

TA-TCA – Tablet Coating Adhesion

The Tablet Coating Adhesion Fixture is designed to measure the strength of the bond between the coating and the tablet for compressed powder tablets. The test will attempt to pull the coating off the tablet.

Fixture Base Table (TA-BT-KIT)

The Tablet Coating fixture base replaces the insert in the fixture base table. For the most convenient use, the base table should be adjusted so that the length of the extension legs totals no more than 1 ½ inches (3.7 cm). Turn the base table upside down, remove the four Phillips head screws, and install the 1 ½” extension legs to achieve the desired height. Place the fixture base table back onto the CT3, but leave the locking T-bolts loose until alignment is complete.

Install the Tablet Coating Adhesion Fixture

Attach the TCA probe directly into the M6 thread of the probe shaft and secure with the locking nut. Install the TCA fixture base in place of the insert in the fixture base table. There are two thumbscrews on adjacent sides of the perimeter of the fixture base table. Alternately tighten both of them to lock the fixture insert into the base table.

Alignment of the Base Table in Stand Alone Mode

The easiest way to align the TCA base under the TCA probe in the stand-alone mode is by using the Tension test. Rotate the select scroll knob until Tension test appears on display. After depressing the start button two times, the select scroll knob can be used to lower the TCA probe onto the TCA base. Depressing and holding the Select/Scroll knob will continuously lower the probe, and rotating the Select/Scroll knob will lower the probe 1 mm for each click of the knob. Bring the probe down gradually so that the probe is centered over the base, alternately adjusting the position of the base and



Installation Instructions for Texture Accessory Part Number: TA-TCA

lowering the probe. Lock the base table by tightening the T-bolts. Alignment is now complete.

Use of the Tablet Coating Adhesion Fixture

The Tablet Coating Adhesion Fixture consists of a probe and a matching base shaft, the two surfaces of which have concave surfaces shaped to accommodate circular tablets. The Tablet Coating Adhesion Fixture requires the use of double-sided sticky tape. A piece of double-sided sticky tape is placed onto both concave surfaces of the Tablet Coating Adhesion Fixture. A tablet is then placed onto the double-sided sticky tape. The test consists of pressing the tablet firmly between the probe and the base hard enough and long enough to allow good adhesion with the tape. Then the probe retracts, attempting to pull the coating from the tablet.

For this test, it is strongly recommended using the Texture Pro CT Software. The software allows better control over the test parameters compared to using the CT3 in standalone mode. An example of a TCA test method is shown below.

The Test Type is a Compression test; the Test Target is Load force. The Target Value is the force to be applied to stick the tablet to the tape, in this case 1500 g force. This force will remain applied for the length of time entered as Hold Time, 30 seconds in the example below. This allows the double-sided adhesive tape to stick firmly to the tablet and to the TCA fixture.

The screenshot displays the software interface for a Tablet Coating Adhesion test. The main window is titled 'Tablet Coating Adhesion' and contains several configuration sections:

- Sample Identification:** Product Name: Tablet A; Batch Name: Coating Process 1; Sample: Increment Automatically (selected).
- Sample Dimensions:** Measure Length: ; Length: 0.00 mm; Width: 0.00 mm; Depth: 0.00 mm; Shape: Cylinder; Diameter: 0.00 mm.
- Sample Notes:** Tablet Coating Adhesion Fixture
- Test Type:** Compression (selected); Tension, TPA, Rupture (unselected).
- Test Target:** Load (selected); % Deformation (unselected); Target Type: Distance (selected); Final Distance (unselected); Target Value: 1500.0 g; Hold Time: 30 s.
- General Test Parameters:** Trigger Load: 0.0 g; Test Speed: 0.50 mm/s; Return at: Test Speed (selected); Post Test Speed (unselected); Probe: TA3/100; Fixture: TA-BT-KIT.
- Multiple Cycle Tests:** Cycle Count: 1; Recovery Time: 0 s; Always measure target distance from trigger point of first cycle: .

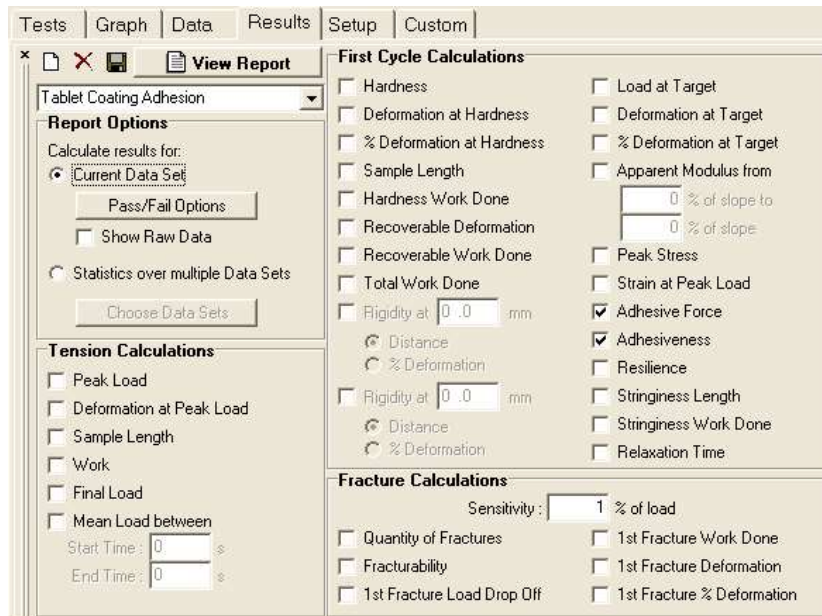
Installation Instructions for Texture Accessory Part Number: TA-TCA

The most important part of the test occurs when the hold time is over and the probe returns to the starting position pulling the coating off of the tablet. In some cases, the compressed tablet will fracture in the middle because the bond of the coating is stronger than the tablet itself. In other cases, the coating will come off of the tablet. If the pressure is too low, or the hold time too short, the tape itself might peel off the coating leaving the tablet intact. This is a failed test.

The Trigger Load should be set to “0” so the test will start as soon as the “Run-Test” button is depressed. Prior to starting the test, the TCA probe should be lowered to about 5 mm above the tablet. The test will start and end at this position. The 5 mm distance should allow adequate space to pull off the tablet coating. You may adjust this starting position according to your needs.

The test speed is arbitrary, but should be slow. We suggest choosing a speed of 0.5 mm per second until you establish the most effective test methodology for your application. The Return Speed should be the same as the Test Speed so the probe will return at the same speed as it descends.

The important results for this test are Adhesive Force, which is the maximum negative load as the probe pulls away; and the Adhesiveness, which is the work required to separate the coating from the tablet.



For further information, please see the application study of Tablet Coating Adhesion Measurements on our web site.

