

Venus Diamond ONE/Venus Pearl ONE

Flexural strength – Kulzer R&D

Comparison of strength and aesthetics of novel single shade composites

There is a trend in dentistry towards simplicity. This is caused by two demands: reducing the risk of application failures and more efficient treatments. At the same time, these simplifications shall not compromise the main features of a material. The simplification started with the introduction of All-in-one-bottle adhesives and continued with bulk filling composites, universal adhesives and reduced numbers of adhesive resin cement components.

In this context, the new ONE shade was invented for Venus Diamond and Venus Pearl which simplifies everyday basic restorations, e.g. in the posterior region. This ONE shade blends seamlessly into the surrounding dentition regardless of the tooth shade. The result is an increased efficiency in stock keeping and shade selection.

In the posterior region the maximum bite force can achieve up to 600N¹. This requires resin composites to exhibit high flexural strength values which minimise the risk of chippings and fractures.

The following study confirms the good shade adaptation of Venus Diamond and Venus Pearl ONE shade. Additionally, the exceptional high flexural strength of these materials is demonstrated.

Giving a hand to oral health.



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Objectives

The purpose of this study was to compare flexural strength and colour adaptation of different single shade composites.

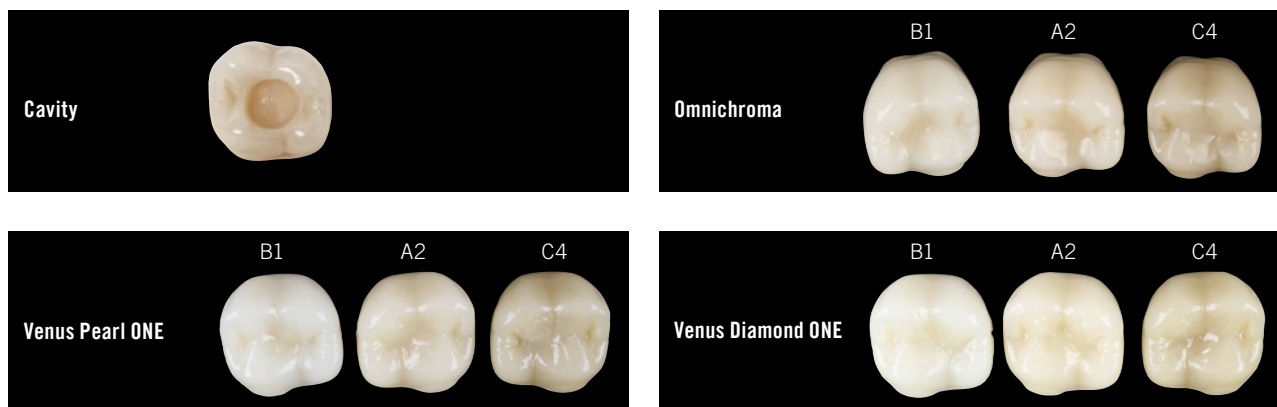
Methods

The tested composites were Omnichroma, Omnichroma Blocker (Tokuyama) and the new ONE shades of Venus Diamond and Venus Pearl (Kulzer). For flexural strength 5–10 samples per composite were prepared according to ISO 4049. The samples were 20s light-cured using a Translux Wave (Kulzer). After 24 h water storage (37°C), flexural strength was measured using a universal testing device (crosshead-speed of 0.75 mm/min).

Standardised class-I-cavities (2 mm diameter and depth) were prepared in denture teeth (Mondial, Kulzer; shades B1, A2, C4) for colour match testing. Cavities were restored using Venus Diamond ONE, Venus Pearl ONE and Omnichroma. Afterwards, the restorations were light-cured and polished using Venus Supra (Kulzer).

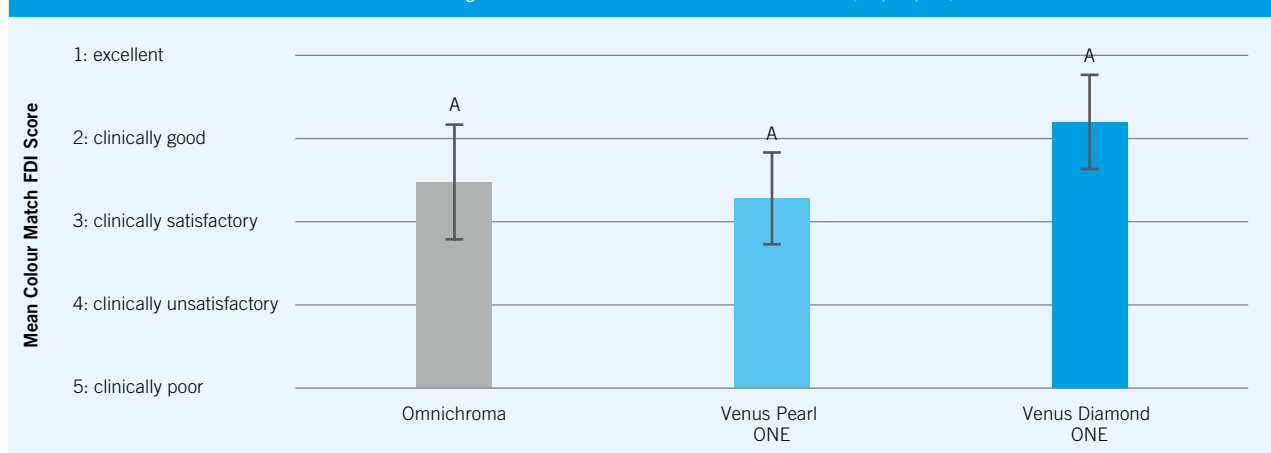
5 experienced dentists (1 male and 4 female) evaluated blinded the colour match of the different composite restorations using the FDI criterion colour match and translucency. The mean for all shades of each composite per dentist was used for comparison.

Statistical analysis was performed by ANOVA, followed by Tukey test ($p=0.05$).



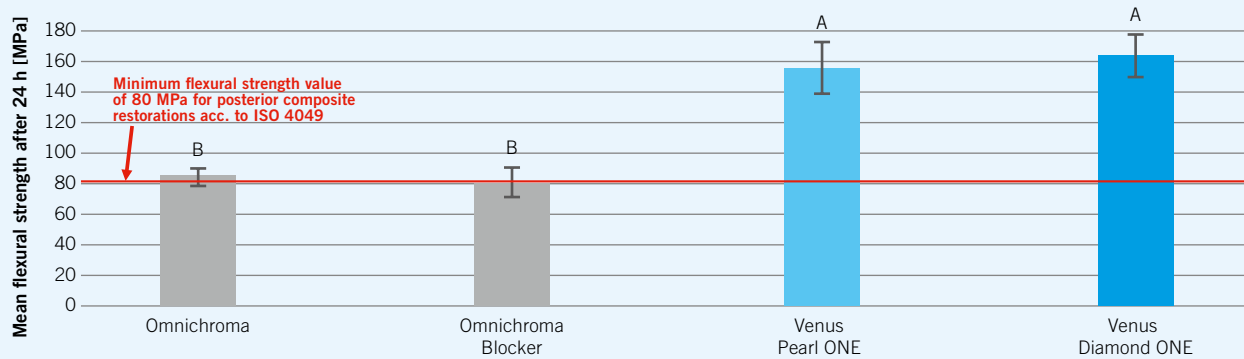
Results

Venus Pearl ONE and Venus Diamond ONE show good colour match to different tooth shades (B1, A2, C4)



Omnichroma received a mean FDI colour match score of 2.5, whereas Venus Diamond ONE and Venus Pearl ONE were rated 1.8, respectively 2.7. No statistically significant difference was found between the three composites ($p=0.07$). Same upper letters between materials indicate no statistically significant differences.

Venus Pearl ONE and Venus Diamond ONE are perfectly suited to resist high chewing force in the posterior region



Mean flexural strength were for Omnichroma 84.8 ± 6.4 MPa, for Omnichroma Blocker 81 ± 9.3 MPa, for Venus Diamond ONE 164.2 ± 14 MPa and for Venus Pearl ONE 155.6 ± 16.9 MPa. Venus Diamond ONE and Venus Pearl ONE showed statistically significant higher flexural strength ($p < 0.0001$) than both Omnichroma shades. Same upper letters between materials indicate no statistically significant differences.

Conclusion

Within the limitations of this study it can be concluded, that the colour match of the experimental shades Venus Diamond ONE and Venus Pearl ONE to the tested shades is at least at the same clinically acceptable level as Omnichroma. In contrast however, Venus Diamond ONE and Venus Pearl ONE showed nearly doubled mechanical strength values compared to the two Omnichroma shades. Higher strength of a composite material might prevent fractures of large posterior restorations.

Comment

This evaluation confirms how excellent Venus Diamond and Venus Pearl ONE are suited for everyday restorations. Both composites have a high strength which can minimise chippings and fractures even in larger posterior restorations. Composites need to have at least 80 MPa flexural strength to comply with EN ISO 4049:2019 to restore occlusal surfaces. Venus Diamond and Venus Pearl are evaluated in a much higher level whereas Omnichroma just passes this value.

Furthermore, ONE shade restorations become invisible by blending into any surrounding dentition. No shade selection is needed which saves time and efforts.

To sum up, Venus Diamond ONE and Venus Pearl ONE Shade is a truly universal shade solution for big majority of everyday cases.

Source

Schweppe J, Utterodt A, Meier C, Eck M, Reischl K: Comparison of strength and esthetics of novel single shade composites. J Dent Res 99 (Spec Iss A): abstract # 1692, 2020.

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

Venus Diamond/Venus Pearl ONE Shade

ONE shade. One experienced formula.

Venus Diamond/Venus Pearl ONE Shade is your one-shade solution for everyday cases.

- **Always grab the right shade:** With the incredible shade-matching properties of ONE shade the restoration becomes invisible by blending into any surrounding dentition.
- **Efficient handling:** Non-slump qualities for easy carving and sculpting with your consistency of choice.
- **Long-lasting restorations:** Exceptional strength to resist chipping and fracture, with over 10 years proven clinical experience.

Try it out for yourself: [kulzer.com/try-one](https://www.kulzer.com/try-one)



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