

## Venus® Pearl

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 procedures<sup>1</sup>. 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.

<sup>1</sup> Curtis, A.R. *et al.*: Water uptake and strength characteristics of a nanofilled resin-based composite. *Journal of Dentistry*, Volume 36 (3): 186 – 93.

Giving a hand to oral health.



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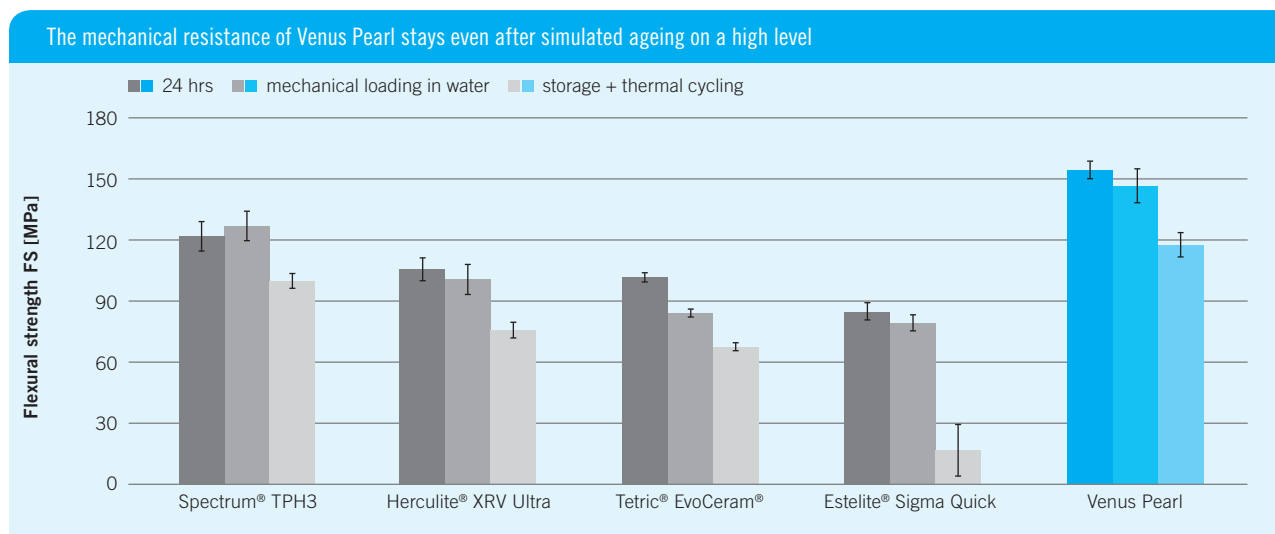
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## Flexural strength of restorative composites after different ageing conditions

### 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 (2x3000 cycles 5°/55° 2min 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



Mean and standard deviation (STD) of flexural strength (FS)

### Conclusion

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.

### Comment

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 Pearls' flexural strength remains on a high level.

### Source

Rosentritt *et al.*: Flexural strength of restorative composites after different ageing conditions. J Dent Res 92 (Spec Iss A), 1559, 2013

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

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