



Experts in Adhesive Consulting & Laboratory Testing
9079 Tyler Blvd. • Mentor, OH 44060
440-974-3080 • fax 440-974-3081
www.chemsultants.com
DEppink@chemsultants.com



April 1, 2010

John F. Fletcher
Elcometer Instruments Limited
Edge Lane
Manchester, M43 6BU
England

Project 10-562 Final Report: Peel Adhesion of Five Tapes

OBJECTIVE

This project was initiated to characterize the peel adhesion property of the five samples submitted.

MATERIALS

Sample Identification

Samples were received with the following identification:

- Permacelel P-99 tape within expiration date (Chemsultants Sample "A")
- Permacelel P-99 tape with expired date (Chemsultants Sample "B")
- Scapa 8010-B tape within expiration date (Chemsultants Sample "C")
- Intertape Polymer Group LA26 tape within expiration date (Chemsultants Sample "D")
- Elcometer 99 tape within expiration date (Chemsultants Sample "E")

METHODS

Sample Preparation

Sample size

The samples were used as received. The widths were accurately measured. Test results were normalized to exactly a one inch width.

Substrates

The stainless steel panels used are an 18 gauge (.043 in.) 304 grade with a bright annealed finish, obtained from ChemInstruments, Fairfield, OH. which meet PSTC specifications. The panels were cleaned in accordance with PSTC Appendage C, "The Cleaning of Test Surfaces."

This report shall not be reproduced except in full, without the written authorization of Chemsultants.

Page 1 of 4

THE INFORMATION AND RECOMMENDATIONS PROVIDED ARE,
TO THE BEST OF OUR KNOWLEDGE, RELIABLE AND ACCURATE.
CHEMSULTANTS MAKES NO WARRANTY, EXPRESSED OR IMPLIED,
BEYOND THE VALUE OF THE CHARGES SUBMITTED.
IT REMAINS THE RESPONSIBILITY OF THE CLIENT TO REVIEW THE WORK
AND ASSESS THE SUITABILITY OF THE PRODUCT FOR THEIR APPLICATION.
THESE RESULTS APPLY ONLY TO THE SAMPLES TESTED.



Project 10-562
Elcometer Instruments Limited
April 1, 2010
Page 2 of 4

Sample Conditioning

All test samples were conditioned at $73 \pm 3^{\circ}\text{F}$ and $50 \pm 5\%$ Relative Humidity for at least 24 hours prior to testing.

Testing

Peel Adhesion

Peel adhesion was tested according to the PSTC-101 method. Chemsultants is A2LA accredited for this method. Peel adhesion tests were performed on a ChemInstruments AR-1000 Adhesion Release Tester with the EZ Lab software program.

Tape samples were applied to a standard stainless steel substrate at a rate of 24 in./min. with a $4\frac{1}{2}$ pound rubber covered roller according to the method. The tape was then peeled from the substrate at a 180° angle after a dwell time of ninety seconds. The force required for removal was measured, averaged, and the mode of failure noted. Ten replicates of each tape were tested.

Test Conditions

All tests were conducted at $73 \pm 3^{\circ}\text{F}$ and $50 \pm 5\%$ Relative Humidity.

RESULTS and DISCUSSION

Results in Newtons per ten millimeters width are presented in Table 1.

The same results in ounces per inch width are presented in Table 2.

Table 1
Peel Adhesion Data

| 180° Peel Adhesion per PSTC-101 on stainless steel, 90 sec. dwell, N/10 mm. | | | | | |
|---|--|---|---|---|---|
| | • Permacel P-99 tape within expiration date, "A" | • Permacel P-99 tape with expired date, "B" | • Scapa 8010-B tape within expiration date, "C" | • Intertape Polymer Group LA26 tape within expiration date, "D" | • Elcometer 99 tape within expiration date, "E" |
| 1 | 6.68 | 6.39 | 5.48 | 10.97 | 6.71 |
| 2 | 6.80 | 7.07 | 5.32 | 11.78 | 6.55 |
| 3 | 6.72 | 6.93 | 5.30 | 11.35 | 6.53 |
| 4 | 6.82 | 7.12 | 5.44 | 10.78 | 6.66 |
| 5 | 6.39 | 7.00 | 5.34 | 11.26 | 6.29 |
| 6 | 6.84 | 6.51 | 5.30 | 10.96 | 6.25 |
| 7 | 6.57 | 7.05 | 5.02 | 11.23 | 6.36 |
| 8 | 6.54 | 7.89 | 5.11 | 11.30 | 6.29 |
| 9 | 6.80 | 7.36 | 5.14 | 11.37 | 6.14 |
| 10 | 6.64 | 7.25 | 5.03 | 11.14 | 6.37 |
| Average | 6.68 | 7.06 | 5.25 | 11.21 | 6.42 |
| Std. Dev. | 0.15 | 0.42 | 0.16 | 0.28 | 0.19 |

Table 2
 Peel Adhesion Data

| 180° Peel Adhesion per PSTC-101 on stainless steel, 90 sec. dwell, oz./in. | | | | | |
|--|---|--|---|---|---|
| | • Permaceal P-99 tape within expiration date, "A" | • Permaceal P-99 tape with expired date, "B" | • Scapa 8010-B tape within expiration date, "C" | • Intertape Polymer Group LA26 tape within expiration date, "D" | • Elcometer 99 tape within expiration date, "E" |
| 1 | 61.0 | 58.3 | 50.1 | 100.3 | 61.3 |
| 2 | 62.1 | 64.6 | 48.6 | 107.6 | 59.9 |
| 3 | 61.4 | 63.3 | 48.4 | 103.7 | 59.6 |
| 4 | 62.3 | 65.1 | 49.7 | 98.5 | 60.8 |
| 5 | 58.4 | 63.9 | 48.8 | 102.9 | 57.5 |
| 6 | 62.5 | 59.4 | 48.4 | 100.0 | 57.1 |
| 7 | 60.0 | 64.4 | 45.9 | 102.6 | 58.1 |
| 8 | 59.8 | 72.1 | 46.6 | 103.2 | 57.5 |
| 9 | 62.1 | 67.1 | 46.9 | 103.9 | 56.1 |
| 10 | 60.7 | 66.2 | 46.0 | 101.8 | 58.2 |
| Average | 61.0 | 64.4 | 47.9 | 102.5 | 58.6 |
| Std. Dev. | 1.3 | 3.9 | 1.5 | 2.5 | 1.7 |

All tapes peeled cleanly from the stainless steel with no adhesive residue.

If you have any questions regarding the test methods or results, please let me know.

Best regards,
 Chemsultants, Inc.

Reviewed by

Donald L. Eppink
 Senior Chemist
 Physical Testing Laboratory Manager

David A. McCann
 Director, Research & Development