Competitive Product Comparison

**Ketac™ Molar Aplicap™**
(3M ESPE)

- High viscosity glass ionomer restorative for posterior restorations

**Indications**
- Base for composite fillings
- Core build ups
- Primary tooth fillings
- Single-surface fillings in areas not involved in occlusion
- Class V fillings
- Semi-permanent fillings

**Claims**
- Chemically bonds to dentin and enamel: Allows gentle preparation, offers excellent sealing of the margins of fillings
- Low acid erosion: maintains excellent marginal integrity of restorations
- Plastic contouring and condensing properties
- Can be applied without lining
- Long-term fluoride release
- Radiopaque
- Aplicap™ capsule provides consistent quality and simplified handling

**Cost Comparison** according to Henry Schein (Catalog 2004, Germany); capsule content: 0.1 ml

| 50 capsules: A1, A3 | € 86,90 (€ 1,74/cap.) |
| 20 capsules: A4, DYO | € 37,90 (€ 1,90/cap.) |

**Fuji IX GP™**
(GC)

- Packable Posterior Glass Ionomer Restorative

**Indications**
- Temporary repairs of porcelain, composite posterior fillings
- Core build-up
- Geriatric and pediatric dentistry
- Base material
- Temporary filling

**Claims**
- Intrinsic adhesion to dentine and enamel:
- No etching, no bonding
- No need for rubber dam: Ease of use
- Packable posterior glass ionomer: High wear resistance
- Can be used with metal matrices: Easy contouring in the cavity
- Single step placement: No need for layering technique
- Good radiopacity
- Excellent bio-compatibility
- No need for undercutting: Tooth-conserving preparation technique

**Conclusion**

- **Ketac™ Molar Aplicap™** distinguishes itself from Fuji IX GP™ through its higher wear resistance and higher resistance to acid erosion. Together with its high surface hardness and compressive strength, Ketac™ Molar is perfectly able to counteract mastication forces and prevent restoration fracture. Both reasons for its clinically proven long-term durability.
- **Ketac™ Molar Aplicap™** facilitates easy access to difficult oral situations by its strongly curved nozzle. Furthermore Ketac™ Molar Aplicap™ can be activated in only two steps. The GC capsule in contrast has to be tapped to loosen the powder and needs to be pre-activated before mounting into the activator.
**Test Results**

**In-vitro wear:** The wear resistance of restorative materials is commonly tested by the ACTA method. In this method, a sample wheel and a narrower textured steel wheel rotate against each other in a millet gruel suspension. The depth of the trace on the sample wheel can be measured profilometrically.

*Ketac™ Molar shows a 29 % lower in-vitro wear than Fuji IX.*

Source: Peutzfeldt A, et. al.; Am J Dent, 1997; 10: 15-17; Surface hardness and wear of glass ionomers and componers

**Acid erosion:** The metabolic processes of intraoral bacteria produce acids, mainly lactic acid, which leads to accelerated erosion of the glass ionomer cement surfaces. A high level of resistance to this erosion contributes to the durability of the restoration. Acid erosion is measured according to ISO FDIS 9917-1. Briefly, a specimen is immersed in lactic acid solution (pH 2.7) for 24h and the eroded depth determined subsequently.

*Ketac™ Molar shows a 55 % lower acid erosion than Fuji IX GP™.*

Source: John F. McCabe, University of Newcastle, UK; September 2003, unpublished data

**Clinical results:** In a clinical study conducted with 197 children aged 12 to 13 years a total of 294 Ketac™ Molar restorations were placed. The treatment was evaluated annually after placement over a period of 5 years. Special attention was paid to retention, secondary caries, and anatomic form. **Survival rates of 83 % for small (< half occlusal width) Ketac™ Molar restorations were found after 5 years.**

Source: Holmgren C, et. al.; IADR 2004; abstract #0959

<table>
<thead>
<tr>
<th>Properties</th>
<th>Ketac™ Molar Aplicap™</th>
<th>Fuji IX GP™</th>
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<tbody>
<tr>
<td>Surface Hardness [MPa] (according to DIN 53456)</td>
<td>450 ± 90</td>
<td>340 ± 26</td>
</tr>
<tr>
<td>Compressive Strength [MPa] (according to ISO 9917)</td>
<td>230 ± 24</td>
<td>232 ± 17</td>
</tr>
<tr>
<td>Flexural Strength [MPa] (according to ISO 4049)</td>
<td>30 ± 9</td>
<td>29 ± 6</td>
</tr>
<tr>
<td>Setting time [min] (according to ISO 9917)</td>
<td>02:15</td>
<td>02:20</td>
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Source: 3M ESPE internal laboratory test data

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