

## Heraeus Dental Science

### Scientific Information

#### Venus Diamond Flow

Low shrinkage stress optimises the longevity of dental composite restorations. This is even more important for flowable materials which are often used for minimal-invasive restorations of cavities with an increased c-factor.

The following in vitro study gives evidence that Venus Diamond Flow has an optimised low polymerisation stress potential.

# Shrinkage Stress of Flowable Composites

Prof L. Breschi, Prof M. Cadenaro, University of Trieste, Italy

## Objective

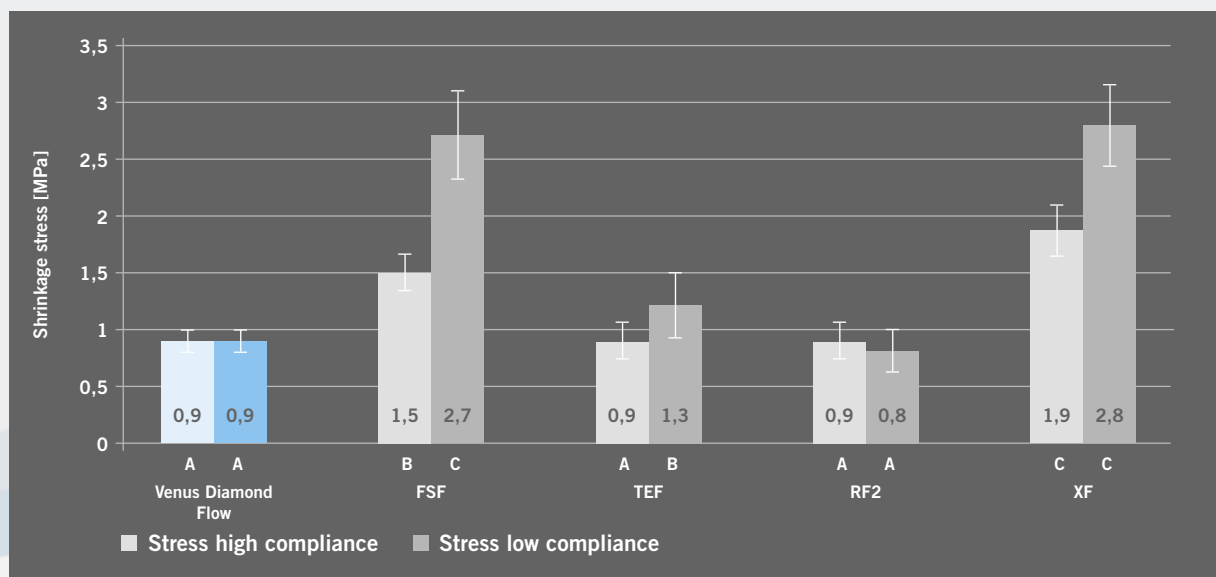
Purpose of the research project was to measure the shrinkage stress of different flowable composites: Venus Diamond Flow (Heraeus), X-Flow\* (XF, Dentsply), Filtek Supreme XT/Plus Flow (FSF, 3M ESPE), Tetric EvoFlow (TEF, Ivoclar Vivadent), Revolution Formula 2 (RF2, Kerr).

\*Similar to Esthet-X Flow (USA).

## Materials & Methods

Shrinkage stress during polymerisation was assessed using a high-compliance and a low-compliance stress-strain analyzer. For the high compliance measurement the setups with the different composites were connected to a load-sensor. The contraction force (N) generated during polymerisation was continuously recorded for 300 s after photo-initiation. The low-compliance system consisted of two stainless steel cylinders as bonding substrates which were attached to an extensometer. This time the force (N) necessary to keep specimen height constant was recorded by the load cell for 300 s after photo-initiation.

## Results



Letters indicate statistical significance. No significant differences between specimens with the same letters were found.

Venus Diamond Flow showed in both testing methods a low contraction stress of 0.9 MPa.

## Conclusions

Venus Diamond Flow exhibits a low contraction stress potential in both testing setups which is an important key factor to improve the marginal integrity and therefore the longevity of a restoration in the long-run.

## Source

Breschi L, Cadenaro M: (2009) Evaluation of the contraction stress and modulus of elasticity of a flowable composite. Data on file.