

In September 2006, we have officially presented the test results on tear strength for alginate impression materials during the congress of the PEF (Pan European Federation), which is the European division of the IADR (International Association for Dental Research) Scientists, manufacturers, researchers, students and dentists from many countries attended this congress and discussed the latest dental developments. For Cavex the ideal location to show powerful results on alginate impression materials.

As we know in dental/orthodontic practices it is very important to have an alginate impression material, which is sufficiently strong and elastic to be removed from the patient's mouth without getting damaged. Current ISO1563:1990 for Dental Alginate Impression Materials is the most relevant and widespread used product specification. This test gives a good indication of the strength of the material in general, but it does not give any information about its tear strength. Therefore, a new tear strength test is developed which provides this clinical relevant information. In the revision of the ISO1563 for Dental Alginate Impression Material, a new test will be added. This new test enables manufacturers to determine tear strength of their alginates.

The Abstract below, clearly states that Cavex alginate impression materials are stronger and more resistant to forces applied during impression taking and pouring with gypsum. Cavex alginate impression materials offer users the most reliable impressions and most predictable results.

## Abstract

### **Introduction:**

Tearing or deformation of alginate impressions can result in inaccuracy of gypsum casts that forms the initial base for a prosthetic appliances. Therefore, strength and elasticity of alginate impression materials are important material characteristics determining the performance of these products. In ISO1563, "Dental Alginate Impression materials", a compressive strength test is described for evaluation of the strength of the impression material. It was hypothesized that a tear strength test, which is also being used in other standards for hydrocolloid based impression materials, has more clinical significance than a Compressive Strength test. **Aim:**

The aim was to evaluate the merit of a Tear Strength Test for characterising alginate-based impression materials, by comparing results with those obtained by the existing tests for Compressive Strength and Elastic Recovery.

### **Materials & Methods:**

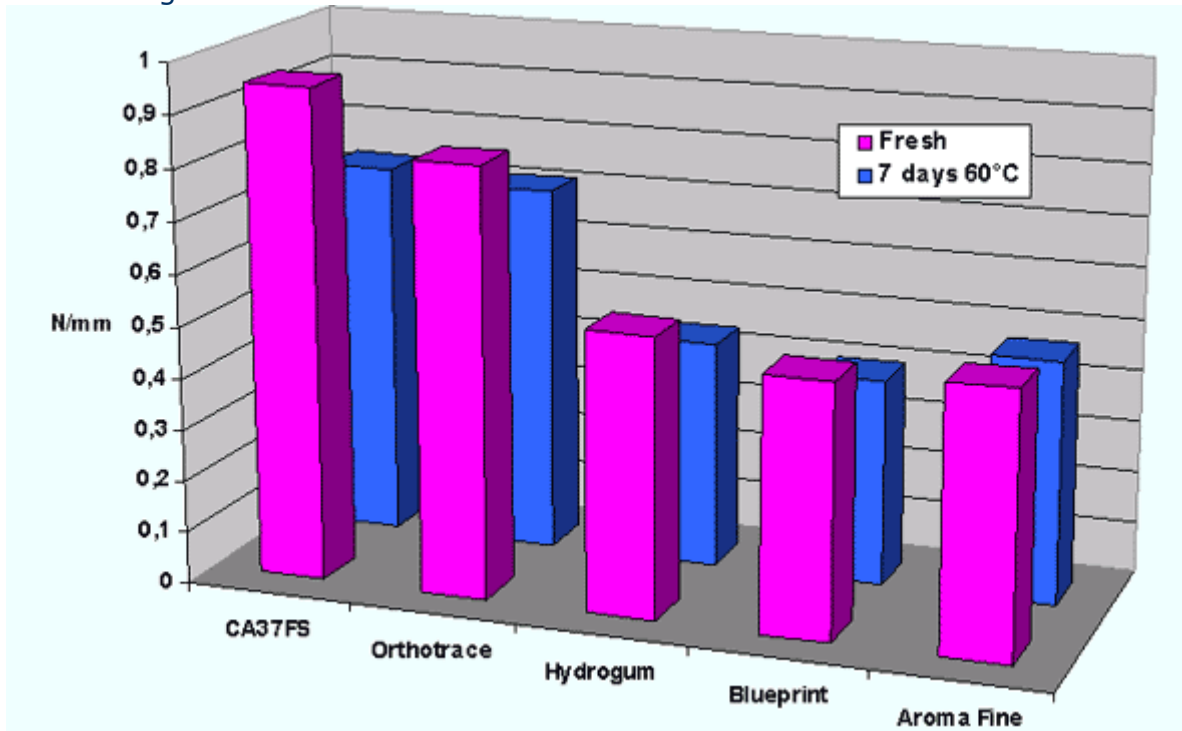
Tear Strength, Compressive Strength and Elastic Recovery of five different alginate impression materials were measured (CA37;Cavex, Orthotrace;Cavex, Hydrogum;Zhermack, AromaFine;GC, Blueprint; Dentsply) The tests were performed on freshly manufactured products and after accelerated aging during 7 days at 60°C.

The Compressive Strength and Elastic Recovery were determined using the standard testing methods described in the ISO1563:1990. For the Tear Strength a new test based upon ASTM D624 was performed. The mould (4x19x102mm with V-notch) was filled with mixed alginate impression material and 90 seconds after setting, the force at failure was measured in a tensilometer at a crosshead

speed of 500mm/min. The results were statistically evaluated using 2-way ANOVA.

**Results:**

Tear strength results



	CA37	Orthotrace	Hydrogum	AromaFine	Blueprint	
Tear Strength	0,95	0,83	0,54	0,51	0,49	N/mm
Compressive Strength	1,06	1,06	0,69	0,57	0,61	MPa

**Conclusion:**

- The Tear Strength Test is a valuable addition to existing tests of the ISO1563:1990
- Correlation was found between Tear Strength and Compressive Strength
- No correlation was found between Tear Strength and Elastic Recovery