



Grandio Seal

NANO-FISSURE SEALANT

Grandio® Seal

SMALLEST PARTICLES FOR GREATEST EFFECT:

Fissure sealing has been part of the standard repertoire of every prophylaxis concept for a long time. Fissures and fossulae rank first as predilection sites for juvenile caries. The colonisation of fissures with caries-causing bacteria can be successfully prevented through sealing, and existing initial lesions can be stopped. The fissure seal must be free from bubbles and material excess in order to prevent loss of retention and elevation in the bite.

When selecting a material, one had to previously decide between:

- Good flowability at the expense of high shrinkage and other unsatisfactory physical properties
- or
- Composite-based materials with better physical properties that do not, however, flow into all areas of the fine fissures and thus promote the formation of bubbles and voids.

The solution:

Grandio® Seal, the first no-compromise nano-fissure sealant

Grandio Seal is a highly flowable, light-curing fissure sealant material with a filler content of over 70% w/w, which makes it the most abrasion-resistant fissure sealant. Furthermore Grandio Seal can withstand daily chew loading, even without adhesive luting.

The viscosity of Grandio Seal guarantees, amongst other things, that the material penetrates deep fissures without forming bubbles (see Figures 3 and 4).

Conventional fissure sealants are less flowable and therefore do not reach the base of the fissure.

This unique combination is made possible through the use of nano-particles:

High flowability, low abrasion and, simultaneously, physical properties that are even superior to those of various posterior hybrid composites.

The utilisation of thixotropy

Through the utilisation of thixotropy, Grandio Seal becomes flowable under pressure and stable again when the pressure is reduced.

The ability to become less viscous under pressure or through agitation is important for complete and bubble-free entry into the fissure (see Figure 1).

Grandio Seal's pronounced thixotropy permits the sealing material to become more flowable when agitated with a cannula, probe or fine brush, and it thus reaches the depths of the fissure, instead of remaining in its funnel.

Thanks to these properties, Grandio Seal is a guarantor for long-lasting and marginally tight fissure sealing.

Pele Tim – The ideal supplement to Grandio® Seal

For durable fissure sealing, hardening of excess material must be prevented.

If excess still occurs, it can be easily and conveniently removed with Pele Tim No. 1 (VOCO) before light-curing.

In contrast to cotton pellets, Pele Tim foam pellets absorb the material residue without leaving strands of cotton behind.

Loss of retention is reduced, since excess material is removed and the sealant tightly seals the margins.

Technical Data

Adhesion to enamel (after 24 h storage in water)	16.9 MPa
Transverse strength	130 MPa
Transverse strength after thermocycling	107 MPa
Abrasion (ACTA)	41.7 µm
Filler content	70.2 % w/w

Flowability of Grandio® Seal and a conventional fissure sealant under pressure (here: glass plate)

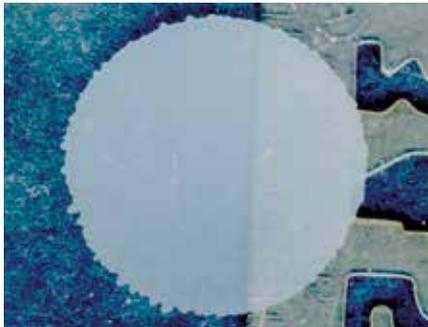


Fig. 1:
Grandio Seal:
average circle
diameter: 17.8 mm

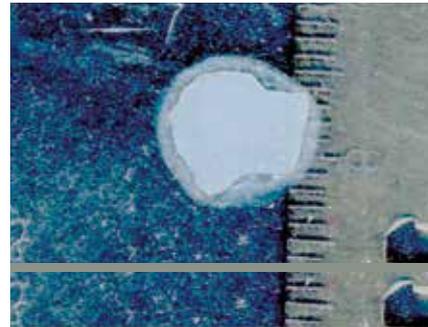


Fig. 2:
Product B: average
circle diameter:
7.9 mm

Source: O.W. Denga, J.M. Denga, Stom. Institut, Nat. Akademie Odessa UA, 2007

Treatment result with Grandio® Seal

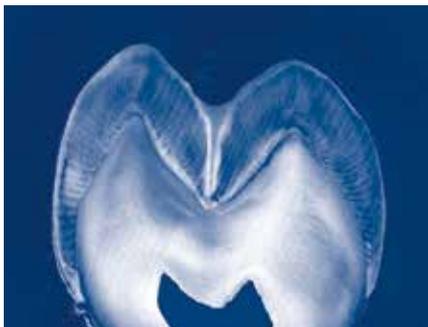


Fig. 3



Fig. 4

Source: VOCO

Grandio Seal offers outstanding flow and wetting properties without forming bubbles, even in the deepest regions of the fissure, thanks to the utilisation of nano-fillers.

Typical air bubble formation in composite-based systems with limited flowability and traditional fillers



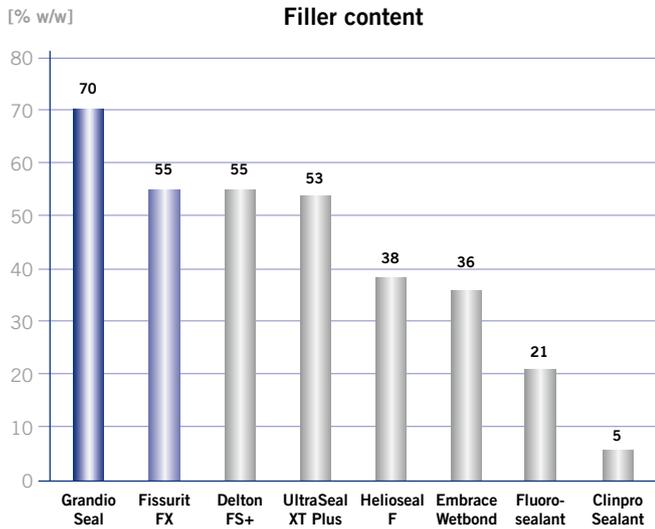
Fig. 5



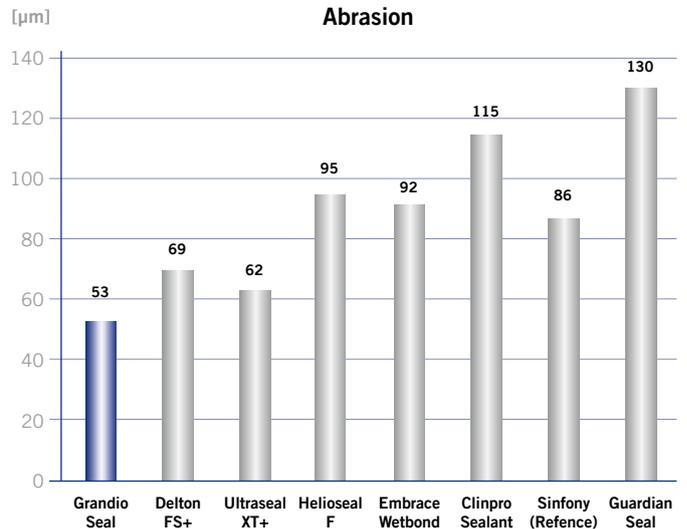
Fig. 6

Source: VOCO

Grandio® Seal

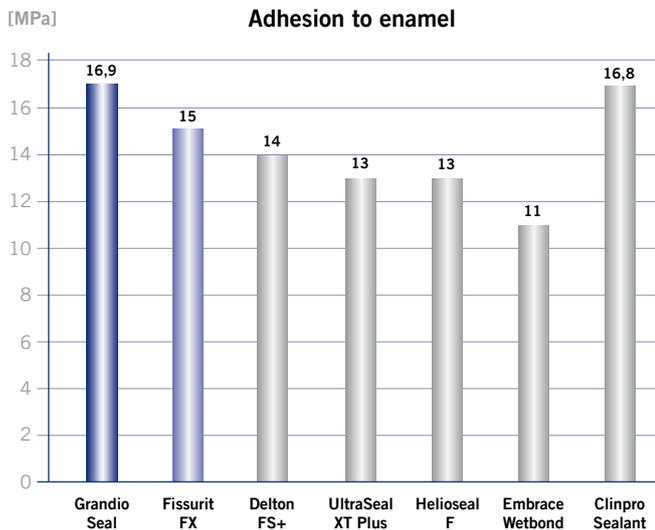


Source: VOCO, in-house measurement

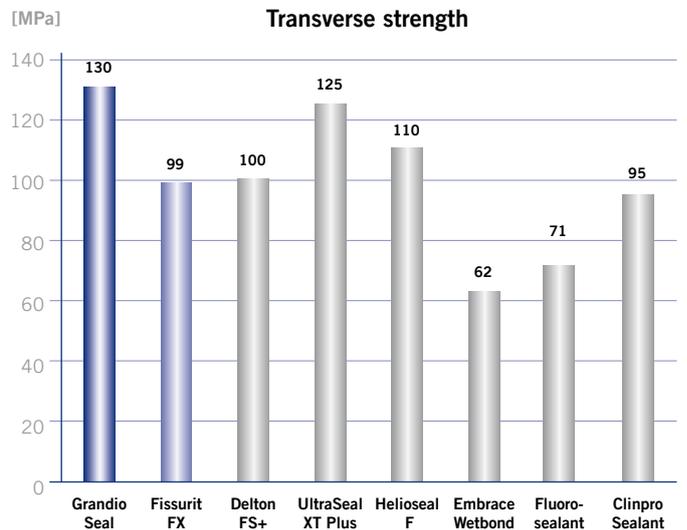


Source: C. Mürnseer, M. Rosentritt, M. Behr, G. Handel, „Three-body Wear of Fissure Sealants“, Regensburg University Medical Center, Department of Prosthetic Dentistry.

As the comparison to other materials shows, Grandio Seal has the highest filler content in its class. This has a direct effect on the abrasion, which is lowest in Grandio Seal.



Source: VOCO, in-house measurement

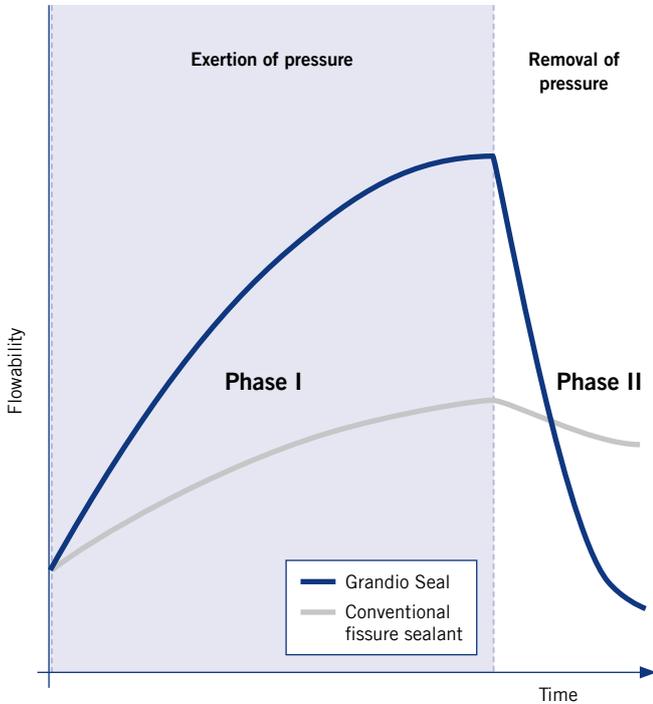


Source: VOCO, in-house measurement

Since sealing fissures is carried out without bonding, the adhesion to the enamel is not determined by the properties of a bonding agent, but by the properties of the fissure sealant. The better the material can infiltrate the small recesses in the enamel produced by the conditioning, the higher the micro-retention and thus the adhesion to the enamel. Grandio Seal has very good flow behaviour, thus it flows into the smallest enamel recesses and so leads to high enamel adhesion.

Grandio® Seal

YOU DECIDE WHEN THE MATERIAL SHOULD FLOW!



Phase I:

Flowability of the material under pressure

This shows Grandio Seal's thixotropic properties. Under pressure, e.g. through agitation of the material by brush, Grandio Seal becomes highly flowable and can thus reach the base of the fissure quickly.

Conventional fissure sealants are less responsive to pressure. Their flowability increases only slightly, and the material therefore hardly reaches the base of the fissure.

Phase II:

Flowability under reduction of pressure

When the pressure eases, Grandio Flow quickly becomes stable again. This ensures that the material does not flow out of the fissure, even when working on the upper jaw.

A fissure sealant without these thixotropic properties will remain flowable and the material may flow out of an upper jaw fissure

Non-invasive fissure sealing with Grandio® Seal



Fissure before sealing



Etching of the occlusal surface



Filling with Grandio Seal



Excess removal with Pele-Tim after 20 seconds infiltration of the material into the fissure

20 - 30 s
light-curing of
Grandio® Seal



Finished, sealed fissure with Grandio Seal

Photos: Dr. Marcelo Balsamo

Grandio® Seal

LIGHT-CURING NANO-SEALANT

Indications / Scope of application

Sealing / filling of fissures and fossulae in:

- Deciduous teeth and / or six year molars after eruption that are free from caries, but vulnerable to caries
- Adult patients with a diagnosed high caries risk
- Patients with a high caries risk due to possibly limited oral hygiene
- Patients with limited treatment compliance

Sealing of damaged enamel surfaces

Covering of caries predilection sites during orthodontic treatments

Advantages

- Use of nano-fillers for optimal flow behaviour
- With 70 % w/w highest filler content in its class
- Outstanding physical properties:
 - low abrasion
 - low shrinkage values
 - high transverse strength
- Excellent handling
- Optimal wetting properties
- Perfect marginal adaption



Grandio® Seal Presentation

- REF 1060 Set syringe 5 × 2 g, Vococid gel syringe 5 ml, application cannulae type 45
- REF 1061 Syringe 2 × 2 g, application cannulae type 45

Pele Tim Presentation

- REF 2252 No. 1 3.000 × ø 4 mm

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