

Denture Cement at a Test

► Denture cement, also known as denture adhesive, is used for a wide variety of dental work such as attaching braces to teeth and fitting temporary crowns.

This case story describes how a manufacturer of denture cement uses the LR Plus materials testing machine to test new formulations and control the quality of products in the manufacturing process.



Challenge

The performance of denture cement is affected by many parameters such as the condition and amount of saliva in the mouth, mouth temperature, the force applied by the jaw and the speed at which the jaw moves. Controlling these and isolating single parameters in the laboratory environment can be very difficult.

To achieve accurate test results using high precision testing machines, the manufacturer of denture cement looked to Lloyd Instruments to come up with a solution.



Solution

To single out each parameter that needed to be tested at the right force and under the right conditions, the denture cement supplier used the LRPlus test machine from Lloyd Instruments.

The LRPlus was fitted with a water bath on the lower anchor pin. Using a water bath allowed the denture cement supplier to vary the temperature of the bath to simulate different temperatures in the mouth.

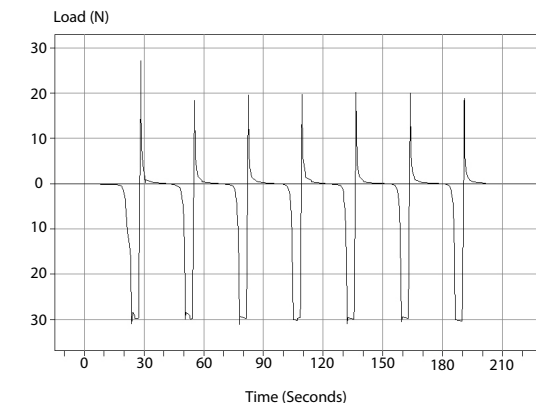
Two aluminium plates were fitted to the machine. Denture adhesive was applied to the lower plate and fixed in the water bath.

The flexibility of the NEXYGENPlus materials testing software that was supplied with the LRPlus, allowed the upper plate to be brought into contact with the lower plate at an infinitely variable speed between 0.1 and 1020mm/min. The contact force could be varied up to 5000N.

The upper plate was then be pulled away from the lower plate to measure the adhesive force.

To simulate jaw opening and closing this procedure could be repeated an infinite number of times.

A thermocouple fitted in the water bath fed back the bath temperature to NEXYGENPlus which logged the value with the test results for added traceability.



Test result showing seven consecutive pull off force measurements from the same sample