



TAPE, TWO SIDE PRESSURE SENSITIVE ADHESIVE FILM, THERMALLY CONDUCTIVE

WSF-M3G215-A

1. SCOPE

The material defined by this specification is a two sided acrylic based pressure sensitive, thermally conductive, adhesive film tape protected with a polyester film release liner on one side.

2. APPLICATION

This specification is for an adhesive film to be used to bond flexible and rigid circuit boards to aluminum or steel or for any application where a thermally conductive pressure sensitive adhesive may be beneficial. The adhesive functions both as a bonding agent and as a conductor of thermal energy from the circuit board to the metal.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.4 THICKNESS, without release liner 0.05 +/- 0.013 mm
(ASTM D 1000)

3.5 DENSITY 2.00 +/- 0.15 g/cm³
(ISO 1183, Method A)

3.6 VOLATILES, max 0.90%
(4 h at 125 +/- 2 °C)

3.7 PEEL ADHESION, 90°, min

3.7.1 Initial Adhesion

20 minutes at 23 +/- 2 °C 300 N/m width

72 h at 23 +/- 2 °C 350 N/m width

3.7.2 Aged Adhesion

14 d at 70 +/- 2 °C 530 N/m width

14 d at 38 +/- 2 °C and 425 N/m width
95% relative humidity

14 d cycling (each cycle consisting 600 N/m width
of 1 h at -40 +/- 2 °C, 1 h at 70
+/- 2 °C and 85% relative humidity,
and a 2 h ramp time between each
condition)

Date	Action	Revisions
2006 02 08	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.16, 4
1993 03 31	Released	NGA1E10269419002



Documents

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Test Method: Apply a 25 mm wide strip of the adhesive film to a clean 50 x 150 x 1 to 2 mm SAE J405 30304 bright annealed stainless steel panel and roll down with 2.0 kg roller. Remove liner and apply a 30 x 200 x 0.1 mm anodized aluminum strip. Roll down with a 6.8 kg steel roller. Condition the bonded assembly for 24 h at 23 +/- 2 °C. Place two assemblies each into the above environments. Within 4 h after completion of the exposures, measure 90° peel adhesion on a testing machine having a jaw separation rate of 305 mm/minute.

- 3.8 STATIC SHEAR**, min 4 days
(70 +/- 2 °C, 1000 g load)

Test Method: Apply 25 x 13 mm piece of adhesive film to one end of 16 x 130 x 0.01 mm anodized aluminum strip. Remove liner and bond it to one end of 25 to 50 x 75 x 1 to 2 mm cleaned stainless steel panel so that the adhesive film is covered by and centered behind the stainless panel. Roll down the assembly with 6.8 kg roller and let stand for 24 h at 23 +/- 2 °C. Hang the assembly from the free end of the stainless steel panel in the test chamber, attach load to the looped lower end of the aluminum strip, and record time to separation of strips.

- 3.9 LINER REMOVAL**, range 3 to 23 N/m width
(ASTM D 1000)

Test Method: Apply pressure sensitive side of the adhesive film to a clean SAE J454 6061 aluminum panel and roll down with a 2.0 kg roller, measure the force required to peel the liner from the adhesive using the procedure in ASTM D 1000.

- 3.10 DIELECTRIC STRENGTH**, min 20 kV/mm
(ASTM D 149/IEC 243, at 23 +/- 2 °C)

- 3.11 DIELECTRIC CONSTANT**, max 6.00
(ASTM D 150/IEC 250, 1 kHz to 1 MHz, at 23 +/- 2 °C)

- 3.12 DISSIPATION FACTOR**, max 0.055
(ASTM D 150/IEC 250, 1 kHz to 1 MHz at 23 +/- 2 °C)

- 3.13 THERMAL CONDUCTIVITY**, min 0.35 W/m.K
(ASTM F 433, 40 - 150 °C, use 10 plies of 255 micrometer thick material)

- 3.14 VOLUME RESISTIVITY**, min 1E14 ohm.cm
(ASTM D 257/IEC 93, at 25 +/- 2 °C)

- 3.15 SHELF LIFE**

No loss in properties for 12 months from date of receipt by customer when stored in original cartons at a temperature no greater than 38 °C and 50% relative humidity.

5. GENERAL INFORMATION

The information below is provided for clarification and assistance in meeting the requirements of this specification.