

TA-FSF – Film Support Fixture

The Film Support Fixture measures strength of flexible film material by applying a bi-axial strain on the film using a spherical probe and measuring the force and deformation required for failure.

Fixture Base Table (TA-BT-KIT)

The Film Support Fixture replaces the insert in the fixture base table. The spherical probe attaches directly to the *M6* thread in the probe shaft. For most convenient use, the base table should be adjusted so that the length of the extension legs totals no more than 5” (12.7 cm). Turn the base table upside down, remove the four Phillips head screws, and install the proper combination of 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 Film Support Fixture

Attach the 5 mm spherical probe to the probe shaft and place the Film Support Fixture base into the 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 FSF base under the spherical probe in the standalone mode is by using the Tension test. Rotate the select scroll knob until Tension test appears on the display. After depressing the start button two times, the select scroll knob can be used to lower the probe. Depressing and holding the Select/Scroll knob will continuously lower the probe, then rotating the Select/Scroll knob will lower the probe 1 mm for each click of the knob. Bring the probe down gradually, so that it is centered on the hole of the FSF, alternately adjusting



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the position of the base and lowering the probe. The position of the probe shaft is shown on the CT3 display. When the spherical probe is lowered to about 40 mm, it should be centered on the hole in the FSF base. Lock the base table by tightening the T-bolts. Alignment is now complete.

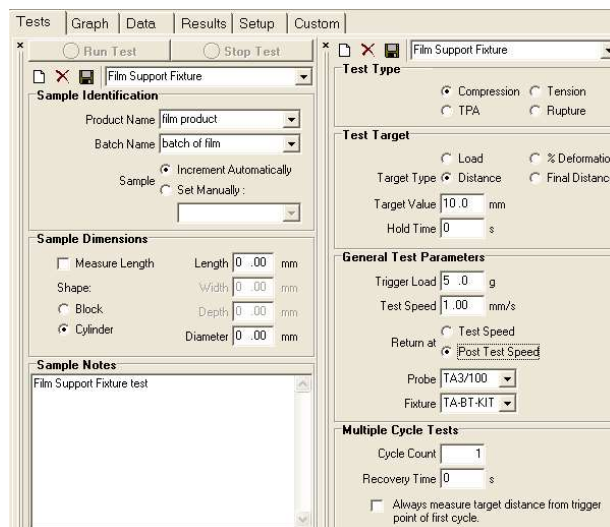
Use of the Film Support Fixture

When using the Film Support Fixture, the film material should be secured under the clamping collar. Remove the collar by loosening the two thumbscrews. Place the film sample on the base then replace and tighten the collar. A Compression test will always be used with the Film Support Fixture. The trigger load for the compression test should be small enough so the test starts when the spherical probe just touches the surface of the film. The deformation distance should be sufficiently long after the trigger is encountered so that the film will be stretched and completely punctured. The distance required for this will depend upon the nature of your film.

Testing may be done in standalone mode or with the Texture Pro CT Software.

In standalone mode, we suggest starting with these test parameters: Trigger Load 5 g; Deformation Distance 10mm; Test Speed 1mm/s. Test results shown on the display will be: Peak Load (the maximum force recorded during probe descent. This usually occurs just before the film ruptures); Deformation (this is the distance the probe traveled from the trigger to where the Peak Load was detected); Work (the work in millijoules required to puncture the film).

When using the Texture Pro CT software, the same test parameters can be setup as shown below:



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An alternative approach, when using Texture Pro CT software, is to use the rupture test, which is a compression test that continues until the sample fails. A drop in load force, known as a “Correction” load, indicates sample failure. As the film is strained, the load force builds. When the load suddenly drops by the value indicated, in this case 50 g, rupture is assumed to have taken place and the test stops. The Correction load may be set from 1 g to 99 g. The rupture test is useful because a test deformation distance doesn’t need to be defined. The test will continue until the sample ruptures. Rupture tests can only be selected when using Texture Pro CT software.



When the test is complete, the probe returns to its starting position. The return speed can be faster than the test speed. The maximum return speed is 10mm/s and can be set on the SETUP page. Setting a Hold Time is of no value unless the probe stops before the film ruptures. Then film relaxation might be of interest. If a hold time is used, sample relaxation can be calculated from the drop in load force during the hold time. This is useful for some materials.

Test results of interest include Hardness, Deformation at Hardness, and Hardness Work Done.

For further information, please see the application study of Puncture Resistance of Film Material on our web site.

<https://laboratorium-industri.com>

