

## Delara®

In-vitro study – University of Regensburg, Germany  
Wear testing of denture teeth

Wear resistance of denture teeth is an important factor for the longevity of dentures, as well as concerning functional and esthetic aspects. Wear of denture teeth can lead, amongst others, to loss of vertical dimension, decrease of masticatory function and loss of esthetics<sup>1</sup>. Especially the wear of anterior denture teeth can negatively affect the esthetic appearance of removable dentures over time. In the present in-vitro study, wear of various denture teeth was investigated using a pin-on-block wear design. The lowest values for wear depth were measured for the denture tooth line Delara. Low wear depth values indicate high wear resistance and can contribute to the longevity of dentures.

Giving a hand to oral health.



**KULZER**  
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<sup>1</sup> Suwannaroop P, Chaijareenont P, Koottathape N, Takahashi H, Arksornnukit M. In vitro wear resistance, hardness and elastic modulus of artificial denture teeth. Dent Mater J. 2011;30(4):461-8.

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## Wear testing of denture teeth

### Objective

Aim of the in-vitro study was the investigation of wear of four different anterior denture tooth lines in a pin-on-block wear design.

### Materials and methods

Preparation of specimens (n=8) from four different anterior denture tooth lines (Delara, Kulzer; Portrait IPN, Dentsply Sirona; Vita MFT, Vita Zahnfabrik; SR Vivodent, Ivoclar Vivadent) with orientation of the incisal edges in parallel to the direction of loading. The in-vitro wear testing with impact impulse was performed in the “Regensburg” pin-on-block simulator (50 N, 120,000 cycles, 1,2 Hz). For simulation of wear behavior steatite balls (CeramTec, d=3mm) were used as standardized antagonists. Subsequently measurement of the wear surfaces with a 3D laser microscope and determination of wear depth followed. The results were statistically analysed.

### Results and conclusion

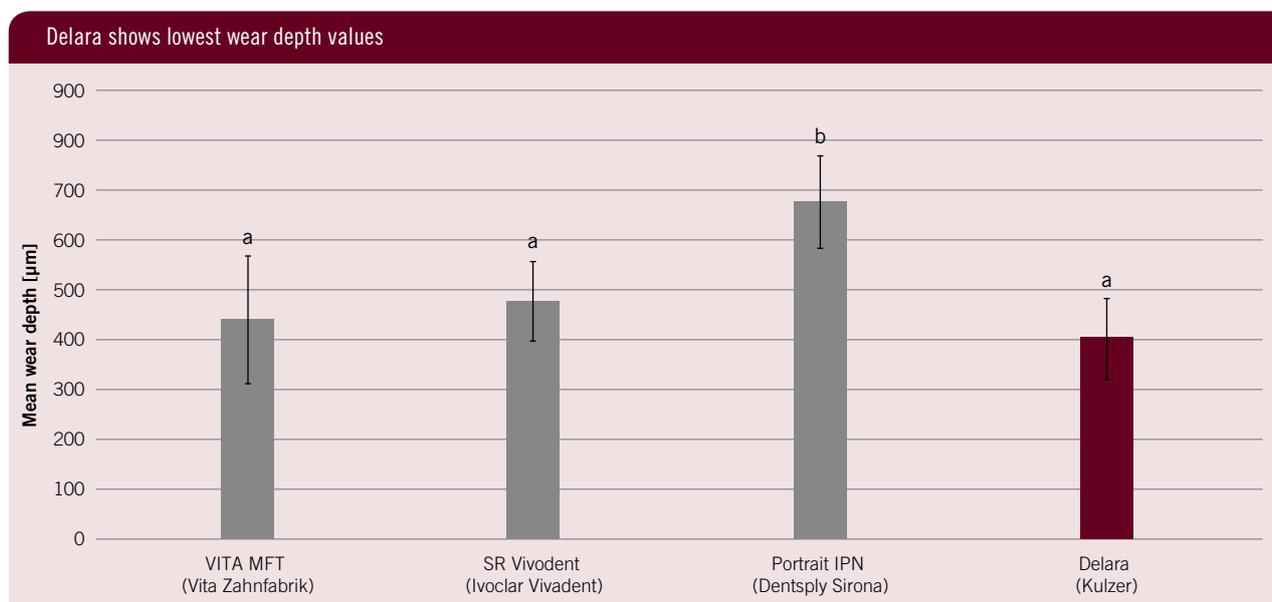


Fig. 1: Mean wear depth values (µm) of the tested denture tooth lines; the whiskers represent the standard deviation. Different letters above the whiskers indicate statistical significant differences between the groups.

Statistical significant differences were detected between the anterior denture tooth lines under investigation (fig. 1). The lowest wear depth values were measured for the denture tooth line Delara; the tooth line showed the lowest wear by tendency in the present investigation. Low wear depth values indicate high abrasion resistance, which can contribute to the longevity of dentures.

### Source

University of Regensburg 2020 test report: Pin on Block (POB) wear testing. Prof. Dr. Dipl.-Ing. (FH) Martin Rosentritt, UKR Universitätsklinikum Regensburg, Poliklinik für Zahnärztliche Prothetik. Unpublished data. Documentation available. The report was summarised. The figures and heading were created by Kulzer.

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