

DENTOCORE

CORE BUILD-UP

WHITE PAPER



DENTOCORE is a dual-cured composite for the making of core build-up.

Function	Composition
Matrix	Bis-GMA
	TEGDMA
Fillers	Silica
	Barium aluminoborosilicate
Photo-initiator	Camphorquinone
Cross - linker	Hyperbranched molecules

DENTOCORE is based on hyper-branched multi-methacrylate polymers technology. Hyper-branched polymers are low viscosity materials compare to linear polymers at the same molecular weight level. The HBPs technology uses very large molecules with many branches in the resin matrix to improve mechanical properties and to reduce shrinkage because the multitude of functional groups enables a high degree of polymerization.

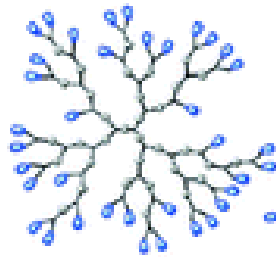


Figure 1 - Hyper-branched polymer

Main features of DENTOCORE:

- ▶ Lower polymer shrinkage
- ▶ Radiopaque
- ▶ Fluoride release
- ▶ Superior mechanical properties
- ▶ Excellent viscosity for placement and stacking
- ▶ Less free monomer leaking → better biocompatibility
- ▶ Easy to trim

Indications

DENTOCORE is a suitable material for core build-ups in vital and non-vital teeth and for the post cementation into the canal.

Shades

DENTOCORE is available in two shades for a natural and aesthetic results for each clinical case.

Shade	Indication
A3	Dentin shade that can be used underneath all ceramic restorations
White	Can be used for any core build-up for metal and porcelain-fused-to-metal crowns

DENTOCORE has an optimized translucency for a natural tooth appearance, which minimizes the chance of shadows under ceramic crowns. DENTOCORE also provides an excellent radiopacity and good contrast.

Technical Properties

Clinical evaluation study

- Dentists panel: 34 (worldwide)
- Clinical cases: 531

Evaluation criteria:

- Mix consistency
- Ease of dispensing
- Working time
- Curing time
- Ease of trimming
- Stacking ability

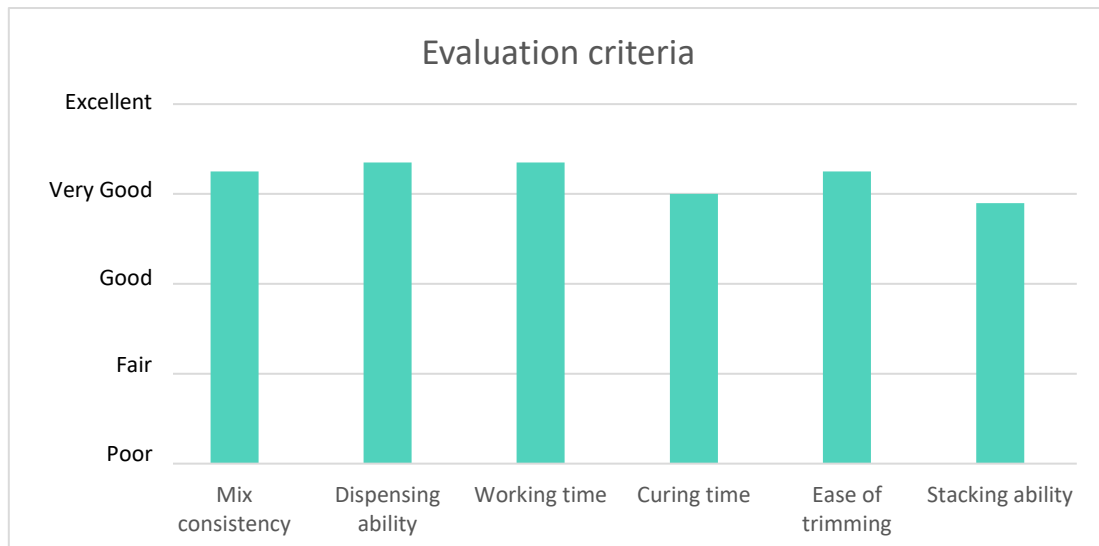


Figure 2 - Dentocore key features evaluation [1]

Dentocore is considered as very good for all expected clinical criteria.

Viscosity:

DENTOCORE is available in two different viscosities for an adaptation to each practice.

DENTOCORE	Has a light viscosity that flows easily into crevices and tight areas for immediate adaptation
DENTOCORE BODY	Will stay put even with the most difficult maxillary core build-ups, yet moves freely under pressure for good adaptation

Solubility:

DENTOCORE offers an excellent tightness due to its low solubility and water sorption properties.

Solubility	2 $\mu\text{g}/\text{mm}^3$
Water sorption	14 $\mu\text{g}/\text{mm}^3$

Table 1: Dentocore properties with water [1]

Flexural strength:

Dentocore has a flexural strength equal to 200 MPa.

Setting:

Working time at 23°C: 1.5-3.5 min

➤ Light-cure setting times

Final setting time	Shades	
Depth of cure	A3	White
6 mm	30 sec	30 sec
8 mm	30 sec	40 sec

Figure 3 - Dentocore depth of cure and setting times [1]

➤ Chemical-cure setting times

Final setting time at 37°C: 2.5-4.5 min

The exothermic reaction of polymerization induces a temperature increase of only 3°C.

Radiopacity:

DENTOCORE has a radiopacity equal to 400 %Al according to ISO 4049:2009.

DENTOCORE has been developed with a high radiopacity for a better contrast between the restorative material and tooth structure.

Filler content:

DENTOCORE filler content has been adjusted for optimal mechanical properties.

DENTOCORE Filler content (%)	
Weight	60

Figure 4 - Dentocore filler content [1]

Product Performances / MARKET

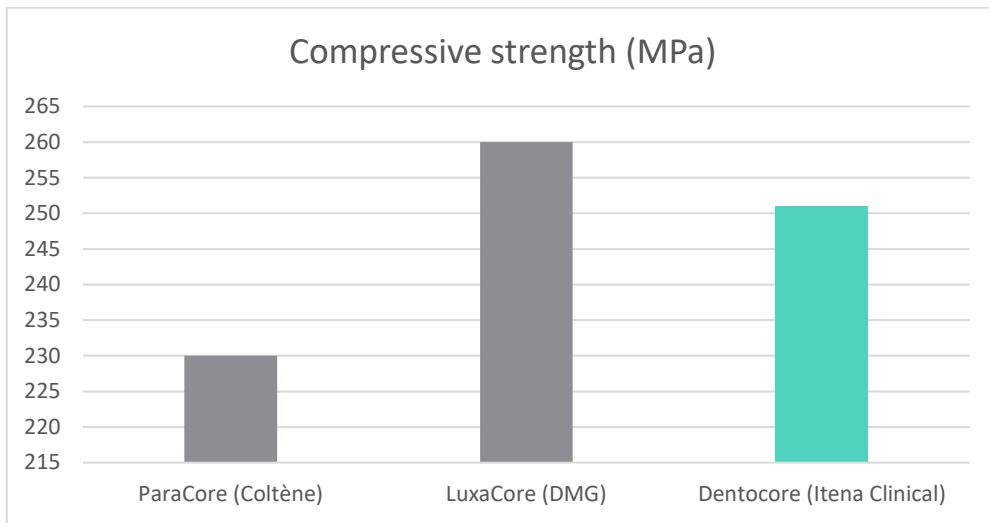


Figure 5 - Dentocore compressive strength compared with other products on the market [1] based on ISO 9917

DENTOCORE has a much higher compressive strength than ParaCore and slightly lower than LuxaCore.

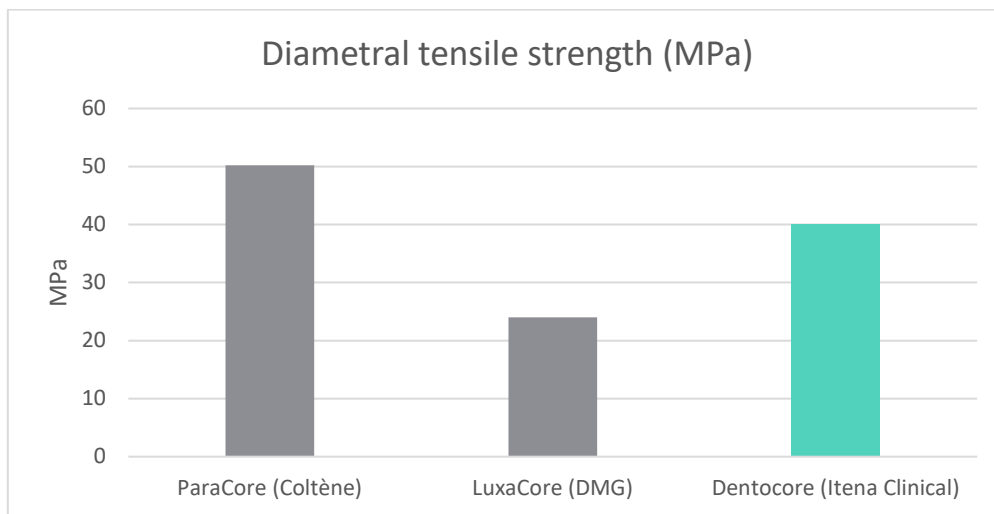


Figure 6 - Dentocore diametral tensile strength compared with other products on the market [1] based on ISO 9917

DENTOCORE has a higher diametral tensile strength than LuxaCore.

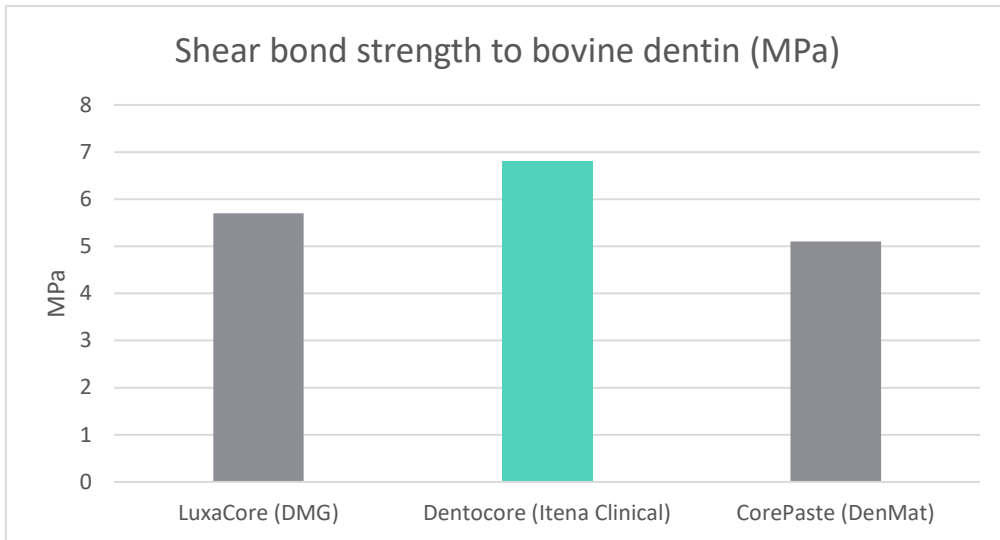


Figure 7 - Dentocore shear bond strength to bovine dentine [1] based on ISO/TS 11405:2003 [4]

DENTOCORE has higher shear bond strength to bovine dentin than competitive products on the market.

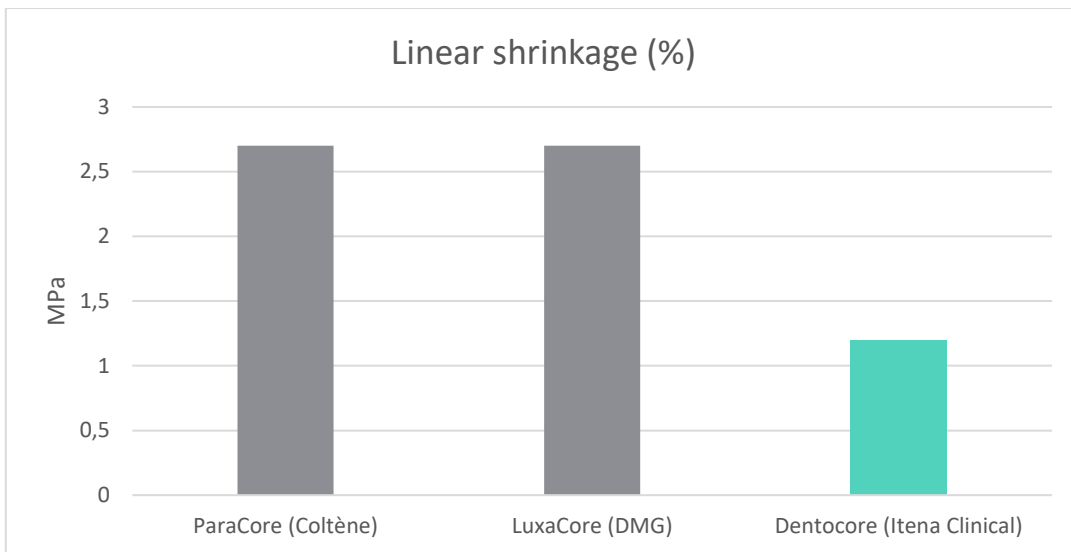


Figure 8 - Dentocore linear shrinkage compared with other products on the market [1]

DENTOCORE shrinks less than competitive products on the market.

Scientific Literature data:

[1] Itena's R&D internal test report.

[2] Patricia Bataillon-Linez et al. Fiber post reconstructions: when, why, how?. 2010

[3] ISO 4049:2009 – Dentistry - Polymer-based filling, restorative and luting materials

[4] ISO/TS 11405:2003 – Dental materials – Testing of adhesion to tooth structure