TEST METHOD

TITLE: Degree of Contact Angle Using Video Contact Angle Goniometer (for website)

Method Number: FG-345-03 Revision #: 0 Page: 1 of 2

Department: DENTSPLY/Caulk Quality Owner: Quality Dept

1.0 SCOPE

1.1 This procedure describes the method used to determine the contact angle of Elastomeric Impression Materials using the Video Contact Angle instrument.

2.0 PRINCIPLE:

2.1 A drop of water is applied to a specimen of material and after a pre-determined time the advancing contact angle of the drop of water is measured.

3.0 EQUIPMENT

3.1 Mylar sheets cut approx. 50 mm x 50 mm

3.2 Glass plate approx. 50 mm x 50 mm

3.3 Teflon specimen mold used to produce a specimen approx. 5-mm high with a radius of approx. 18 mm.

3.4 Video Contact Angle Goniometer.

4.0 REAGENTS : N/A

5.0 PROCEDURE

5.1 Preparing the specimen.

5.1.1 Place a square of Mylar on a smooth flat surface, and place the Teflon mold on top of the Mylar.

5.1.2 Fill the mold with mixed polyvinyl material and place another square of Mylar on top of the filled mold.

5.1.3 Use the glass plate to press down on the top of the Mylar covered filled mold to extrude any excess material.

5.1.4 Allow material in the mold to set up, approx. 10 minutes. **NOTE**: Do not remove Mylar or remove specimen from mold until just before testing.

5.2 Turn on all equipment; computer, monitor, light source, and VCA camera and remove the lens cover from the VCA camera. Open VCA program on the desktop.

5.3 Check “Image adjustment” window, it should have the following information as settings, correct if necessary (**Note**: the box before “Reverse Video Interlace” should remain empty):

5.3.1 Brightness = 45%

5.3.2 Contrast = 69%

5.3.3 Image Size = 320 x 240

5.4 Click on the “Dynamic Capture” icon on the toolbar and when the “Dynamic image capture” window appears drag it to the lower half of the screen. It should have the following information as settings, correct if necessary:

5.4.1 Image Size = 320 x 240

5.4.2 Frame Rate = variable and 1 FPS

5.4.3 Movie = by time.

5.4.3.1 When "by time" is clicked it will bring up a sub window titled "Capture Length". Enter the time that the product requires per its Bulk Product Specification plus 1 second and click OK. **For example** if you're testing a product that has a contact angle of 20 degrees maximum at 30 seconds, you would set your "Capture Length" at 31 seconds.

5.5 Remove the specimen from its mold and remove the Mylar being careful to avoid touching the flat surfaces of the specimen with your fingers.

5.6 Place the specimen on the testing area underneath the water-dispensing tube located between the light source and the camera. Center the specimen under the water-dispensing tube.

5.7 Using the large black dial located underneath the testing area; raise the specimen so that the top of the specimen is within 1 – 2 mm of the bottom of the water-dispensing tube.

5.8 Turn the water-dispensing dial in a clockwise direction until a water drop starts forming at the end of the water-dispensing tube. DO NOT allow water drop to make contact with the specimen yet!

5.9 Using the mouse; place the cursor over the **R** (run) button on the "Dynamic image capture" window.

5.10 Slowly turn water-dispensing dial clockwise and as the water makes contact with the specimen, simultaneously click on the **R** button with your cursor and turn the water-dispensing dial counter clockwise a couple of turns (**Note**: this is to break the contact between the water-dispensing tube and the water on the specimen).

5.11 When testing time has expired a 2nd video image will appear next to the original one. On the "Dynamic image capture" window click on the "Previous" button one time, this displays the last photo taken in the series.

5.12 Using the mouse, move the cursor to the "L" (left) at the top of the video image and click once; then move the cursor to the furthest left point that the droplet has spread and click once (this will place the "L" where you just clicked). Using the mouse, move the cursor to the "R" (right) at the top of the video image and click once; then move the cursor to the furthest right point that the droplet has spread and click once (this will place the "R" where you just clicked). Using the mouse, move the cursor to the "T" (top) at the top of the video image and click once; then move the cursor to the top center of the spread droplet and click once (this will place the "T" where you just clicked.

5.13 Click on the "Manual Calculation" icon on the toolbar at the top of the screen; this will calculate and display the contact angle on the video image.

6.0 CALCULATIONS: None required.

7.0 RESULTS: Record Contact Angle to the nearest whole degree.

8.0 REFERENCES: N/A

9.0 APPENDIX: N/A