MICRO HYBRID LIGHT CURE COMPOSITE MEDENTAL


**Introduction:**

Composites or composite resins are synthetic materials mixed heterogeneously forming a compound, as their name indicates. Composite resins are most commonly composed of Bis-GMA and other dimethacrylate monomers (TEGMA, UDMA, HDMA), a filler material such as silica, and in most applications, a photoinitiator.

Hybrid composites were introduced in the 1980s and are more commonly known as resin-modified glass ionomer cements (RMGIC). The material consists of a powder containing a radiopaque fluoroaluminosilicate glass and a photoactive liquid contained in a dark bottle or capsule. The material was introduced because resin composites alone were not suitable for class II cavities. RMGIC can be used instead. This mixture of resin and glass ionomer allows the material to be set by light activation (resin), allowing for a longer working time. It also has the benefit that the glass ionomer component releases fluoride and has superior adhesive properties. The hybrid filler contains particles of various sizes with a filler loading of 75-85% by weight.

In the case of Micro hybrid resins, they contain filler particles on average of 0.4 mm to 0.8 mm. Microhybrid resins typically have a filler content of 70% to 80% by volume.

**Device description:**

MICRO HYBRID LIGHT CURE COMPOSITE At MEDENTAL we manufacture the universal light-curing resin for all types of cavity restorations, inlays, onlays and indirect veneers, with a unique combination of barium glass fillers with state-of-the-art curing agents and Bis- GMA-based resin systems making our Microhybrid Composite an ideal filling material for anterior or posterior restorations. Its use ranges from one week to four months, but they can also be used as definitive cements, depending on the hardening method.

**Intention of use:**

Microhybrid Light Cure Composite: Universal Composite for restoration of all cavity classes. Indirect inlays, onlays and veiners. Such as restoring caries and performing aesthetic cementations in the following conditions:

- Anterior or posterior teeth with the presence of class I and V caries, with adequate remaining healthy dental structure.
- Anterior or posterior teeth with dental fractures with no more than 50% loss of dental structure.
- Anterior or posterior teeth with mild and moderate wear facets where the occlusal stress factor can be controlled.
- Anterior or posterior teeth with aesthetic alterations or alterations in shape, color and position are considered to be treated with a direct surgical procedure for their correction.

**Colors:**


A1, A2, A3, A3.5, B1, B2, B3, C1, C2, C3, D2, D3 Incisal and Opaque

| | Results | ISO 4049:2019 values |
|---|---|---|
| Micro Hybrid Light Cure Composite Medental | Curing depth: 2.8mm | 1.0 mm (Opaque) Minimum<br>1.5mm(Other) Minimum |
| | Flexural Stress: 113 MPa | 80 MPa Minimum |
| | Water Absorption: 15 mg/µm3 | 40 mg/µm3 Maximum |
| | Solubility: 0.20 µm3 | 7.5 mg/µm3 Maximum |

Compression resistance: Micro Hybrid Light Cure Composite Medental resin usually has good compression resistance, which is important to withstand masticatory forces in dental restorations.

Wear resistance: These resins also offer good wear resistance, which is crucial to maintaining the integrity of the restoration over time.

Color stability: Micro Hybrid Light Cure Composite Medental resins usually maintain their original color and do not fade easily, which is important for dental aesthetics.

Clinical Management: Handling during placement and subsequent polishing are important aspects of the clinical performance of these resins. Its ability to adhere to tooth structure and ease of use are key considerations.

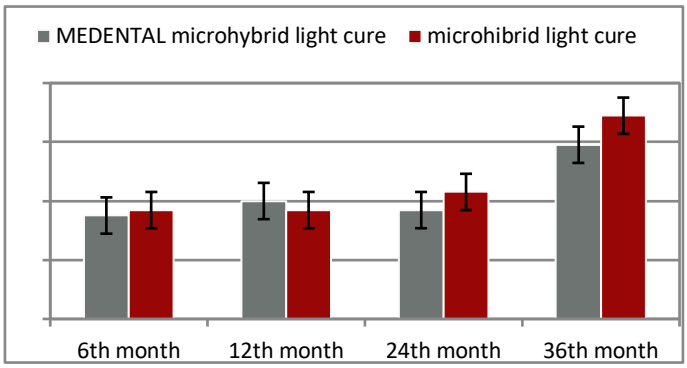
**Product performance used in other dental applications:**

A clinical evaluation carried out on the Micro Hybrid light cure composite resin from Medental Clinical Evaluation Report revealed that it can be useful and almost similar in applications in which. The evaluation was carried out with a period of 36 months of monitoring by 3 independent dentists.

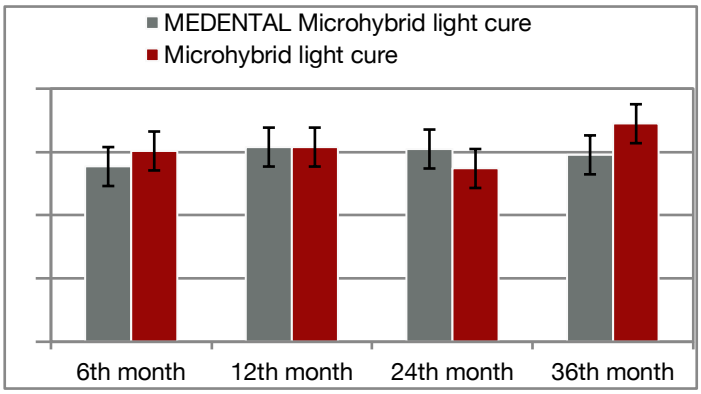
The results obtained in the clinical evaluation (reference) are shown in the following graph, which shows the differences between the Micro Hybrid Light Cure Composite Medental resin and the light-curing microhybrid resin from other brand in their color matching capacity, marginal integrity, surface texture and filling finish at 6, 9 and 12 months after placement. No statistically significant

differences were found between the two, which demonstrates the effectiveness of the light-curing microhybrid resin as a good restorative material.

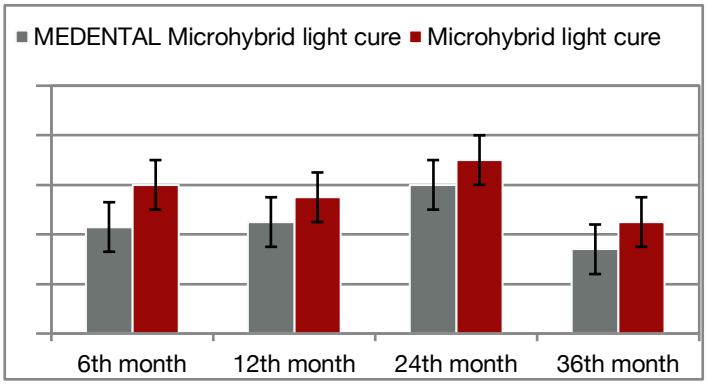
This graph represents the Color matching capability of the Micro Hybrid Light Cure Composite Medental resin with respect to other brand light-curing microhybrid resin at 6, 12, 24 and 36 months.



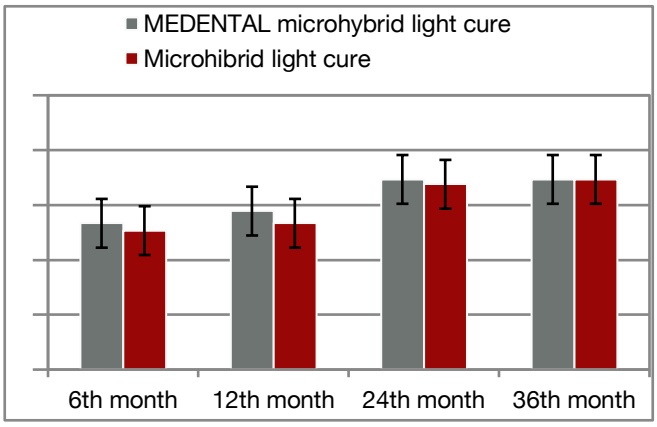

This graph represents the Marginal Integrity of the Micro Hybrid Light Cure Composite Medental resin with respect to other brand light-curing microhybrid resin at 6, 12, 24 and 36 months.




This graph represents the Superficial texture of the Micro Hybrid Light Cure Composite Medental resin with respect to other brand light-curing microhybrid resin at 6, 12, 24 and 36 months.



This graph represents the Finish of obturation of the Micro Hybrid Light Cure Composite Medental resin with respect to other brand microhybrid resin at 6, 12, 24 and 36 months.




The data obtained in this study of the Medental Micro Hybrid Light Cure used as a restorative material show its total effectiveness to date, which is 36 months with reviews every 6, 12, 24 and 36 months. It has been demonstrated that there is no operational sensitivity compared to light-polymerizable resins from other brands and good color stability as well as permanence in the mouth to date. In relation to the color change, this exists, however, there are no statistically significant differences compared to a Mycrohybrid photopolymerizable resin from another brand, so its complete application on anterior teeth is recommended following the protocol recommended by the manufacturer due to its high aesthetics that provides the microparticle.