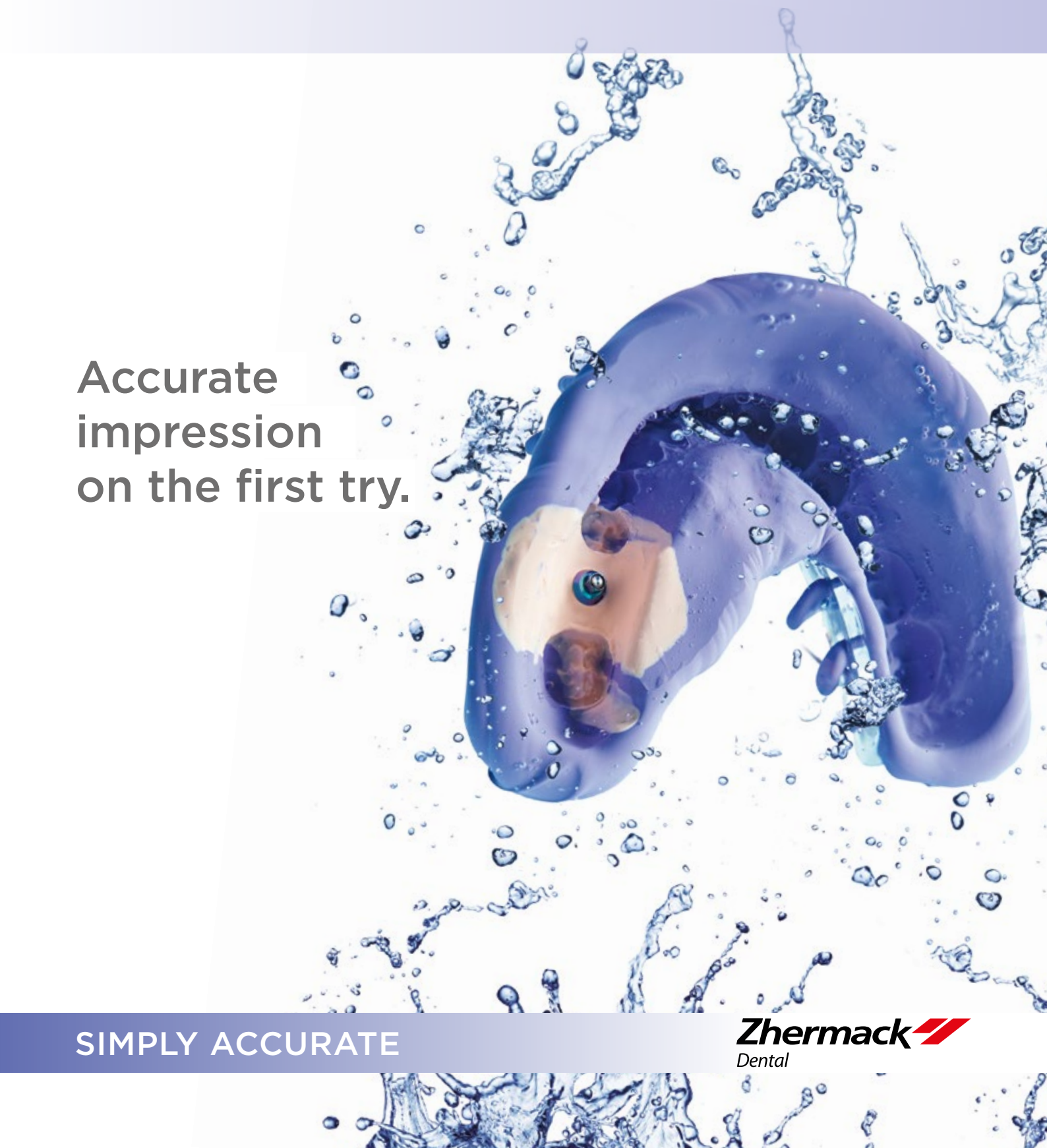
hydrorise implant

The high-rigidity A-Silicone designed for impression taking in implantology

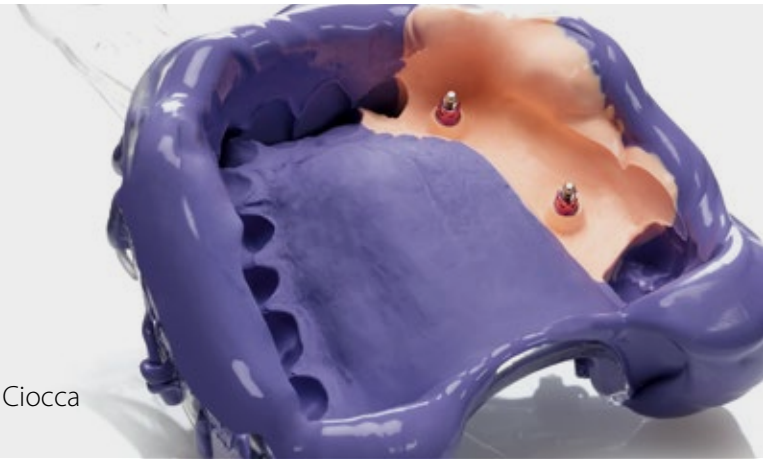


Accurate impression on the first try.

SIMPLY ACCURATE

Zhermack Dental

Accuracy And Precision Of Impression Materials Designed For Implant Prosthodontics



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ABSTRACT

OBJECTIVES

State-of-the-art CAD/CAM manufacturing of implant prosthodontic frameworks requires a high degree of accuracy and precision of the impressions, particularly in complex full arch prostheses. New VPS (VinylPolySiloxanes) with improved elastic properties have been developed to facilitate and match the strict clinical requirements of modern implant prosthodontics.

METHODS

A plexiglass master model simulating a mandibular all-on-four prosthesis was made by inserting four implants (Premium 3.8-010, Sweden&Martina) angulated (5°, 10°, 0°, 0°). Eighty impressions were taken using a standardized tray and technique at 37°C in wet conditions. Eight groups (n=10) were created as follows, the first 2 groups having no solid resin splinting (NS): 1) **Hydrorise Implant Medium** NS (Zhermack); 2) **Hydrorise Implant Heavy & Light** NS (Zhermack); 3) **Hydrorise Implant Medium** (Zhermack); 4) **Hydrorise Implant Heavy & Light** (Zhermack); 5) Honigum Mono, (DMG); 6) Honigum Heavy & Light (DMG); 7) Impregum Penta (3M); 8) Permadyne Penta H & Garant (3M).

Accuracy and precision were determined directly on the impressions by comparing with an OCMM machine (OGP 300) the position of the transfer platforms with the corresponding position on the master model scanning. Each scanning was elaborated (Rhinoceros software) in order to calculate the transfer 3D positioning error (µm) existing with the reference model. Data were analyzed with ANOVA and SNK (alpha=.05).

RESULTS

Among splinted groups **Hydrorise Implant Heavy & Light** (4) and **Hydrorise Implant Medium** (3) (Zhermack) showed the best combination of accuracy and precision (<30.9µm; <+/- 13.5), whereas both polyether materials showed the worst (44,2 µm; +/- 17.6; P<0.001). NS groups (1,2) were not statistically different from splinted polyether materials (P>0.05), with Hydrorise Implant Medium NS (1) performing better than the other three (<38.0 µm; <+/- 13.7). The transfer splinting significantly reduced the 3D error.

Conclusions:

New VPS materials **(Hydrorise Implant) designed for implant impressions showed significantly higher accuracy and precision when compared to polyether materials on an "all-on-four" simulation model**; even in the "nonsplinted" unfavorable condition, they behave similarly or better than polyethers.

Means and SD (microns) of the transfers 3D positioning error in each group.

1) Hydrorise Implant Medium NS	2) Hydrorise Implant Heavy+Light NS	3) Hydrorise Implant Medium	4) Hydrorise Implant Heavy+Light	5) Honigum Mono	6) Honigum Heavy+Light	7) Impregum Penta	8) Permadyne Penta H & Garant
38.02A,B	44.31B	30.91A	28.67A	35.61A,B	34.01A,C	44.24B	43.78B,C
13.7	30.3	14.4	15.5	13.5	20.2	16	17.6

ANOVA F = 4.53; DF: 7; P=0.000; SNK mct: groups with different letters are statistically different (alpha=.05).

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