

Simplified Method of Measuring Tack of Pressure Sensitive Adhesives

The procedure for measuring tack of pressure sensitive adhesives is fully described in some ASTM methods. The definition for tack is the maximum force required to break contact from the adhesive surface as the test probe pulls away. The units of force should be stated in kPa. This result is dependent upon several factors:

- 1) The surface area of the probe
- 2) The finish on the face of the probe
- 3) The thickness of the adhesive layer
- 4) The force with which the probe contacts the adhesive
- 5) The length of time that contact is maintained prior to pulling away
- 6) The Speed at which the test probe is pulled away

Although the ASTM method specifies all these parameters, it would seem that one should be able to alter any or all of them in order to meet equipment, product or test requirements as long as the test results are for internal use in quality control or product differentiation. Once a method is established, stick with it. One will always be able to check the performance tack between samples by using a consistent method, even if the method uses different test parameters than those specified by the ASTM.

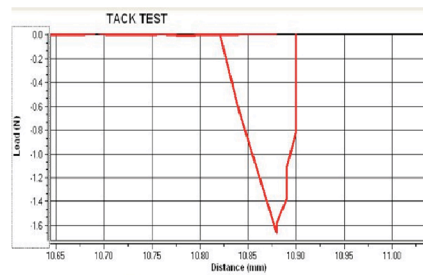


An example of such testing was done recently when a client requested tack testing at elevated temperatures for some waxy materials. A specially designed water-jacketed plate was used and connected to an external circulating water bath to maintain a stable, elevated temperature.

Figure 1: Brookfield's CT3 Texture Analyzer

The warm plate was placed on an insulated test table of the CT3 Texture Analyzer. (See Figure 1) A small amount of sample was smeared onto the surface of the plate. Within a few minutes the surface showed a smooth, even film.

A 6mm diameter cylindrical, stainless steel probe was used. During the test, the probe travels down at a constant speed to contact the wax film and when contacted maintains a contact force, in this case 0.5 Newtons, for five seconds. The probe then pulls away at the same constant speed returning to the starting position. The entire negative load profile as the probe pulls away is



recorded even though the tack test needs only the peak force. (See Figure 2)

Figure 2: Tack Test Results Peak Force

To get the tack result the peak force is converted to kPa, which is a function of the force in Newtons and the surface area of the probe used. A small, inexpensive texture analyzer can easily be adapted to measure tack and is flexible enough to find uses for many additional tests on a wide variety of products.

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