

## Pala® Teeth – Premium & Mondial

Wear resistance and break resistance

2-Media-Wear Resistance of Denture Teeth in the Chewing Simulator.

Break Resistance of Standardized Test Specimens Made of Denture Teeth.

High durability of removable dentures primarily depends on the physical properties of the utilized materials. Frequently, the problem arises that high values of one parameter negatively influence another parameter. For dental prostheses, and in particular denture teeth, the balance between wear and break resistance is especially decisive. Dental prostheses should be fully functional as long as possible without having prior damage due to increased wear or breakage.

The following *in vitro*-examinations support the balance of wear and break resistance of our Flexecure® material technology which is used in our tooth lines Premium and Mondial.

Giving a hand to oral health.



**KULZER**  
MITSUI CHEMICALS GROUP

## 2-Media-Wear Resistance of Denture Teeth in the Chewing Simulator.

### Objective

Denture teeth are subjected to constant wear in the mouth. The purpose of this examination is the determination of the abrasion strength of various dental materials in the 2-media chewing simulation.

### Materials & Method

The 2-media chewing simulation is a common method which was further developed by the University of Heidelberg in co-operation with Kulzer. By using attenuators standard deviations could be noticeably reduced. Prior to insertion of the teeth into the chewing simulator any slight unevenness was leveled with fine abrasive paper. Using Al<sub>2</sub>O<sub>3</sub>-pellets (diameter of 4.75mm) as antagonist 200,000 cycles with a horizontal movement of 0.8mm under 50N pressure were conducted. Abrasive wear of the teeth was analyzed with a laser scan surface profilometer.

### Results

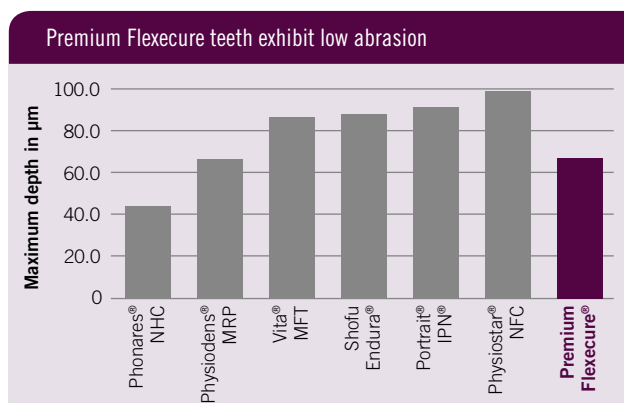


Fig. 1: Maximum depth of wear after chewing simulation in µm.

### Conclusion

Premium Flexecure teeth belong to the group of tooth lines that showed lowest abrasion values in this investigation (Fig. 1).

### Source

Eck M, Renz K, Ruppert K, Stange F, Kulzer GmbH, Wehrheim/Hanau/Wasserburg, Germany  
Unpublished Data. Data on File.

## Break Resistance of Standardized Test Specimens Made of Denture Teeth.

### Objective

Forces exerted on denture teeth can lead to fracture in extreme situations. Purpose of this examination is the determination of the break resistance of various denture teeth independent from their exterior form.

### Materials & Method

Anterior denture teeth were embedded in denture base material and then milled into a cylinder of 6mm in diameter and 10mm in height. At a defined location near the cylinder base a predetermined breaking point of 1 mm depth was inserted. All test samples were then exposed to an increasing amount of force at an angle of 90° until fracture using a universal testing machine (Zwick). Breaking strength was recorded for all teeth lines.

### Results

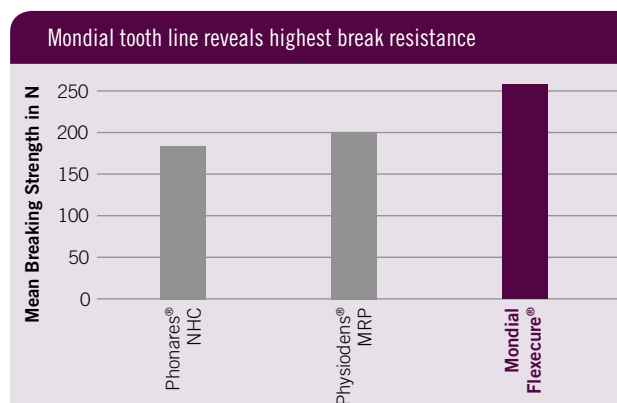


Fig. 2: Mean breaking strength [N] of anterior denture teeth.

### Conclusion

Mondial showed significantly highest breaking strength values in this test (Fig. 2). It is recommended that denture teeth with a high break resistance are used in order to ensure a high durability of dental prosthetic work.

### Source

Beyer M, Kerscher K, Renz K, Schönhof N, Stange F, Kulzer GmbH, Wehrheim/Hanau/Wasserburg, Germany  
Unpublished Data. Data on File.

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