



# Grandio blocs · Grandio disc

NANO-CERAMIC HYBRID CAD / CAM MATERIAL

# Grandio® blocs · Grandio® disc

## NANO-HYBRID EXPERTISE NOW ALSO AVAILABLE FOR CAD / CAM APPLICATIONS

Silicate ceramics, lithium disilicate, hybrid ceramics, composite, zirconium dioxide – there are a wide range of materials available on the market for CAD / CAM restorations. But which material offers you advantages not only in the working process, but also in terms of its durability?

Hybrid materials have been employed for permanent restorations for many years. Take for example, Grandio and GrandioSO, which have proven their optimal properties in a multitude of studies and are used day in, day out all over the world. Material characteristics similar to those of natural tooth substance, such as the dentine-like modulus of elasticity, together with a very high filler content and low shrinkage – this is what puts Grandio and GrandioSO among the premium filling materials available on the market. And both Grandio blocs and Grandio disc complement these two products perfectly. The Grandio product range has now been combined with CAD / CAM technology, and the result is a material that is easy to work, allows permanent restorations, and a whole lot more besides.

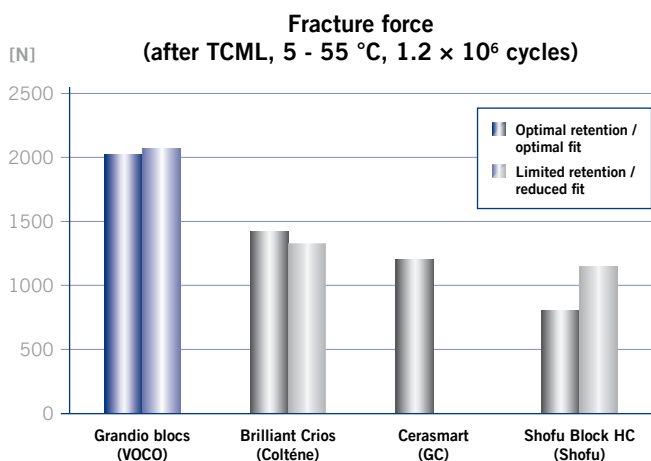
### Strongest in their class

The amount of the study results shown here demonstrates that the nano ceramic hybrid CAD / CAM material Grandio blocs / Grandio disc is stronger than the composite blocs currently available on the market.

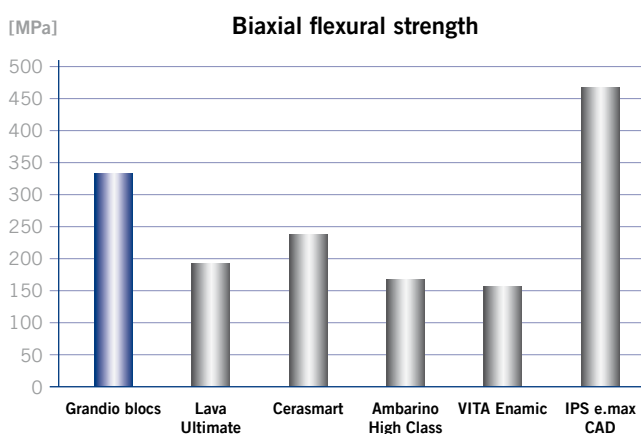
An investigation of the fracture force of the materials shows that Grandio blocs / Grandio disc has a high value even with limited retention and reduced fit of the crown until it breaks.

### Extraordinary strength

In a Tübingen University study, Grandio blocs achieved a biaxial flexural strength result of 333 MPa, while its compressive strength was measured (in-house) at 530 MPa. These results were far superior to other tested products. With this extraordinary strength and the highest filler content, at 86 % by weight, Grandio blocs is a guarantee for durable restorations.



Source: V. Preis, M. Behr, S. Schneider-Feyrer, M. Rosentritt, J Dent Res Spec Iss 97 B: 3329, 2018



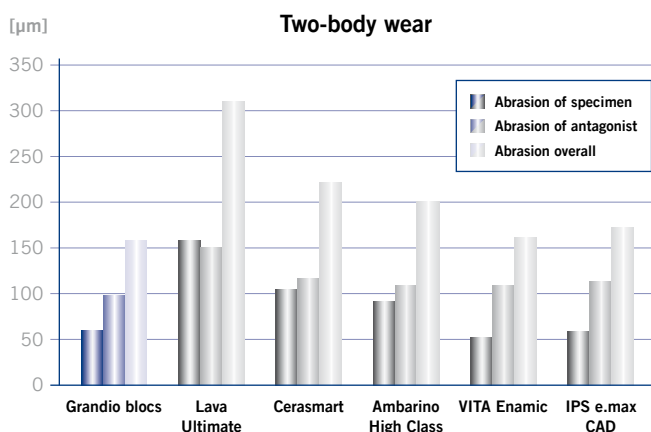
Source: J. Geis Gerstorfer et al., University of Tübingen, report to VOCO, 2016

# Grandio® blocs · Grandio® disc

## STRONGEST IN THEIR CLASS

### Antagonist-friendly

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



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

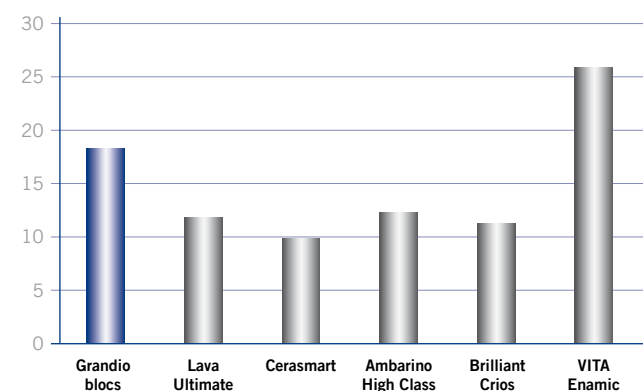
### Similar to natural tooth substance

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 substance.

Grandio blocs also achieves this with ease, and thus offers not only extremely high strength, but also the similarity to natural tooth substance desired by practitioners.

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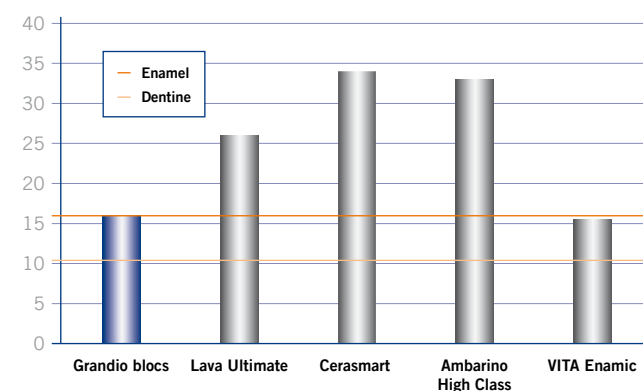
### Modulus of elasticity



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

Like most materials, nano-ceramic hybrid materials expand when heated and contract when they cool again. This behaviour is also true of human teeth. Teeth and restoratives expand when we consume hot food and drinks. If the expansion of the restoration is greater than that of the tooth itself, a tensile force develops at the adhesive bond. The study conducted by Wolter et al. revealed that Grandio blocs comes closer than any other tested material to the values recorded for natural tooth substance (cf. Xu et al., 1989).

### Coefficient of thermal expansion



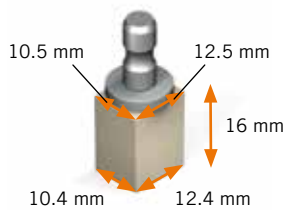
Source: H. Wolter et al., Fraunhofer ISC Würzburg, report to VOCO, 2016

## Grandio® blocs · Grandio® disc

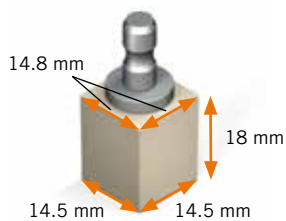
VERSATILE, AESTHETICALLY PLEASING, SECURE HOLD

### Grandio blocs is available in two sizes

12 – for small restorations such as inlays

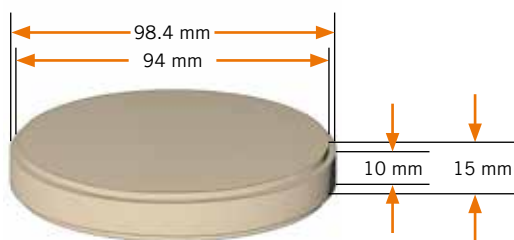


14L – for larger restorations such as crowns



### 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 **A1, A2, A3, A3.5, B1, C2, BL (available as disc)**

HT – Ideal for the posterior region in the shades **A1, A2, A3, A3.5 (available as disc)**

### Adhesive luting

Luting of Grandio blocs / disc is always carried out using an adhesive luting 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-curing luting material, which, when used together with the state-of-the-art universal adhesive Futurabond U and the silane coupling agent Ceramic Bond U, achieves a long-term bond which your patients can rely on completely.

### Clinical Case



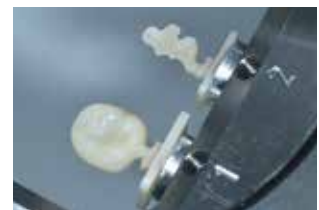
Initial situation teeth 36 and 37



Tooth 37 showing core preparation, tooth 36 with cavity awaiting inlay



Blocks in clamp



Restoration after completion of milling



Luted restorations



FinalTouch is used to individualise the fissures

Source: Dr. Jongki Hadi, Indonesia

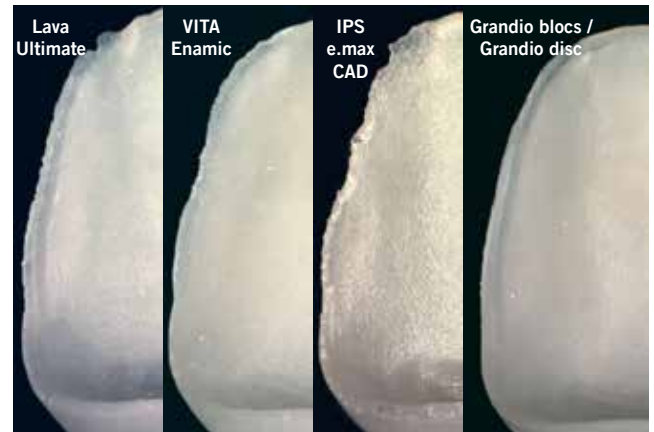
## Grandio® blocs · Grandio® disc

## THE MATERIAL OF CHOICE

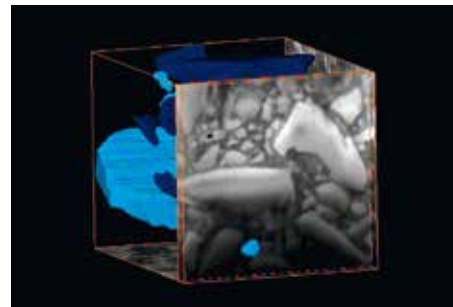
Alongside its outstanding physical values, Grandio blocs and Grandio disc also offer a whole range of additional advantages, which makes these materials a genuine alternative to ceramics e.g. lithium disilicate or silicate ceramics:

- The use of Grandio blocs / Grandio disc makes it possible to mill even thinly tapering edges precisely and without the risk of chipping or breakages. This means precision-fit restorations that are also easy to polish inside the mouth or outside.
- Yet another advantage is that there is no need for the firing process required when using ceramics. As Grandio blocs / Grandio disc is a completely polymerised material, it can be further processed immediately after the milling procedure. This time saving enables you to offer your patients a complete restoration in just one session.
- Grandio blocs and Grandio disc come in monolithic shades and can be customised just like ceramics. For this, the low-viscosity material GrandioSO Flow and the high-viscosity material GrandioSO Heavy Flow are particularly suitable, as they permit exact shade matching. FinalTouch can then be used to add particular accents such as fissures and white spots as well as other effects found in natural teeth.
- Whilst chips in ceramic restorations (e.g. lithium disilicate or silicate ceramics) require extensive treatment, any defects in Grandio restorations can be repaired quickly and easily. This is done by roughening the surface of the defect, applying the bonding agent and then correcting the situation with a composite.

## Edges after grinding



Source: Internal pictures, veneer 0.6 mm



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

3D tomography visualisation 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 nanoparticles.

**Expert opinion**

Dr. Marco Castellani, Verona (Italy): "VOCO's CAD / CAM blocks are already very easy to polish and they are aesthetic. When combined with the fantastic FinalTouch characterisation colours, they make restorations perfectly aesthetic."

*In my opinion, this new material is more than suitable, and better than all other currently available composite blocks, for posterior teeth and also for crowns and inlays, where ceramic or lithium disilicate would not provide sufficient stability."*

## Grandio® blocs · Grandio® disc

### NANO-CERAMIC HYBRID CAD / CAM MATERIAL

#### Indications

Crowns, inlays, onlays, veneers

Implant supported crowns



#### Presentation

##### Grandio® blocs

REF 6000 Set blocks  
 2 × No. 12 (A2 LT, A3 HT), 3 × No. 14L  
 (A3 LT, A3 HT, A3.5 LT), Bifix QM QuickMix  
 syringe 10 g universal, Futurabond U  
 SingleDose 5 pcs., Ceramic Bond bottle 5 ml,  
 Dimanto set, accessories

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

\*(1 each of A1 LT, B1 LT, C2 LT, BL LT, A1 HT)

#### Advantages

- Highest filler content (86 % w/w)
- Resembles natural teeth perfectly
- Excellent physical values for flexural strength and abrasion
- No firing required
- Can be processed using any conventional milling unit
- Can be polished and repaired optimally
- Ideal for milling even in cases with thin edges
- Based on the nano-hybrid technology
- High radiopacity

##### Grandio® disc

Low translucent (LT)	1 × 15 mm, ø 98.4 mm
A1 LT	REF 6050
A2 LT	REF 6051
A3 LT	REF 6052
A3.5 LT	REF 6053
B1 LT	REF 6054
C2 LT	REF 6055
BL LT	REF 6056
High translucent (HT)	1 × 15 mm, ø 98.4 mm
A1 HT	REF 6057
A2 HT	REF 6058
A3 HT	REF 6059
A3.5 HT	REF 6060

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