TEST REPORT

CHO-TRCL130

CL-130 Adhesive on Cho-Seal S6305

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1. Summary of Data

CL-130 is a 1.5 mil (0.0015 inch) conductive, pressure sensitive adhesive used on Chomerics conductive elastomers. All tests were performed with the adhesive alone as is, not layered or laminated to a gasket.

Table 1. Data

CL-130 Adhesive	
180° Peel Adhesion	1.61 1.83 1.52 1.70 **Average: 1.7 lbs/inch**
Lap Shear	5.61 12.73 3.90 4.25 **Average: 6.6 psi**
Volume Resistivity	0.033 mΩ 0.020 mΩ Average: 0.026 mΩ **59 mW-cm**
Shielding Effectiveness on S6305	Gasket Alone (Without adhesive) 20 MHz – 10 GHZ **Average: 112 dB**
	Gasket With Adhesive 20 MHz – 10 GHz **Average: 104 dB**

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2. Peel Adhesion

PSTC-1 (Pressure Sensitive Tape Council) Peel Adhesion of Single Coated Pressure Sensitive Tapes at 180° Angle
ASTM D1000 - Pressure Sensitive Adhesive Coated Tapes Used for Electrical and Electronic Applications – Sections 38-44 Adhesion Strength

Note: PSTC-1 and ASTM D1000 are very similar test methods. CL-130 was tested per these standards with slight modifications. Instead of stainless steel panels, the CL-130 was tested on aluminum (Alloy 2024, T3 temper) panels; and instead of testing the material immediately or 20 minutes after application, the samples were tested after one week.

Peel adhesion testing was performed using a 2 mil aluminum foil backing on the CL-130 adhesive. The samples were applied to the panels with a 10 pound steel roller rolled lengthwise once in each direction at approximately 12”/minute. Testing was performed at room temperature with the tape being removed at a 180° angle at 12”/minute.

The peel strength of this CL-130 adhesive is 1.7 lbs/inch. The mode of failure was adhesive from the aluminum panel.

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3. Lap Shear

ASTM D1002 - Apparent Shear Strength of Single Lap Joint Adhesively Bonded Metal Specimens by Tension Loading

Lap shear testing was performed with a 1 in^2 piece of adhesive and two aluminum (Alloy 2024, T3 temper) panels per ASTM D1002 Figure 3. The tape was placed between the panels then a load of 25 pounds was applied for 20 seconds to bond the panels together. The test specimens were allowed to dwell for one week at room temperature before testing. The panels were pulled apart at a rate of 0.05"/minute.

The lap shear strength of this CL-130 adhesive is 6.6 psi. The mode of failure was partially adhesive from one aluminum panel and partially cohesive failure.

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4. Volume Resistivity

Chomerics Internal Procedure
MAT-1002 Through Volume Resistivity of Conductive Elastomers
(similar to MIL-DTL-83528)

Electrical conductivity was tested through one layer of adhesive cut into a circle having a diameter the same size as the electrodes, 1.31 inches. The adhesive was placed between the two silver electrodes. The specimen was tested while under a pressure of 30 psi. A reading was taken using a digital ohmmeter once the display stabilized, about 15 seconds. Volume resistivity was calculated using the following formula:

$$V = R\ A / L$$

Where:
V = Volume resistivity (ohm-cm)
R = Observed resistance (ohms)
A = Area of specimen (cm^2)
L = Thickness of specimen (cm)

The through volume resistivity of this CL-130 adhesive is 59 mOhm-cm.

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5. Shielding Effectiveness

Chomerics Internal Procedure
CHO-TM TP08 - Shielding Effectiveness Test Method for Commercial Style EMI Gaskets (Testing conducted by Chomerics Test Services)

The gasket configuration is a square "picture frame" assembled from 4 mitered strips (each a nominal 24 inches long). Gaskets are mounted to a 0.025 inch thick 6061-T6 aluminum test plate. The test plate is placed over the open 24 inch square brass test fixture. Nonconductive fasteners and various non-conductive compression stop spacers provide 50% deflection of gaskets. Shielding Effectiveness measurements were performed at 15 different frequencies (20 MHz to 10 GHz).

Data Recorded:
-Reference level and gasketed panel level.
Data Calculated/Reported:
-Shielding Effectiveness = reference level – gasketed panel level

Average Shielding Effectiveness (20 MHz - 10 GHz) results in Table 1 give the average SE of the gasket with and without the CL-130 PSA, 104 and 112 dB respectively. Complete data is shown below in Graph 1.

Graph 1. Shielding Effectiveness of S6305