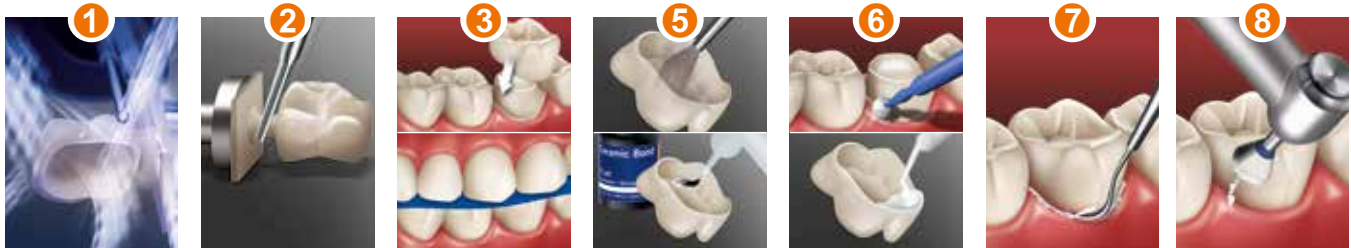


Source: Department of Materials for Medical Technology, University of Rostock, 2016

3D tomography visualization of the homogeneous distribution of fillers in Grandio blocs. 50 nm sections were prepared using the dual beam technique, viewed under a microscope and combined to create a 3D image. The light blue and dark blue regions represent the glass fillers in 3D. They are surrounded by resin and nano-ceramic particles.

Grandio blocs

UP TO 50% FASTER THAN LITHIUM DISILICATE BLOCKS



Grandio blocs Steps:

(Nano-ceramic Hybrid Block)

1	Milling	(5–12 mins*)
2	Sprue adjustment and rough finishing	(2 mins*)
3	Try in	(5 mins*)
4	Surface characterization (optional)	(8–10 mins*)
5	Crown Surface Treatment = sand blast and application of Ceramic Bond	(6–8 mins*)
6	Ready prep for cementation with dual-cure or universal adhesive. Dispense adhesive cement in crown	(approx. 2 mins*)
7	Seat restoration / clean-up	(approx. 6 mins*)
8	Final polish/finishing (if not done extraorally before seating)	(approx. 5 mins*)

Total time: (31–50 mins*)

**TOTAL TIME SAVINGS
USING GRANDIO BLOCS =**

26–39 MINUTES*

NO FIRING OR SINTERING REQUIRED

Lithium disilicate Block Steps**:

1	Milling	(8–15 mins*)
2	Sprue adjustment and rough finishing/glazing	(2 mins*)
3	Try in	(5 mins*)
4	Firing	(approx. 20 mins*)
5	Surface characterization (optional)	(8–10 mins*)
6	Firing (optional)	(approx. 12 mins*)
7	Try in	(1 min*)
8	Crown Surface Treatment based on manufacturer instructions (use of HF-acid)	(6–8 mins*)
9	Ready prep for cementation manufacturer's instructions for use. Dispense cement in crown	(approx. 2 mins*)
10	Seat restoration/clean-up	(approx. 6 mins*)
11	Final polish/finishing (optional if needed or not done extraorally before seating)	(approx. 8 mins*)

Total time: (57–89 mins*)

Other Grandio blocs Advantages:

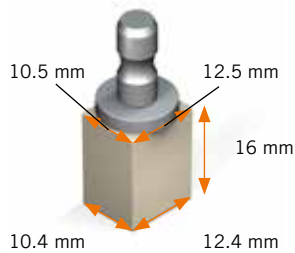
- Burs last longer
- Better for antagonist teeth
- Easy intraoral repair
- Easy extra- and intraoral characterization

Grandio blocs/Grandio disc with Bifix QM

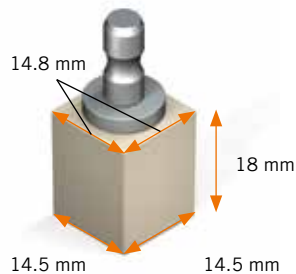
ESTHETIC, VERSATILE AND LONG-LASTING

Grandio blocs is available in two sizes

12 – for small restorations such as inlays

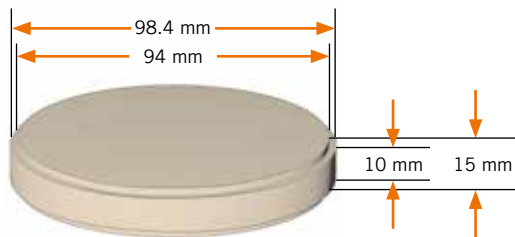


14L – for larger restorations such as crowns



Grandio disc

Average number of restorations per disc: 25 - 30



Two grades of translucency for optimal aesthetics

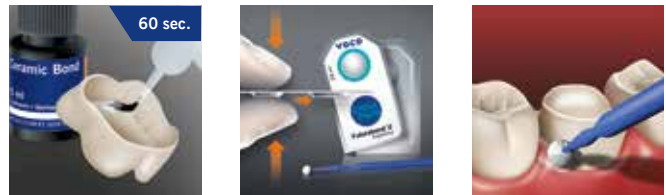
- LT – Ideal for the anterior region in the shades
Grandio blocs: A1, A2, A3, A3.5, B1, C2, BL
Grandio disc: A1, A2, A3, A3.5
- HT – Ideal for the posterior region in the shades
Grandio blocs: A1, A2, A3, A3.5
Grandio disc: A1, A2, A3, A3.5

11 shades ensure that your patient always receives the restoration which suits him or her best.

Bonded-in Cementation

Cementation of Grandio blocs/disc is always carried out using a bonded-in cementation system. Bifix QM, in combination with Futurabond U and Ceramic Bond, is the system of choice for ensuring that the highest standards are also met in this respect.

Bifix QM is a universal dual-cured cement, which, when used together with the state-of-the-art universal adhesive Futurabond U and the silane coupling agent Ceramic Bond, deliver both excellent mechanical retention and an adhesive interface that will provide extended longevity to the restoration.



Grandio blocs/Grandio disc

NANO-CERAMIC HYBRID CAD/CAM MATERIAL

Indications

Crowns, inlays, onlays, veneers

Implant supported crowns

Presentation

REF 6000 Kit
 2 × No. 12 (A2 LT, A2 HT), 3 × No. 14L
 (A2 LT, A2 HT, A1 LT), Bifix QM QuickMix
 syringe 10 g universal, Futurabond U *SingleDose* 5 pcs
 Ceramic Bond bottle 5 ml, Dimanto set, accessories



Advantages

- 86 % filled for enhanced strength and excellent wear resistance
- Tooth-like elasticity and thermal expansion allows for thinner crown margins
- Natural esthetics with enhanced color stability and polish retention
- No firing required for true one appointment dentistry
- Easy intraoral polishability, characterization and repair

Grandio blocs

Low translucent (LT)	5 × No. 12	5 × No. 14L
A1 LT	REF 6003	REF 6018
A2 LT	REF 6004	REF 6019
A3 LT	REF 6005	REF 6020
A3.5 LT	REF 6006	REF 6021
B1 LT	REF 6007	REF 6022
C2 LT	REF 6008	REF 6023
BL LT	REF 6009	REF 6024

High translucent (HT)	5 × No. 12	5 × No. 14L
A1 HT	REF 6012	REF 6027
A2 HT	REF 6013	REF 6028
A3 HT	REF 6014	REF 6029
A3.5 HT	REF 6015	REF 6030

Shade	5 × No. 12	5 × No. 14L
Mixed*	REF 6033	REF 6034

*(A1 LT, B1 LT, C2 LT, BL LT, A1 HT)

Grandio disc

Low translucent (LT) Ø 98.4 mm, 15 mm		High translucent (HT) Ø 98.4 mm, 15 mm	
A1 LT	REF 6050	A1 HT	REF 6057
A2 LT	REF 6051	A2 HT	REF 6058
A3 LT	REF 6052	A3 HT	REF 6059
A3.5 LT	REF 6053	A3.5 HT	REF 6060

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