Ultra High Temperature 100HTL Adhesive Transfer Tapes

9077 • 9079

Technical Data **November, 2006**

Product Description

3M™ Ultra High Temperature 100HTL Adhesive Transfer Tapes utilize a high performance and low outgassing adhesive system having excellent heat resistance in high temperature environments. These adhesive systems have excellent holding power and much higher adhesion strength at high temperatures than typical pressure sensitive adhesive tapes.

3M™ Ultra High Temperature 100HTL Adhesive Transfer Tape 9077 is a double coated non-woven adhesive tape with improved die-cut and converting performance. 3M™ Ultra High Temperature 100HTL Adhesive Transfer Tape 9079 is a solid adhesive transfer tape with no carrier in the adhesive, which provides better adhesive wet-out for improved initial adhesion.

Construction

	3M™ Ultra High Temperature 100HTL Adhesive Transfer Tape	
Product	**9077**	**9079**
Adhesive Type	0.002 in. (0.05 mm) thick double coated non-woven high temperature acrylic adhesive	0.002 in. (0.05 mm) thick high temperature acrylic adhesive
Release Liner	0.0036 in. (0.09 mm) thick heat resistant liner	0.0036 in. (0.09 mm) thick heat resistant liner
Color	Clear	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.

Product	3M™ Ultra High Temperature 100HTL Adhesive Transfer Tape	
	9077	9079
Temperature Tolerance (Short Term)	Adhesive: 500°F (260°C) Liner: 500°F (260°C)	Adhesive: 530°F (275°C) Liner: 500°F (260°C)
Temperature Tolerance (Long Term)	Adhesive: 300°F (150°C) Liner: N/A	Adhesive: 350°F (175°C) Liner: N/A

Performance Characteristics

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Both tapes are made from high temperature acrylic adhesive systems, 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 a 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 minutes.
- Peel speed at 12 in./min. (or 300 mm/min.) at room temperature.
- Solder reflow peak temperature: 500°F (260°C) for 40 seconds.

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Solder Reflow Effect	Before Reflow	After Reflow	Before Reflow	After Reflow
Polyimide Film	5.31 lb./in. (9.3 N/cm)	2.91 lb./in. (5.1 N/cm)	3.37 lb./in. (5.9 N/cm)	2.97 lb./in. (5.2 N/cm)
Glass Epoxy	6.28 lb./in. (11 N/cm)	5.19 lb./in. (9.1 N/cm)	3.08 lb./in. (5.4 N/cm)	2.80 lb./in. (4.9 N/cm)
Polyester Film	N/A	N/A	3.20 lb./in. (5.6 N/cm)	2.85 lb./in. (5.0 N/cm)

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).

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212°F (100°C)	No slippage	No slippage
356°F (180°C)	0.008 in. (0.2 mm)	0.012 in. (0.3 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.

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Before Reflow	29 grams/in. (0.11 N/cm)	47 grams/in. (0.18 N/cm)
After Reflow	39 grams/in. (0.15 N/cm)	114 grams/in. (0.44 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 in original cartons at 70°F (21°C) and 50% relative humidity.

Shelf Life

If stored under proper conditions, product retains its performance and properties for 12 months from date of manufacture.

Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

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ISO 9001:2000

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