Strength testing – University of Regensburg, Germany
Flexural strength of restorative composites after different ageing conditions

The long-term stability of dental materials plays an important role in the clinical success of dental restorations. Especially mechanical properties of a restorative material are strongly influenced by water uptake, mechanical loading and thermal ageing. So, a decrease of these properties is often observed after those simulated ageing procedures1. Therefore, dental materials should exhibit less decrease in strength over time under simulated ageing conditions.

The aim of the following study was to compare flexural strength of five restorative composites after different ageing conditions. Venus Pearl showed even after simulated ageing high strength.


Venus® Pearl

Giving a hand to oral health.
**Methods**

Composite specimens (n=8 per group) were made of each material according to the manufacturer’s instructions and polymerised by the Translux Energy (Kulzer, Germany). Fracture force was determined after 24 hrs, combined storage (4 weeks) and thermal cycling (2 x 3000 cycles 5°/55° 2 min each cycle, EGO chewing simulator, Germany) and mechanical loading (200 000 times with 20N, f=5 Hz, water bath 25°C, Prematec F1000; Germany). Flexural strength (MPa) was calculated (EN ISO 4049). Statistics: one-way ANOVA (p=0.05).

**Results**

Significant different flexural strength values between the materials were found. Mechanical loading caused reduction of flexural strength for four materials. Significantly strongest decrease of flexural strength was found after combination of storage and thermal cycling.

**Conclusion**

During ageing the mechanical strength of a resin based composite decreases. To resist the mastication forces the material should show even after ageing high flexural strength values. Venus Pearl’s flexural strength remains on a high level.

**Comment**

**Source**


The study was abbreviated, summarised and commented and all diagrams and titles have been established by Kulzer.

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