

Application News

Material Testing System

No.i243

Measurement of Press-Through Package Force and Tablet Break Force

■ Introduction

Many tablets and capsules are packaged in thin metallic (aluminum, etc.) and plastic materials. This type of package is referred to as a PTP (Press-Through Package) or PTP sheet, and serves to protect the contained tablets and capsules and facilitate handling of the contents. Therefore, quality control is necessary to ensure that the package does

not peel excessively, and that the tablet is not too difficult to dispense. Here, using the Shimadzu EZ-Test compact table-top universal testing machine and the Trapezium X material testing software, we introduce an example of the adhesive strength of the PTP package, in addition to the force required to break a tablet in half.



Fig. 1 PTP Packaged Tablets



Fig. 2 Testing Machine (EZ Test)

■ Press-Dispense Test for PTP Packaged Tablets

As shown in Fig. 4, the test was performed by pushing the tablet out of the PTP package using an upper $\phi 10$ mm spherical press jig at a test speed of 50 mm/min, and a fixing platform below. In this case, the result obtained was a maximum test force mean value

of 24.3 N. The judgment as to whether or not the tablet is easy to push out can be obtained from the maximum test force, which is applicable to product development and quality control.

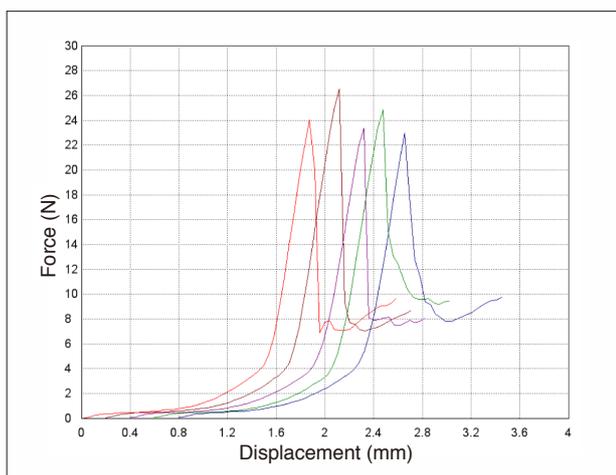


Fig. 3 Results of Press-Dispense Test



Fig. 4 View of Testing Machine During Measurement

■ Peel Test for PTP Packages

As shown in Fig. 6, using a 100 N pantograph type jigs above and fixing platform below, we performed the test by peeling the aluminum foil off from the

underside of the PTP package at a test speed of 50 mm/min. Peeling began at about 0.3 N, and at the package edge the force was about 3 N.

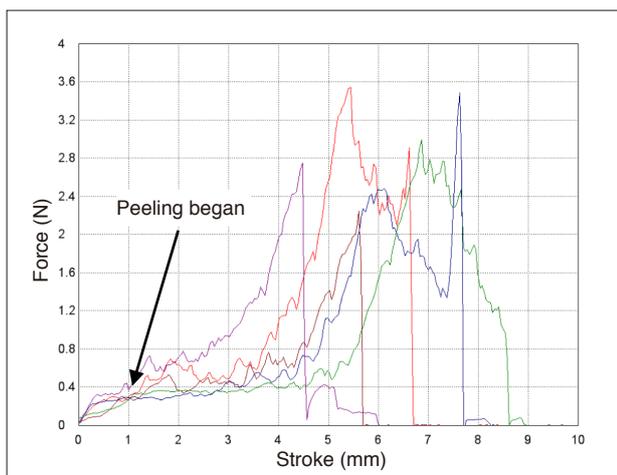


Fig. 5 Results of Peel Test



Fig. 6 View of Testing Machine During Measurement

■ Break Test for Tablets

Some tablets have a groove in the center, allowing each to be taken whole by adults or in a half-dose by children. Accordingly, it must be able to be broken in half using some suitable degree of force.

As a suitable method of simulating this breaking-in-half, the tablet was placed above the bend test jig supports (5 mm distance between supports), and measurement was conducted at a test speed of

0.5 mm/min until the tablet broke. As shown in the measurement result graph of Fig. 7, the force required to break the tablet in half (mean value of maximum test force) was about 24 N.

By using this kind of measurement, the depth of the tablet center groove can be optimized so that the tablet is easily and accurately broken in half.

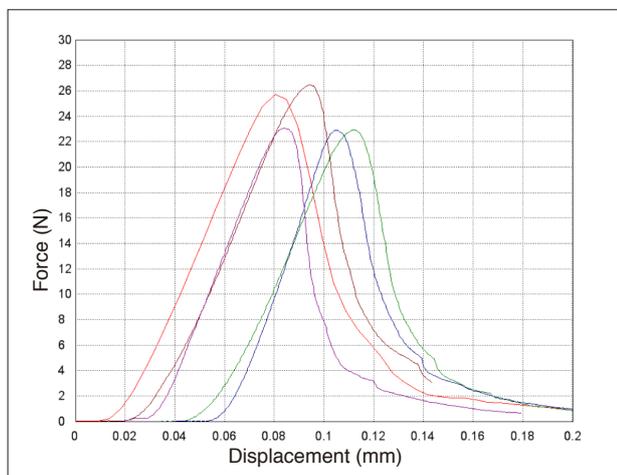


Fig. 7 Results of Break Force Test



Fig. 8 View of Testing Machine During Measurement

Thus, by combining the Shimadzu EZ-Test compact table-top universal testing machine with the abundant selection of test jigs, test force evaluation of drug

products including the packaging material can be conducted easily and efficiently.



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