STRONGEST IN ITS CLASS

Grandio blocs / Grandio disc

86% FILLED NANO-CERAMIC HYBRID CAD/CAM MATERIAL

VOCO
THE DENTALISTS

MADE IN GERMANY
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).

**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/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 its durability as a restoration.

![Graph of Filler content and Biaxial flexural strength](image)

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.

![Graph of Lowest content of Resin](image)

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.
**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.

**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 reviewal of radiographs.

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[Images of before and after 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.

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*)

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

TOTAL TIME SAVINGS USING GRANDIO BLOCS = 26–39 MINUTES*

NO FIRING OR SINTERING REQUIRED
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
10.5 mm 12.5 mm 16 mm
10.4 mm 12.4 mm

14L – for larger restorations such as crowns
14.8 mm 18 mm
14.5 mm

Grandio disc

Average number of restorations per disc: 25 - 30

98.4 mm 94 mm
10 mm 15 mm

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

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), Bifix QM QuickMix syringe 10 g universal, Futurabond U SingleDose 5 pcs
Ceramic Bond bottle 5 ml, Dimanto set, accessories

Grandio blocs

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

Grandio disc

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<td>A3.5 LT</td>
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