

Heraeus Dental Science

## Scientific Information Pala Teeth – Mondial®

The failure of dental work can lead to frustration at the dental office, dental lab and with the patient. The goal of all participants in this project should be the avoidance of such frustration. One form of failure is the breakage of denture teeth or the denture base material. In the past, procedures and materials were developed that are all used and are intended to influence the fracturing behavior.

The following in-vitro study tests the bonding strength between two anterior tooth lines and the denture base material under various pre-treatments of the basal surface. Here the strength of the compound Mondial® with PalaXpress showed values that are far above the maximum forces occurring in partial denture cases.

### Strength of Synthetic Polymer Teeth on the Denture Base

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## Purpose

This study examined the influence of macro-retention, chemical compounds and the denture teeth used on the strength of the denture teeth on the denture base. In addition, artificial aging was conducted to provide information regarding the long-term stability of the strength.

## Materials & Method

The teeth of two manufacturers were roughened basally and cervically with a diamond burr of 50µm grain. Then some of the teeth were treated with macro-retention. Used were cross cuts (R) and core drills (L). The teeth that were treated macro-retentively were pre-treated with the respective recommended bonding agent and were then polymerized with synthetic PalaXpress to the test specimen according to manufacturer's instructions. Another set of teeth was only moistened with monomer (-) and then polymerized in the same manner. The artificial aging by means of alternating thermal load was conducted with one half each of the test specimens at 10,000 cycles between 5°C and 55°C. Based on the completed and partially aged test specimens the maximal load was determined until a break with a 45° initial load.

## Conclusion

The test specimens with Mondial® showed significantly higher breaking strength in all 3 pretreatment types than test specimens with Vitapan®. With additional macro-retention no improvement of the breakage strength could be observed with either Mondial® or Vitapan®. Artificial aging significantly weakens breakage strength. For Mondial® it is significantly above the maximum loads observed in partial denture cases.

This study was summarized by Heraeus.

## Source

Deutsche Zahnärztliche Zeitschrift 61 [German Dental Magazine], Volume 3 (2006) Page 147-150

## Results

