

Compression Test on Syringes

General

A pharmaceutical manufacturer wanted to investigate the forces necessary to eject medications from various types of syringes and needles.

Sample Preparation

A precisely machined insert was fitted to each of the syringes, and then they were installed in the fixture and machine for testing. A beaker, to capture the ejected fluid, was also installed.

Compressive Testing

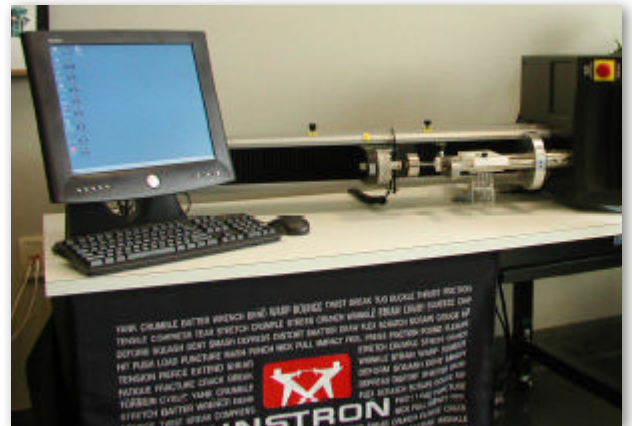
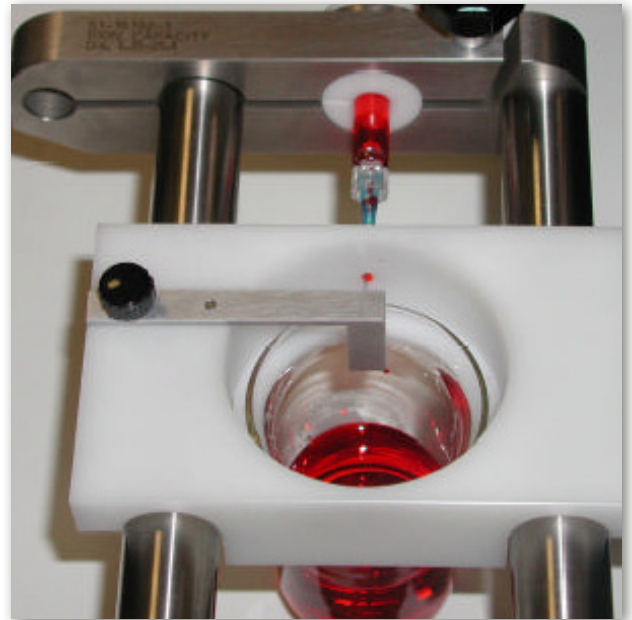
The 5544 Electromechanical system was positioned horizontally so that the length of the syringe was also horizontal; replicating the orientation of the syringe during normal use and also to prevent sediment in the medicines from clogging the tip. The fixturing utilized for this test was design specifically to suit the syringe, and per the customer specifications.

Principle of Operation

The objective of the test was to be able to collect force versus time data and to also determine the peak load and load values at specified points of plunger displacement.

Conclusion

A number of tests were carried out using tap water at room temperature. Red food coloring was put into the water to ensure that the fluid divider was functioning adequately. The test consisted of running a variety of different size syringes to a preset displacement of 35 mm (1.378 in) and obtaining peaked load as well as load value at preset displacements. In each test, each different geometry of syringe showed consistent results.



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