

# Influence of Sodium Alginate Contents on the Strain in Compression, Elastic Recovery, and Compressive Strength of Experimental Alginate Impression Materials

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The purpose of this study was to search the influences of the increase of the contents of sodium alginate in the experimental alginates on the some mechanical properties.

3 commercial alginates were selected for the purpose of comparison of the results of experiments. 7 experimental alginates were manufactured with the rise of contents of sodium alginate from 8.8% to 18.3% with the decrease of contents of diatomaceous earth and with the constant contents of calcium sulfate 12.5%, sodium phosphate 2.2%, zinc fluoride 2.0%. Splitable metal mold with 12.5mm diameter and 20.0mm height was filled with mixed alginate to prepare the cylinder shaped specimens.

Strain in compression, elastic recovery, compressive strength were tested using the ISO specification number 1563, alginate impression material. Experimental groups were 7, and 10 specimens were used for each test items and each groups.

Following results were obtained:

1. Strain in compression was decreased with the increase of sodium alginate contents ( $p=0.0077, r^2=0.6302$ ).
2. Elastic recovery was decreased with the increase of sodium alginate contents but was not significant ( $p=0.0639, r^2=0.7449$ ).
3. Compressive strength was increased with the increase of sodium alginate contents ( $p<0.0001, r^2=0.9617$ ).

These results mean that the increase of sodium alginate contents make alginate harder but may result the increased permanent deformation.