

3M Ultra High Temperature Double Coated Tape 9077

Technical Data

November 2006

Product Description

3M™ Ultra High Temperature Double Coated Tape 9077 utilizes a high performance and low outgassing adhesive system having excellent heat resistance in high temperature environments. This adhesive system has excellent holding power and much higher adhesion strength at high temperatures than typical pressure sensitive adhesive tapes.

3M™ Ultra High Temperature Double Coated Tape 9077 is a double coated non-woven adhesive tape with improved die-cut and converting performance.

Note: If a double coated tape is needed, please refer to the 3M™ Adhesive Transfer Tape 9079 technical data page.

Construction

Adhesive Type	Release Liner	Color
0.002 in. (0.05 mm) thick Double coated non-woven high temperature acrylic adhesive	0.0036 in. (0.09 mm) thick heat resistant liner	Clear

Features

- High temperature release liner that is able to survive from a typical lead-free solder reflow process having a peak temperature up to 500°F (260°C).
- Ideal for Flexible Printed Circuit (FPC) attachments in many areas of electronics subjected to high temperature processing and operating environments.
- Releasable after lead-free solder reflow.
- High adhesion, excellent holding power and low outgas.

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Typical Physical Properties

Note: The following technical information and data should be considered representative or typical only, and should not be used for specification purposes.

Temperature Tolerance (Short Term)	Temperature Tolerance (Long Term)
Adhesive: 500°F (260°C) Liner: 500°F (260°C)	Adhesive: 300°F (150°C) Liner: N/A

Performance Characteristics

Note: The following technical information and data should be considered representative or typical only, and should not be used for specification purposes.

3M™ Ultra High Temperature Double Coated Tape 9077 is made from a high temperature acrylic adhesive system, and will become softer as temperature increases and firmer as temperature decreases. As the adhesive becomes firmer, the adhesion performance generally increases. At low temperatures (lower than -40°F [-40°C]), the tapes become very firm and glassy; the ability to absorb impact energy is reduced.

Adhesive strength and liner release performance before and after a typical lead-free solder reflow are presented here along with static shear data at high temperatures.

1. 90° Peel Adhesion to Various Surfaces (per ASTM D3330)

- Pull Tab: 0.003 in. (75 µm) thick Copper Clad Laminate (or flexible circuit)
- Bonded samples were dwelled at room temperature for 20 to 40 minute
- Peel speed at 12 in./min. (or 300 mm/min.) at room temperature
- Solder reflow peak temperature: 500°F (260°C) for 40 seconds

Solder Reflow Effect	Before Reflow	After Reflow
Polyimide Film	3.31 lb./in. (9.3 N/cm)	2.91 lb./in. (5.1 N/cm)
Glass Epoxy	6.28 lb./in. (11 N/cm)	5.19 lb./in. (9.1N/cm)
Polyester Film	N/A	N/A

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Performance Characteristics
(continued)

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2. Static Shear (Creep or Slippage Testing)

- Overlap area: 1 in. x 1 in. (or 25 mm x 25 mm).
- 1 hour dwell time to stainless steel at 212°F (100°C) and 356°F (180°C), respectively.
- Measure the slippage length after 1 hour with a holding weight of 3.3 pounds (1.5 kg).

212°F (100°C)	No slippage
356°F (180°C)	0.008 in. (0.2 mm)

3. 90° Liner Release

- Peel off liner at 90° angle.
- Peel speed at 12 in./min. (or 300 mm/min.) at room temperature.
- Solder reflow peak temperature and duration time: 500°F (260°C) for 20 to 40 seconds.

Before Reflow	29grams/in. (0.11 N/cm)
After Reflow	39 grams/in. (0.15 N/cm)

Application Techniques

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure helps develop better adhesive contact and improves bond strength.

To obtain optimum adhesion, the bonding surfaces must be clean, dry, and well unified. Some typical surface cleaning solvents are isopropyl alcohol/water mixture or heptane.*

Ideal tape application temperature range is 70°F to 100°F (21°C to 38°C). Initial tape application to surfaces at temperatures below 50°F (10°C) is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

*Note: When using solvents, extinguish all ignition sources and follow the manufacturer's precautions and directions for use.

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Available Sizes	Standard Length:	109.3 yds. (100 m)
	Standard Width:	19.6 in. (500 mm)
	Normal Slitting Tolerance:	± 1/32 in. (0.8 mm)

Storage Store under normal conditions of 70°F (21°C) and 50% relative humidity in the original carton.

Shelf Life To obtain best performance, use this product within 12 months from date of manufacture.

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