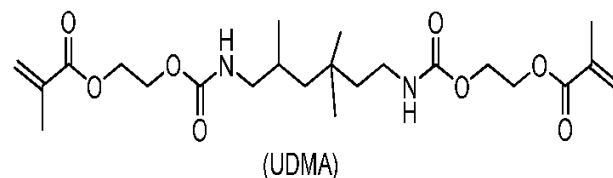
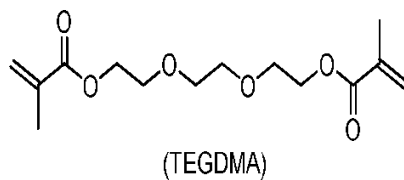
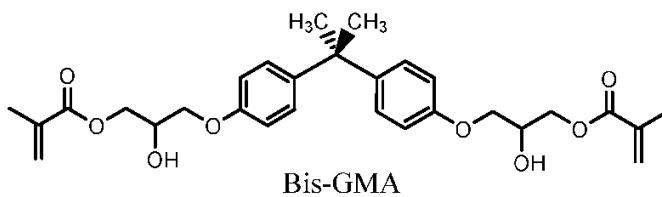


MEDENTAL FLOWABLE LIGHT CURE COMPOSITE



INTRODUCTION:

Composite dental resins (better known as "composite resins" or simply "filled resins") are dental cements made from synthetic resins. Synthetic resins evolved as restorative materials since they were insoluble, had a good dietary appearance, were insensitive to dehydration, easy to manipulate and economical. Composite resins are most commonly composed of Bis-GMA and other dimethacrylate monomers (TEGDMA, UDMA, HDMA), a filler material such as silica, and, in most applications, a photoinitiator (Camphorquinone).



Flowable composite resins are materials used in dentistry for the restoration of teeth. They are characterized by their low viscosity, which makes them more fluid than conventional composite resins.

In 1978, several microfilling systems were introduced to the European market. These composite resins were attractive as they were capable of having an extremely smooth surface when finished. These microfilled composite resins also showed better clinical color stability and greater wear resistance than conventional composites, which favored their similar appearance to dental tissue, as well as their clinical effectiveness. However, further investigation showed progressive weakness in the material over time, leading to microcracks and stepwise material loss around the margin of the composite. In 1981, microfilled composites improved markedly in terms of marginal retention and adaptation. It was decided, after further research, that this type of composite could be used for most the restorations provided that the acid etching technique was used and a bonding agent was applied.

Microfillers are made of colloidal silica with a particle size of 0.4 μm . Resin with this type of filler is easier to polish compared to macrofiller. However, its mechanical properties are compromised since the filler load is lower than in the conventional one (only 40-45% by weight).

Some key points:

Composition: These resins are made up of polymeric groups reinforced by an inorganic glass phase. Unlike conventional resins, they have less inorganic filler and certain substances or rheological modifiers have been eliminated to improve their handling.

organic matrix	Union medium	Inorganic Matrix	Others
Encore - GMA	Silane	Silica fillers in low concentration	Camphoroquinone
UDMA			Colorants
TEGMA			

Medental Flowable Light Cure resins composed with microfillers contain very small particle sizes (generally between 0.02 and 0.04 μm). These microfillers improve resistance to flexural tension and chewing forces. In addition, they offer good aesthetics and resistance to abrasion. These resins are fluid enough to achieve a desired degree of flow. They are used in small class III and V cavities, as well as as a complement or cavity base for class I and II fillings.

Medental's Flowable light Cure Composite resin. It is a polymerizable material with many types of medical procedures that benefit from the restoration of class I, II, III, IV and V cavities and thus be able to practice minimally invasive dentistry. In addition to being a material that can be used as a base to receive some restorative materials such as composite resins or dental ceramics. In the same way as its other uses, this material is beneficial for dental organs and for the dentist due to the ability to be used as a sealing material for pits and fissures thanks to its great fluidity.

Flowable Light Cure Composite	Compressive strength: 123.9 MPa	Minimum Value: 100 MPa (ISO 4049:2019)
	Flexural Strength: 70.1 MPa	Minimum Value: 50 MPa (ISO 4049:2019)
	Shrinkage or contraction (%): 1,138	1 to 5% (ISO 4049:2019)
	Water Absorption: 30 $\mu\text{g}/\text{mm}^3$	Maximum Value: 40 $\mu\text{g}/\text{mm}^3$ (ISO 4049:2019)
	Solubility: 5 $\mu\text{g}/\text{mm}^3$	Maximum Value: 7.5 $\mu\text{g}/\text{mm}^3$ (ISO 4049:2019)

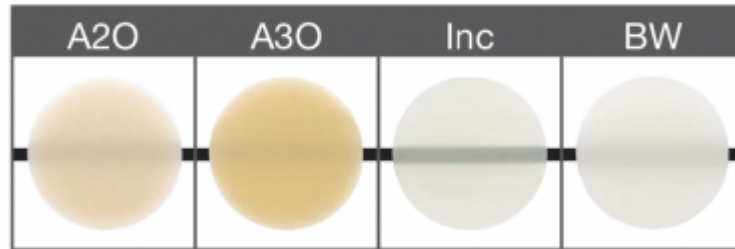
Clinical applications:

- They are ideal for small restorations where it is not necessary to extend the size of the cavity.
- They are ideal for aesthetic restorations in anterior and posterior teeth.

Clinical selection:

- When choosing a flowable composite, it is considered whether mechanical or aesthetic requirements take precedence. In the first case, a material with a larger filler volume is preferred, while in the second, the particle size is crucial.
- The existence of opacifiers and dyes allows improving aesthetic results with these materials

Colors:



Medental's Flowable Light Cure composite resin handles a wide range of shades according to the Vita Shade: A1, A2, A3, A3.5, B1, B2, B3, C1, C2, C3, D2, D3 Incisal and Opaque

After polishing the surface to remove any extrinsic stains, determine the shades needed for the restoration before tooth preparation or rubber dam placement. A tooth that has been dried appears lighter than normal. For this reason, a shade selected on a dry tooth will be lighter than a tooth after hydration. During tone selection:

If a single tone is to be used:

- Select the Shade of the Body by examining the central portion (body) of the tooth. Choose the resin shade that most closely matches the central portion of the VITA Classic Shade Guide.

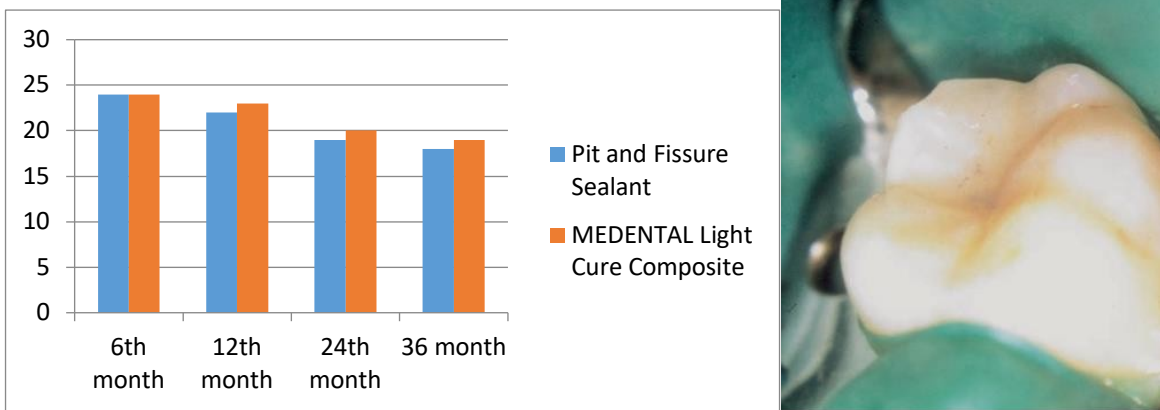
If more than one shade is to be used to mimic tooth structure and increase the vibrancy of the final restoration, use the Circular Shade Guide or identify which opacities should be used. To determine which shade to choose in a given opacity:

- Select the shade for Dentin (or Body) by examining the exposed dentin or gingival area of the tooth. Choose the restorative shade that most closely matches the middle of the dental tablet from the VITA Classic Shade Guide (some recommend wearing down the neck of the tablet).
- Select the shade for Body by examining the central portion (body) of the tooth. Choose the restorative shade that most closely matches the center portion of the dental tablet from the VITA Classic Shade Guide.
- Select the Enamel shade by examining the proximal or incisal area of the anterior teeth, or the cusp of a posterior tooth. Select the resin shade that most closely matches the center portion of the dental tablet from the VITA Classic Shade Guide.
- A Translucent shade (in the same shade family) can be used to provide greater translucency and increase the “depth” of the restoration.
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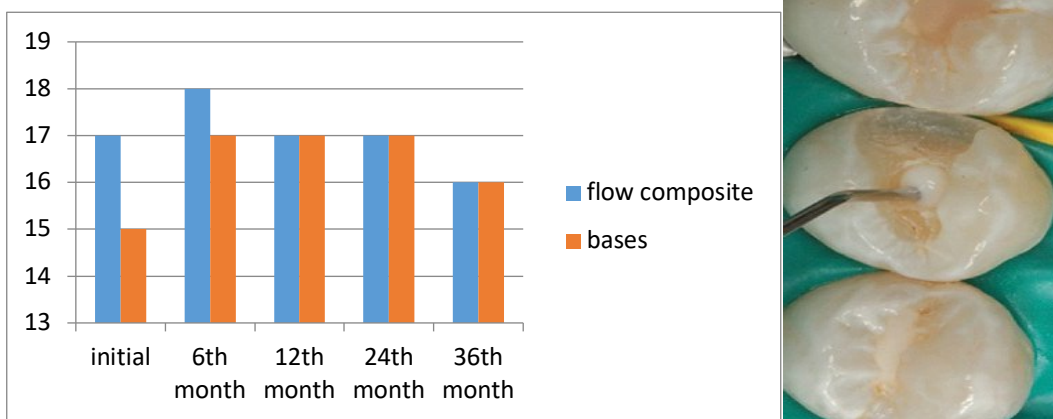
Product performance used in other dental applications:

A clinical evaluation carried out on the flowable light cure composite resin from Medental Clinical Evaluation Report revealed that it can be useful and almost similar in applications in which pit and fissure sealing processes are required, as a base/liner and for all types of types of minimally invasive restorations. The evaluation was carried out with a period of 36 months of monitoring by 3 independent dentists.

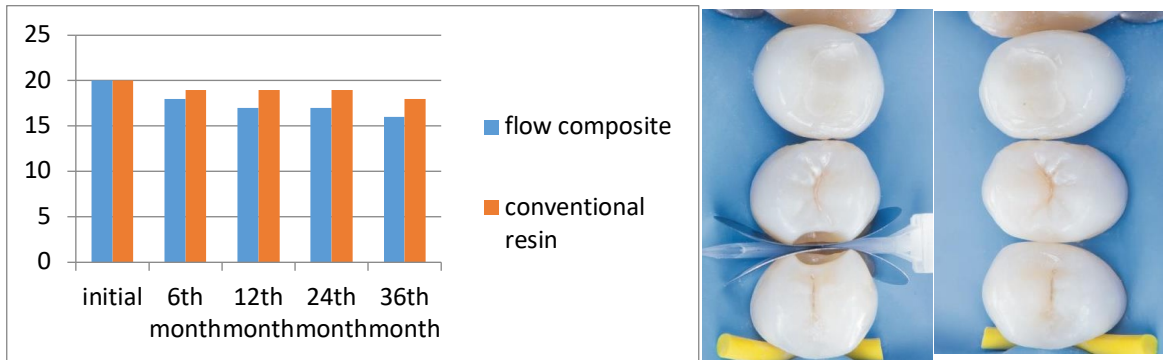
The results obtained in the clinical evaluation in the graph below show the differences between flowable resin and conventional pit and fissure sealants 6, 12, 24, and 36 months after placement. No statistically significant differences were found between the two, demonstrating the efficacy of flowable resin as a pit and fissure sealant.



The results obtained are shown in the following graph where the differences between the fluid resin and the conventional bases are shown 6, 12, 24, and 36 months after placement. No statistically significant differences were found between both, which demonstrates the effectiveness of the fluid resin as a base without showing postoperative sensitivity



The results obtained are shown in the following graph that shows the differences between the fluid resin and conventional resins in minimally invasive cavities class I, II, III, IV and V at 6, 12, 24 and 36 months after placement. No statistically significant differences were found between both, which demonstrates the effectiveness of the fluid resin as a restorative material without showing postoperative sensitivity or fracture of the material.



The Flowable Light Cure Composite medental resins have proven to have the basis to facilitate the selection of the professional in the posterior sector of the mouth, since their characteristics and properties are adapted to the therapeutic requirements, being a simple, fast and practical technique that reduces the number of clinical steps. Medental's Flowable Light Cure Composite resin guarantees penetration into all cavity irregularities and is very flexible, radiopaque and available in different colors. From the clinical results obtained by dental health professionals (evaluators).

Favorable results were obtained when the clinical performance of the products was evaluated according to their intended use, in patients, demonstrating that the product is safe and effective in its use.