STRONGEST IN ITS CLASS

Grandio blocs

86% FILLED NANO-CERAMIC HYBRID CAD/CAM BLOCK

THE DENTALISTS
Grandio blocs

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, a highly filled (86%) CAD/CAM restorative block 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 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, composites expand when heated and contract when they cool again. This behavior 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 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).

Antagonist-friendly

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

**HIGHLY FILLED FOR MAXIMIZED STRENGTH**

**Strongest in Class**
Overall, the study results presented here demonstrate that Grandio blocs as a Nano-ceramic Hybrid material is stronger than the composite blocks 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.

At 86 % by weight, Grandio blocs boasts the highest filler content compared to the composite-based blocks. This is achieved through VOCO’s proprietary nano-technology and guarantees outstanding strength and stability.

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

ENGINEERED PHYSICAL PROPERTIES FOR BETTER LONGEVITY

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

![Water absorption graph](chart-water-absorption.png)

Source: acc. ISO 4049, VOCO, 2017

High radiopacity for easy identification
Grandio blocs offer very high radiopacity (308 % Al) compared to other brands available on the market. This adds to Grandio blocs’ ease-of-use in regards to identification during the reviewal of radiographs.

![Radiopacity graph](chart-radiopacity.png)

Source: acc. ISO 4049, VOCO, 2017

Lava Ultimate, Cerasmart, Ambarino High Class, Brilliant Crios, Vita Enamic, and Shofu Block HC are not registered trademarks of VOCO GmbH.
In addition to its outstanding physical values, Grandio blocs also offer a whole range of additional advantages, which makes this block material an ideal alternative to ceramics:

- **Thinner crown margins**
  The use of VOCO’s Nano-ceramic Hybrid block 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 material 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 come in monolithic shades and can be customized just like pure ceramic blocks. 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 material 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.

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

* The times listed above are averages to produce a crown
** These steps may vary slightly depending type of material
Grandio blocs with Bifix QM

**ESTHETIC, VERSATILE AND LONG-LASTING**

Grandio blocs are available in two sizes

**12** – for small restorations such as inlays

![12 size illustration](image)

**14L** – for larger restorations such as crowns

![14L size illustration](image)

### Bonded-in Cementation

Cementation of Grandio blocs 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.

### Two grades of translucency for optimal esthetics

**LT** – Ideal for the anterior region in the shades A1, A2, A3, A3.5, B1, C2, BL

**HT** – Ideal for the posterior region in the shades A1, A2, A3, A3.5

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

<table>
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Grandio blocs

NANO-CERAMIC HYBRID CAD/CAM BLOCK

Indications
Crowns, inlays, onlays, veneers
Implant supported crowns

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

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

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