In March 2006, the University of Giessen presented a poster on "Dimensional Accuracy of Orthodontic Alginates under different storage conditions" at the IADR congress (International Association for Dental Research) in Orlando, USA. This poster shows the preliminary results of a large investigation on the dimensional behavior of alginate impression materials. Cavex Orthotrace showed perfect result with the lowest dimensional change over time when stored in a plastic bag.

ABSTRACT

C. ERBE, S.RUF, P.FERGER and M.BALKENHOL
Justus-Liebig University, Giessen, Germany

Objectives:
Many manufacturers claim, that their alginates are dimensionally stable under certain storage conditions. However, little information is available about this subject in the scientific literature. Hence the aim of this study was to assess the influence of two different storage conditions on the dimensional accuracy of three contemporary orthodontic alginates.

Methods:
The following materials were tested:

- Jeltrate fastset, DentsplyCaulk
- Orthotrace, Cavex
- Tetrachrom, Kaniedenta

12 specimens/material were fabricated using a stainless steel mould according to ADA Specification No. 18 (ISO1563). Six specimens/material were either stored in a humidifier or wrapped in a wet tissue inside a plastic bag. The dimensional change was determined by measuring the distance of the vertical d-lines on the alginate impressions, using a travelling microscope (M420, Leica, x200 magnification) at baseline and after a storage time of 1h, 2h, 4h, 24h, 48h and 72h. Percentage of dimensional change was calculated from the values obtained. Data were subjected to parametric statistics (ANOVA, $p=0.05$).

Results:
In the humidifier, dimensional change ranged from -0.18% to -8.28%.
In the plastic bag, dimensional change ranged from -2.8% to 1.95%.
All materials showed a high dimensional accuracy at baseline (<-0.4%).
When stored in the plastic bag, Tetrachrom showed an expansion, while Orthotrace and Jeltrate contracted.
After 1h storage in the plastic bag, dimensional change was significantly higher ($p<0.05$) for Tetrachrom (1.77%) compared to Orthotrace (-0.09%) and Jeltrate (0.05%).
After 72h storage in the humidifier, dimensional change was significantly

lower ($p<0.05$) for Orthotrace (-5.87%) compared to Jeltrate (-7.38%) and Tetrachrom (-8.28%). Surprisingly, dimensional change was less, when specimens were stored in the plastic bag compared to the humidifier.

Conclusion:
Within the limits of the study it can be concluded, that storage in plastic bag delivers low dimensional change up to 4h for Orthotrace and Jeltrate. Tetrachromwas most affected by the storage conditions.