



Dental products: A time bomb?

**PureFill, the biocompatible composite
TEGDMA, HEMA, BISGMA and BPA-free**

ELSODENT



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Elsodent, manufacturer of more biocompatible products



As we are conscious of the toxicity in current dental restoration materials, our R&D department is developing a new range of composites and resins which are of excellent quality physically, mechanically and aesthetically, using more biocompatible and non-hydrolysable molecules.

DANGERS OF MONOMERS USED IN DENTISTRY

Hydrolysis, a hidden timebomb

The polymerization rate of resin-based dental restorative materials (composites, cements) is between 45% and 65%. A third to a half of the organic monomers used in these products remains free after polymerization of the composite. These monomers can over time, be released in the mouth. Most of them (Bis GMA, TEGDMA, and HEMA) are degraded by the salivary enzymes to produce smaller molecules, highly toxic.

TEGDMA (Tri ethylene glycol dimethacrylate)

Fluid monomer, usually used as a fluidizer for Bis GMA. It is usually present at a concentration comprising between 8 to 10%. It is easily hydrolyzed by the saliva enzymes into formaldehyde which is highly toxic. Beyond its inherent toxicity, it has genotoxic or cytotoxic effects, depending on the cells.

Bis GMA (Bis Phenol Glycidyl Metacrylate) and its derivatives (BisEMA)

Long chain monomer, widely used in composites and resin formulations, it is synthesized from Bisphenol A (BPA) and Glycidyl Methacrylate. The hydrolysis of this family of monomers releases the BPA used for their synthesis.

HEMA (Hydroxy Ethyl Metacrylate)

Short chain monomer. It easily passes through cell walls and has the capacity to interact with DNA; it interferes in its reparation, and could possibly cause mutations and cancers.

WITH PUREFILL, WE ARE STILL INNOVATING !

This is the first Elsodent composite with an **innovating formula which contains no TEGDMA, BISGMA, or HEMA**. Its higher biocompatibility, due to the non-hydrolysable monomers contained in the matrix of the product, leads to a lower toxicity over time. It makes PureFill an essential product in **our declared approach to public health**.



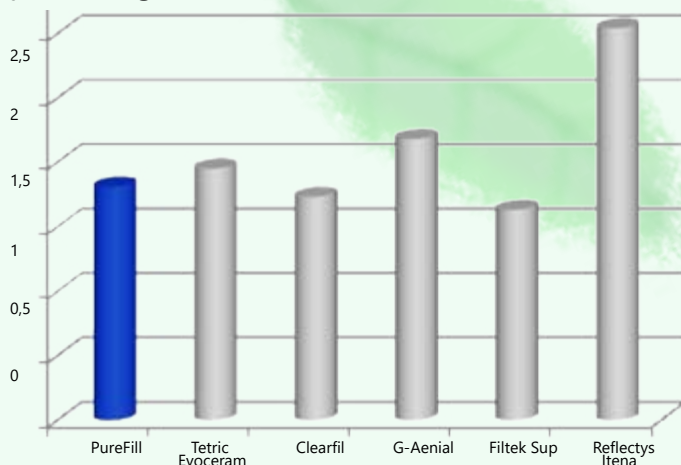
The results of comparative tests show the astonishing qualities of PureFill

Important notice

There is a clear correlation between the conversion rate (polymerization rate) of composites and their toxicity and their shrinkage during polymerization: The higher the conversion rate, the higher the shrinkage and the lower the cytotoxicity, will be. Furthermore, we note that with a conversion rate above 70%, (the highest of all the products tested), the shrinkage of PureFill is still one of the lowest of all the composites sold on the market.

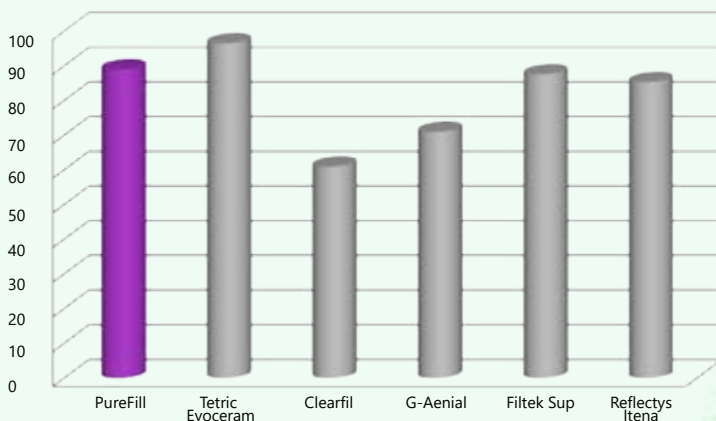
Physico-chemical comparative tests

1/ Shrinkage (%)*



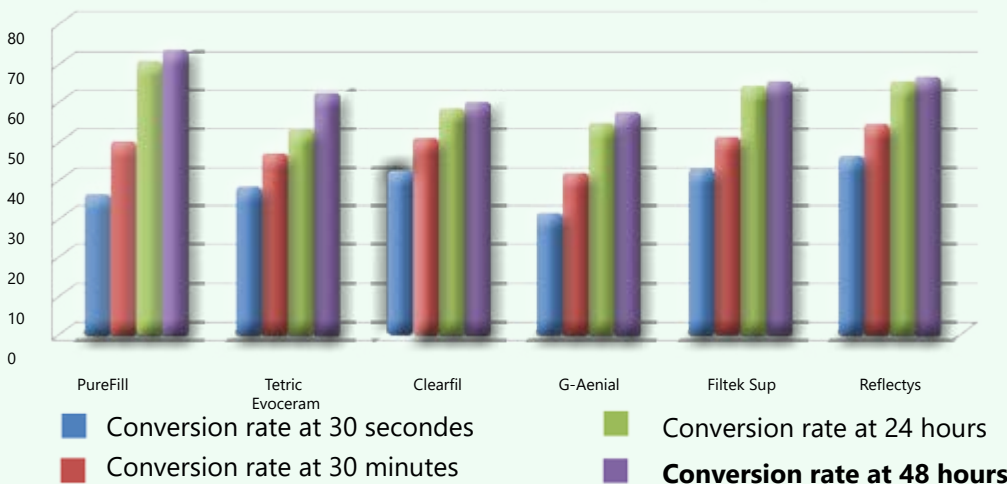
PureFill:
1,81%

2/ Flexural strength (Mpa, σ)*



PureFill flexural strength:
90 MPa

3/ Conversion rate (%)*



* Tests conducted by G-Pharma according to the norms: Shrinkage rate: ISO 17304:2013 ; Flexural strength: Tests carried out with a Zwick equipment annually calibrated and certified following the ISO4049:2009 norm ; Conversion rate: The Degree of conversion was evaluated using FTIR spectrometer with an attenuated total reflectance (ATR) accessory. Each material sample was cured at room temperature for 20 s using a 9mm diameter Elsodent curing light with an output irradiance of 600mW/cm² and standard curing mode..

PureFill

Nano-hybrid, antero-posterior biocompatible composite

The first TEGDMA, BISGMA, BPA and HEMA-free composite



Features

With PureFill, **Elsodent offers you an interesting “less toxic” alternative**, keeping all benefits of an **excellent composite with all the advantages you expect**:

- Doesn't stick to instruments,
- Very low shrinkage ($1,8 < x < 1,9$),
- High conversion rate: $< 70\%$,
- Excellent polishability,
- Highly filled,
- Aesthetic,
- Stable over time: does not polymerized under the chair light.

Indications

- Posteriors restorations (Class I, class II, MOD),
- Anteriors restorations (class III and class IV),
- Class V cavities,
- Aesthetics corrections (ex.: diastema, hypoplasia, discoloration).

References & presentations

PUR-3*	1 x 3 g syringe Available in the following VITA shades: A1/B1 – A2 – A3 – A3,5 – A4 – B2.
PUR-5*	Box of 0.25 g x 20 compules, available in the following VITA shades: A2 – A3 – A3,5 – B2.

* Shade



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