

RESEARCH • DEVELOPMENT • INVENTION • DESIGN
907 Stuart Avenue • Mamaroneck, NY 10543 • (914) 777-1933 • LTBEng@optonline.net
www.ltbengineering.com

20 August 2006

Mr. Marc Doheny
Technical Sales Manager
Current, Inc.
30 Tyler Street
P.O. Box 120183
East Haven, CT 06512

Re: Adhesion Tests of Silent Running 1000 to ASTM D3359
LTB Project: 0126
Report: 1

Dear Mr. Doheny,

Pursuant to your recent request, tests have been performed on the Silent Running 1000 (SR1000) vibration and sound-proofing product. The tests were performed in accordance with ASTM D3359 to determine the adhesion strength of the SR1000 film.

The SR1000 product was applied by Current, Inc. to cold rolled steel plate, and then submitted for test. Method A of ASTM D3359 was practiced. A total of ten (10) tests were performed. Each test consisted of scribing intersecting lines through the SR1000 to the substrate at an angle of approximately forty (40) degrees, applying a pressure sensitive tape over the scribed intersection, then removing the tape. The intersection and adjacent areas were examined for any deterioration of the bond between the SR1000 and the substrate. The test samples were subjected to photo-microscopy for documentation.

The bond between the SR1000 and the substrate was very strong and in each case rated the highest class, 5A, indicating no observable film removal or damage.

Respectfully Submitted,

Gregory Lyon
Chief Engineer

Objective:

This report will document the tests and results in accordance with ASTM D3359 of the adhesion of Silent Running 1000 (SR1000) noise and vibration dampening material.

Materials Tested:

Materials tested consisted of the SR1000 material applied to a cold rolled steel plate measuring 11 inches square and 0.15 inch thick. The plate surface was cleaned with acetone and lightly abraded with 80# sand paper in a crosshatch pattern. Afterwards, the surface was again cleaned with acetone, allowed to dry, and wiped with a clean dry rag. The SR1000 was sprayed onto the surface using a Binks 2001 spray gun and pressure pot. A second coat was applied once the first was dry to the touch after approximately 1 hour for a final average thickness of 0.038 inch. The material was allowed to cure for 5 days after application before testing.

Test Methods:

Tests were conducted in accordance with ASTM D3359, Test Method A. All tests were performed at conditions of 73 °F and 60% RH.

The test materials prepared as described above were mapped with a pencil so as to allow relatively accurate scribing. Scribing consisted of cutting through the film with a new scalpel blade with considerable pressure. The scribe was examined microscopically to ensure penetration. Scribe marks were prepared in the form of an X, the smaller angle at approximately 40 °.

Permacel P99 pressure sensitive adhesive packing tape was utilized for the testing from a one inch wide roll. The adhesive to adhesive strength of the tape was measured at a pull rate of approximately 1 inch per second and indicated a maximum reading of 7.62 lb_f. The failure mode was a combination of adhesive and cohesive separation. Two complete layers of tape were removed before applying an approximately three inch length centrally over each of the scribed X's. A pencil eraser was rubbed across the tape surface over the X to improve wetted area.

After approximately 90 seconds, the tape was removed quickly at an angle of 180 °. The scribed X was examined for any signs of separation or damage and the observations were recorded. Each X was documented via photomicroscopy.

The tests were conducted twice on set up locations, then ten times on random locations of the plate.

Test Results:

All of the scribed X's had no observable damage; using the criteria of ASTM D 3359, each test scored a 5A result; the best possible. The photomicrographs of each test are presented in figures one through 10. In each case a blue tape of 0.125 inch in width is presented for calibration.

Figure 1: Test number 1 results

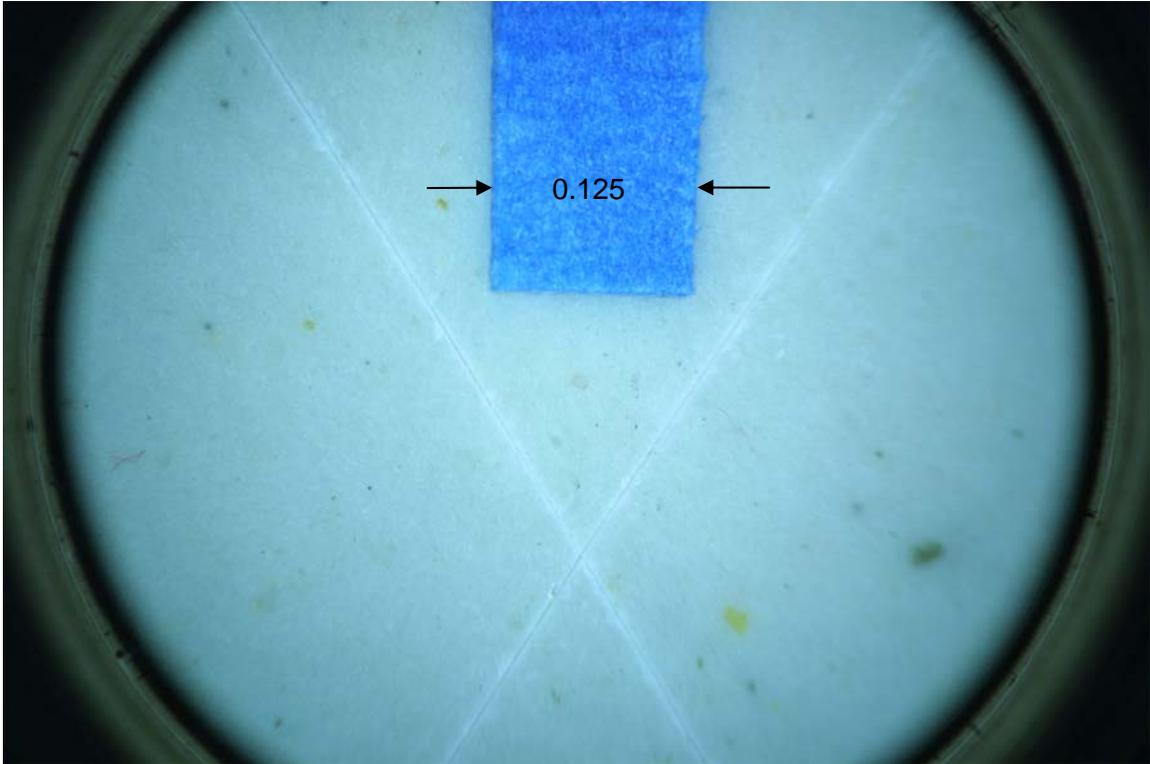


Figure 2: Test number 2 results

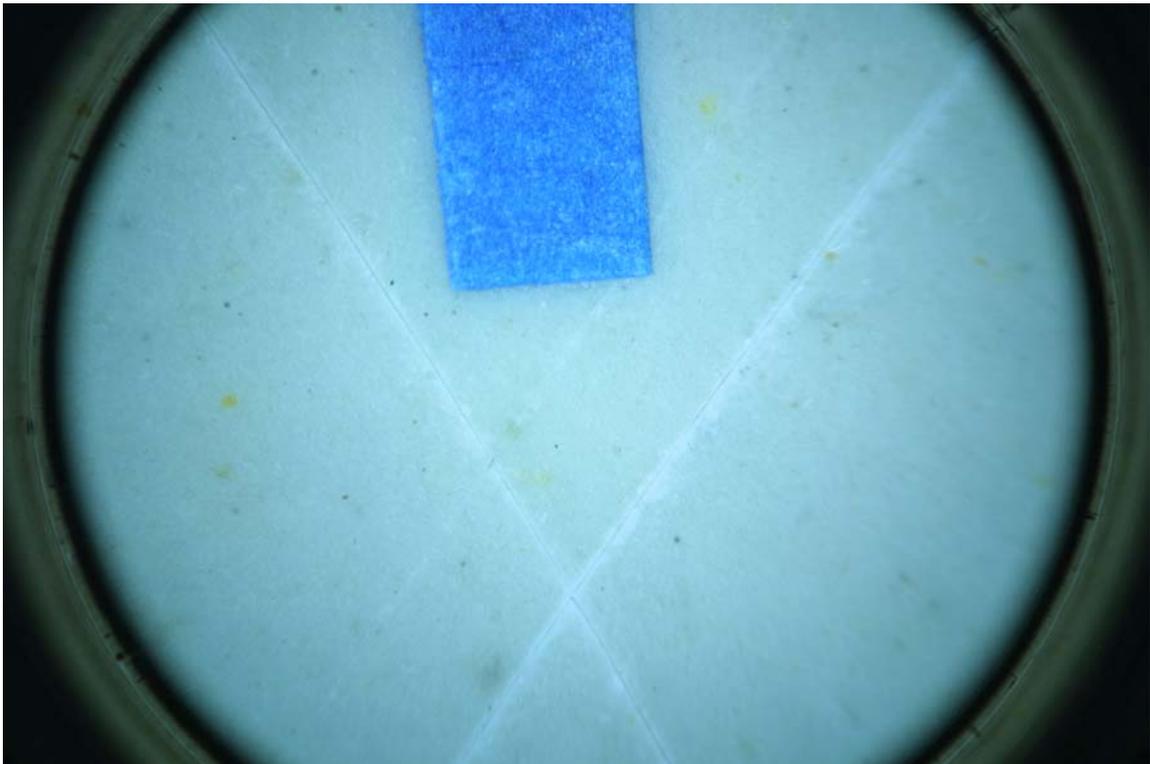


Figure 3: Test number 3 results

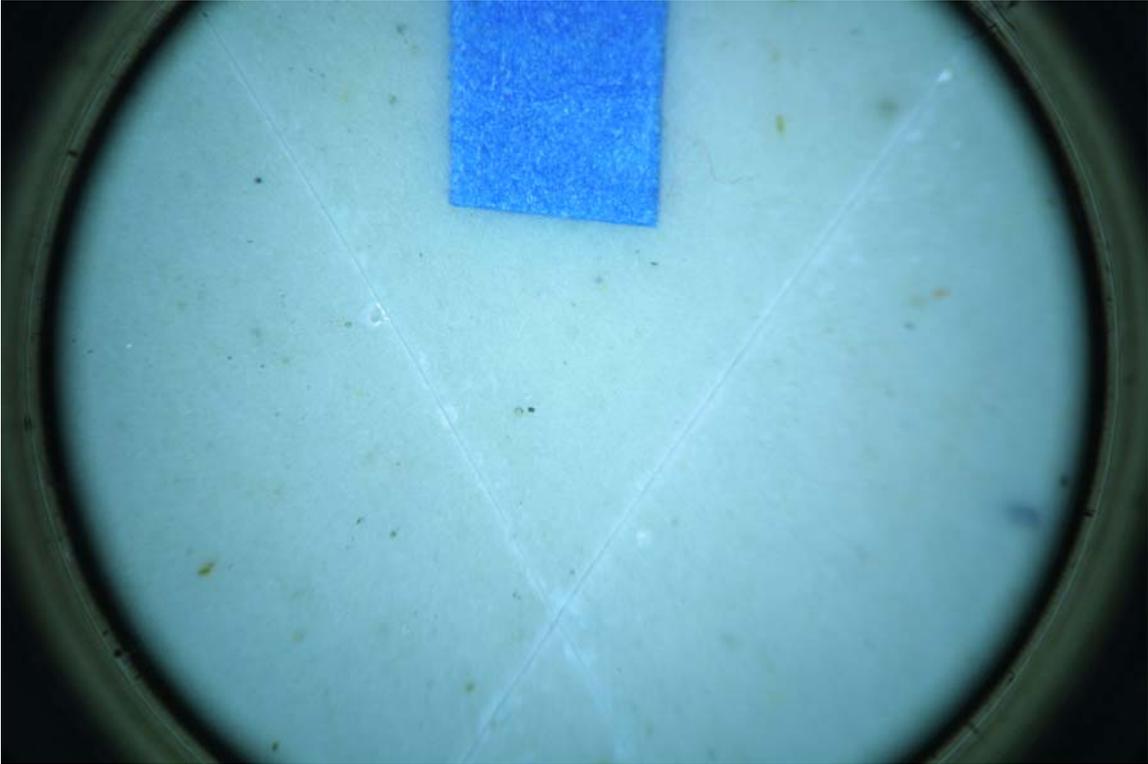


Figure 4: Test number 4 results

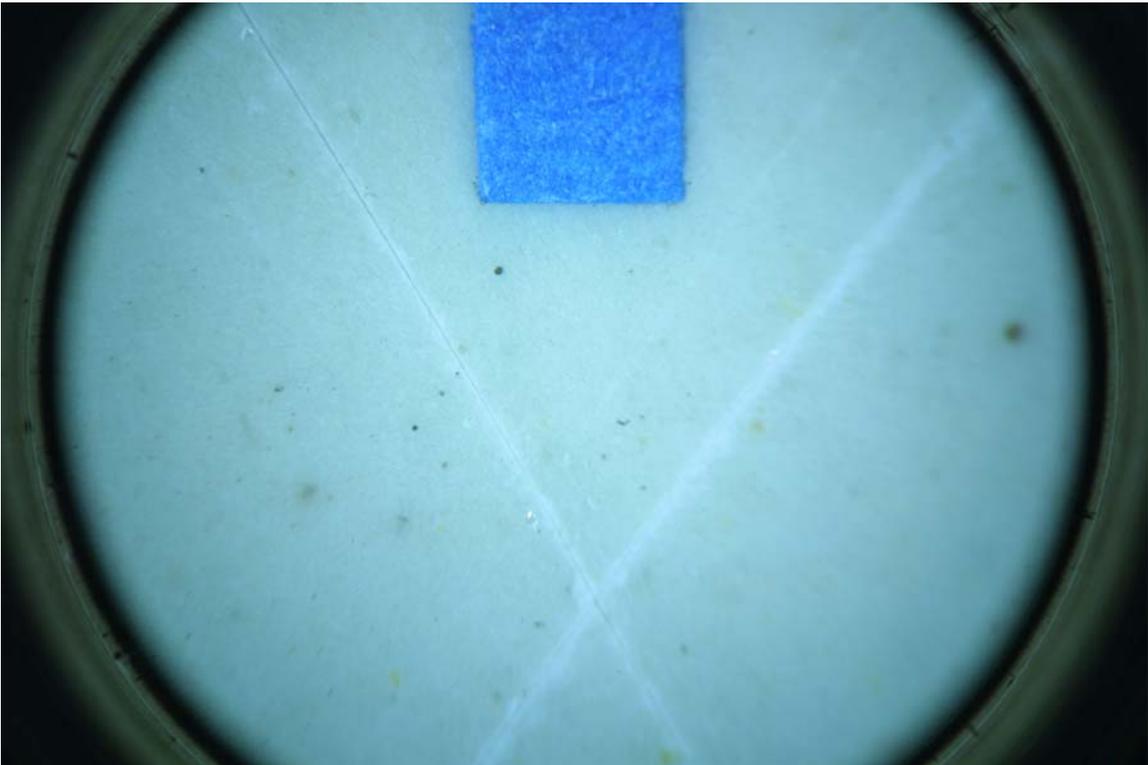


Figure 5: Test number 5 results

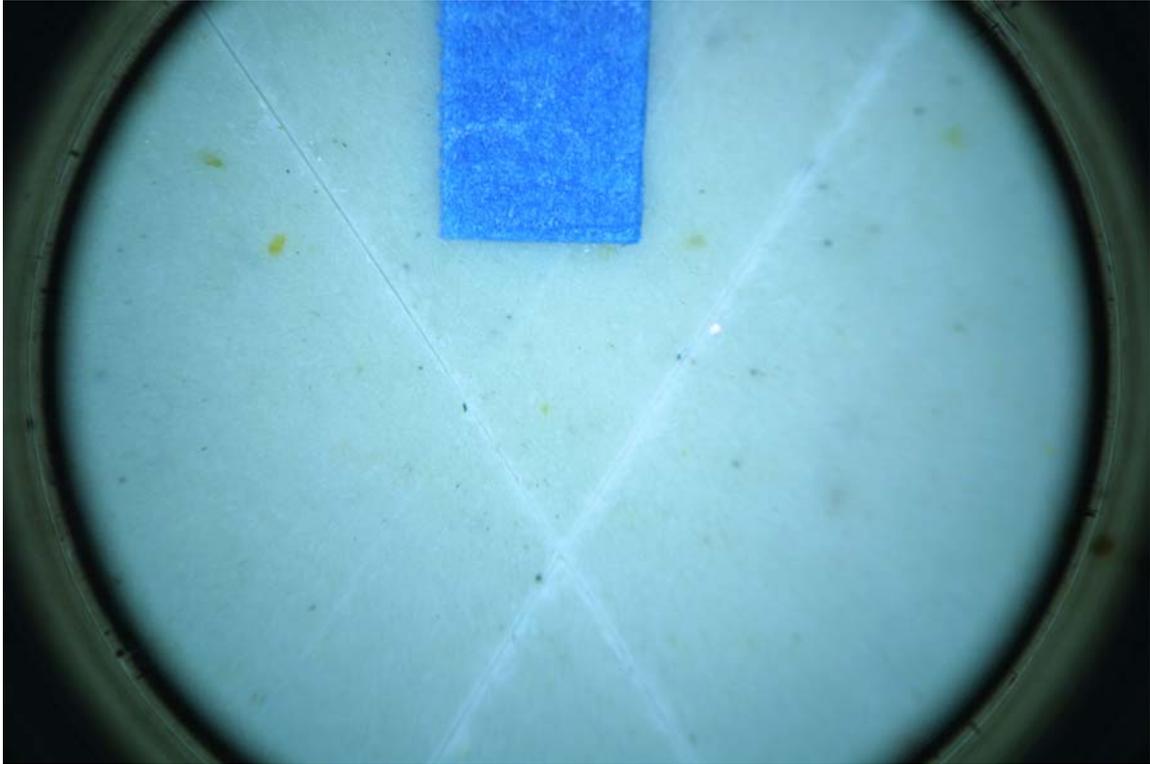


Figure 6: Test number 6 results

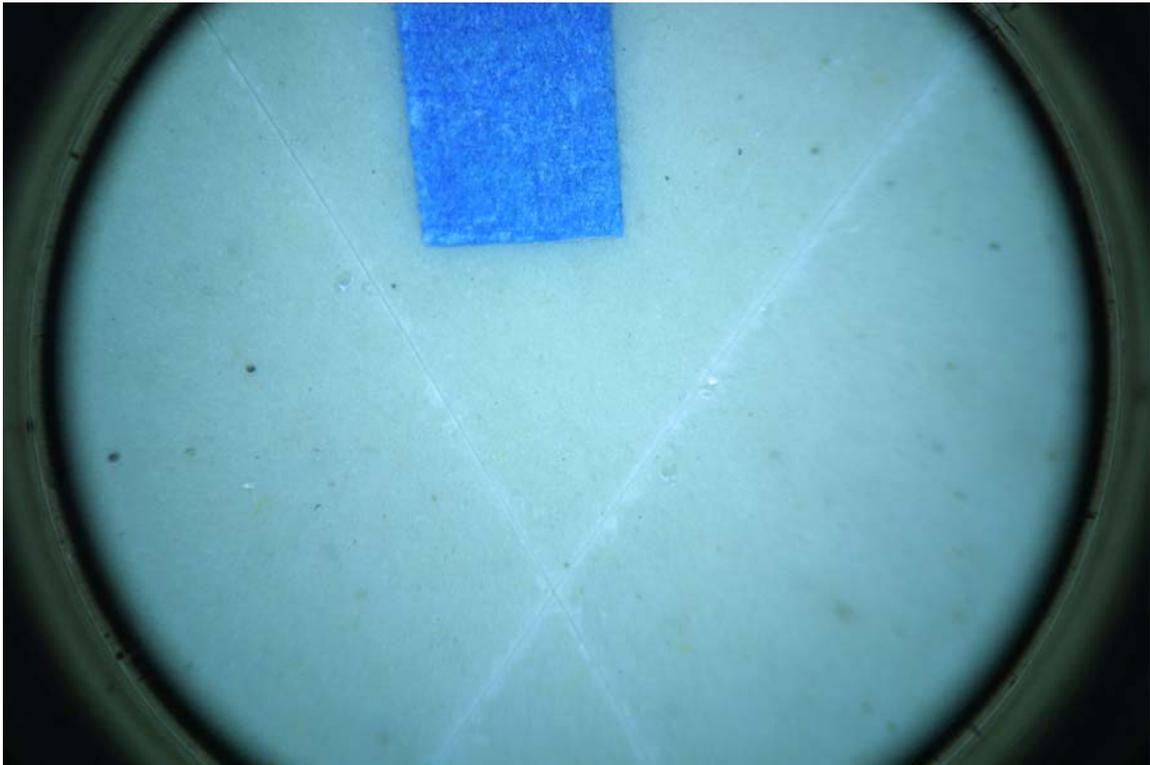


Figure 7: Test number 7 results

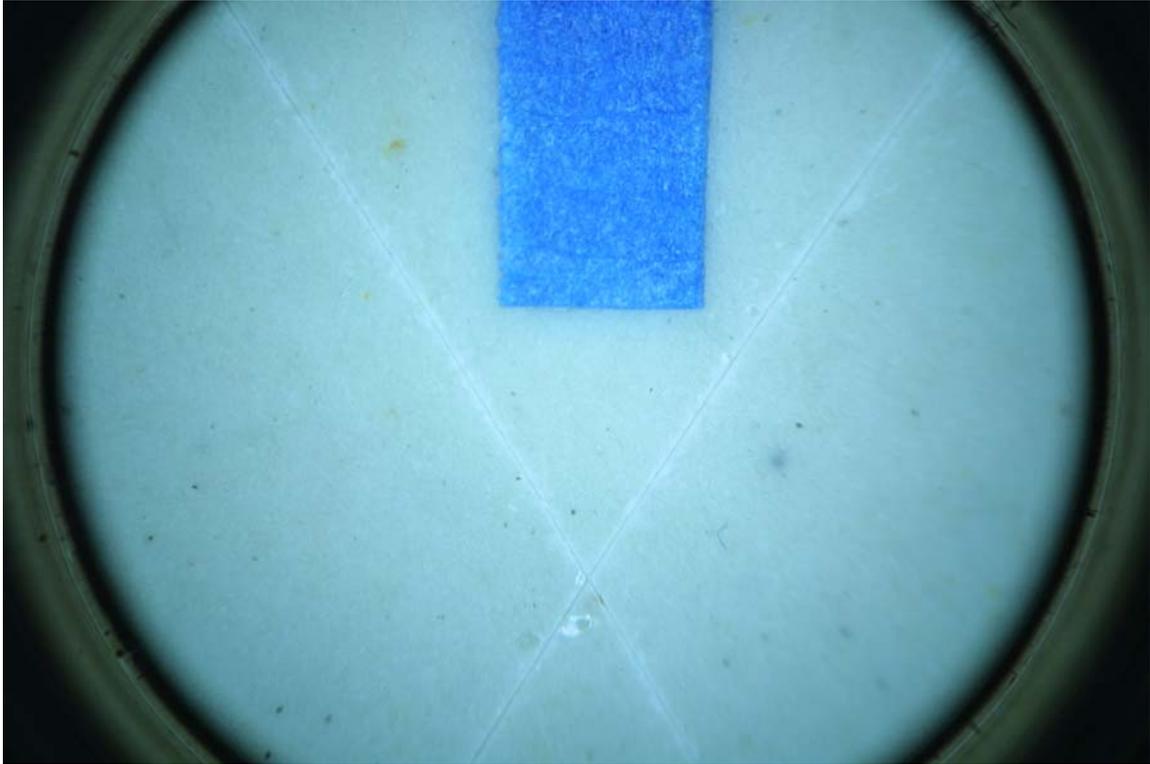


Figure 8: Test number 8 results

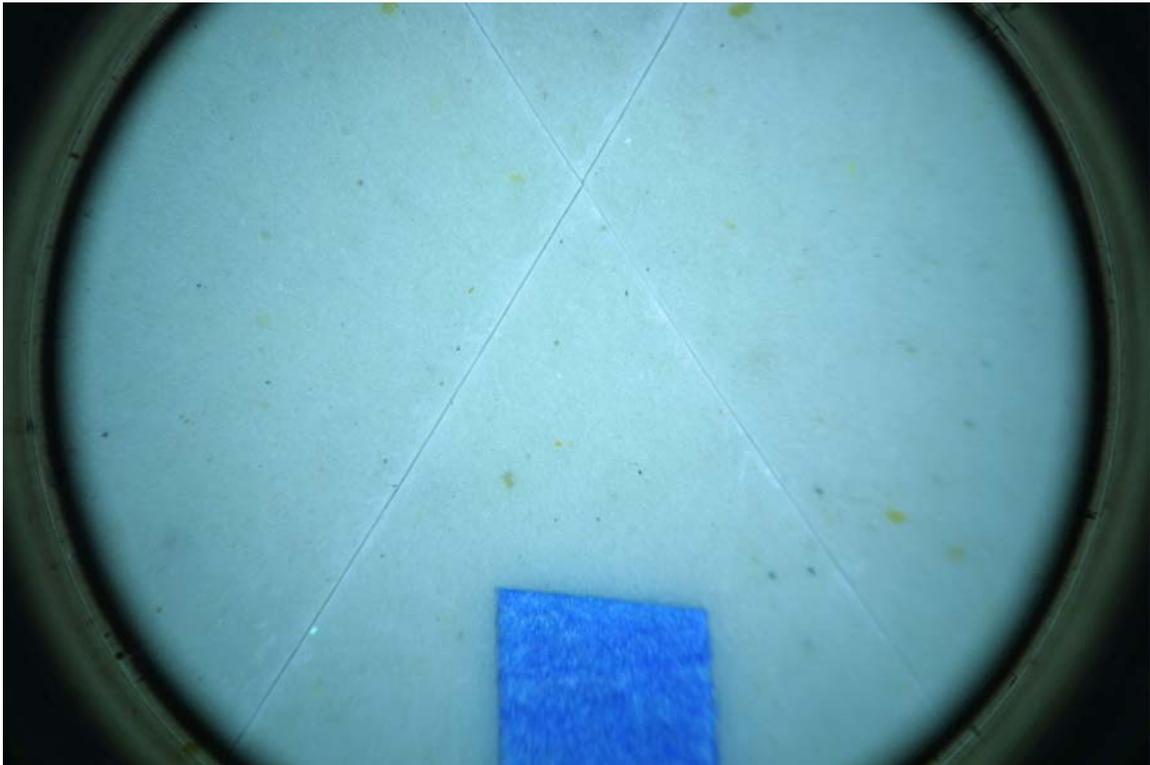


Figure 9: Test number 9 results

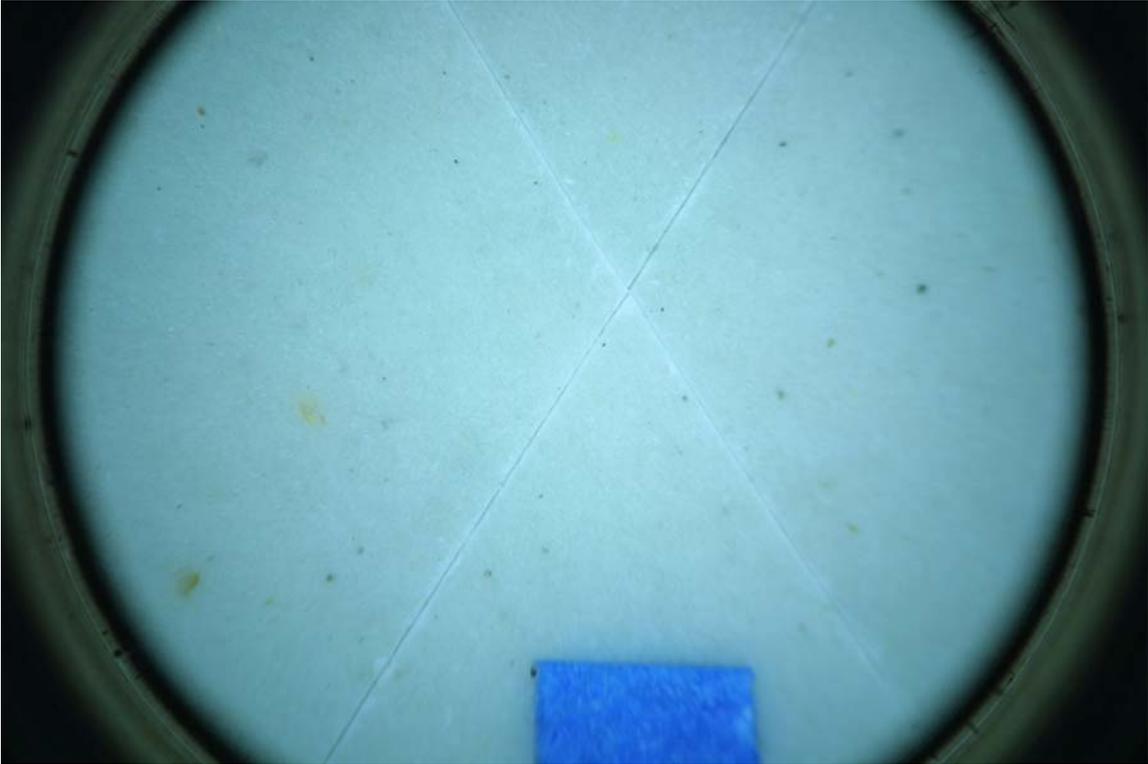
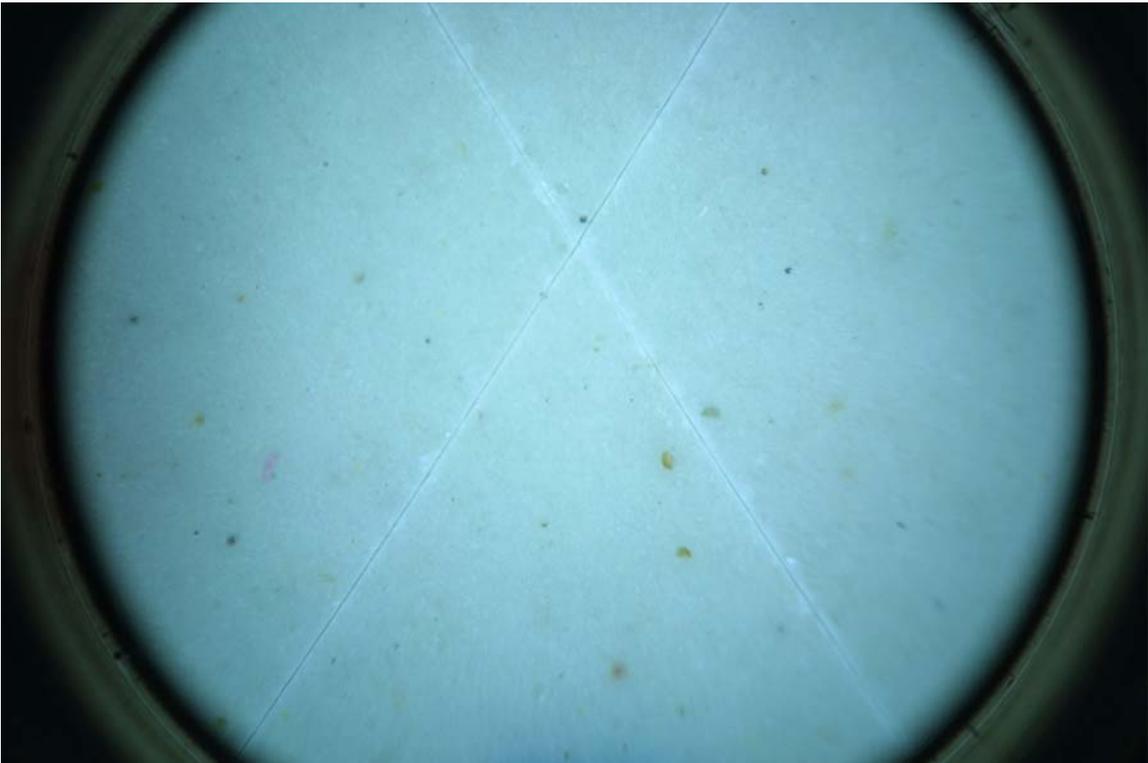


Figure 10: Test number 10 results



Conclusions:

Tests have been performed on Silent Running 1000 (SR1000) vibration and sound-proofing product. The tests were performed in accordance with ASTM D3359 to determine the bond strength of the SR1000 film.

The SR1000 product was applied by Current, Inc. to cold rolled steel plate, and then submitted for test. Method A of ASTM D3359 was practiced. A total of ten (10) tests were performed. Each test consisted of scribing intersecting lines through the SR1000 to the substrate at an angle of approximately forty (40) degrees, applying a pressure sensitive tape over the scribed intersection, then removing the tape. The intersection and adjacent areas were examined for any deterioration of the bond between the SR1000 and the substrate. The test samples were subjected to photo-microscopy for documentation.

The bond between the SR1000 and the substrate was very strong and in each case rated the highest class, 5A indicating no observable film removal or damage.