



Ultra High Temperature 100 HT Adhesive Transfer Tapes

9082 • 9085 • 9082UV • 9085UV

Technical Data

September, 2006

Product Description

3M™ Ultra High Temperature 100HT Adhesive Transfer Tapes 9082 and 9085 utilize a high performance and low outgassing adhesive system having excellent heat resistance in high temperature environments. Not only does it have excellent holding power, but also its adhesion strength is significantly higher than typical pressure sensitive tapes.

3M™ Ultra High Temperature 100HT Adhesive Transfer Tapes 9082UV and 9085UV have a UV fluoresce agent to allow black light inspection during converting and assembly.

These adhesive transfer tapes are ideal for use in many industrial applications subjected to higher temperature environments. Typical examples are for automotive under-hood applications that require both higher processing and operating temperatures. Other areas include printed circuit boards and heat sink bonding in many electronics applications subjected to high solder reflow temperatures.

Construction

Products	3M™ Ultra High Temperature 100 HT Adhesive Transfer Tape	
	9082/9082UV	9085/9085UV
Adhesive Type	0.002 in. (0.05 mm) thick acrylic adhesive system	0.005 in. (0.13 mm) thick acrylic adhesive system
Release Liner	0.0032 in. (0.08 mm) thick white printed-paper	
Color	Clear	

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.

Products	3M™ Ultra High Temperature 100 HT Adhesive Transfer Tape					
	9082/9082UV			9085/9085UV		
Temperature Tolerance (Short Term)	540°F (280°C)					
Temperature Tolerance (Long Term)	350°F (177°C)					
Thermal Coefficient of Expansion	770 x 10 ⁻⁶ mm/mm/°C					
Thermal Conductivity (ASTM C-177)	0.092 BTU-ft/ft ² Hr °F (0.0016 Watts/cm °C)			N/A		
Dielectric Strength (Volts per ASTM D-149-97A)	23°C	150°C	175°C	23°C	150°C	175°C
	1200	870	770	3000	N/A	N/A
Insulation Resistance (ASTM D-1000)	> 1 x 10 ⁶ megaohms/in ²					
Density	0.04 lb/in ³ (0.98 g/cm ³)					

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Performance Characteristics

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Both tapes made from the same adhesive system and are thermoplastic in nature, becoming 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. In contrast, adhesion strength reduces with increasing temperatures. Typical adhesive strength properties at different temperatures are shown below. (Note: Samples were conditioned at the desired temperature for two minutes before testing at that temperature.)

Peel Adhesion on Aluminum (ASTM D-3330)

Products	3M™ Ultra High Temperature 100 HT Adhesive Transfer Tape	
	9082/9082UV	9085/9085UV
72°F (23°C)	5.0 lb/in (88 N/100 mm)	6.0 lb/in (105 N/100 mm)
225°F (107°C)	4.0 lb/in (70 N/100 mm)	5.0 lb/in (88 N/100 mm)
300°F (150°C)	3.5 lb/in (61 N/100 mm)	4.0 lb/in (70 N/100 mm)
350°F (175°C)	3.0 lb/in (53 N/100 mm)	3.0 lb/in (53 N/100 mm)
450°F (230°C)	1.5 lb/in (26 N/100 mm)	1.0 lb/in (18 N/100 mm)

Over-Lap Shear on Stainless Steel (ASTM D-1002)

Products	3M™ Ultra High Temperature 100 HT Adhesive Transfer Tape	
	9082/9082UV	9085/9085UV
72°F (23°C)	90 lb/in ² (620 kPa)	80 lb/in ² (550 kPa)
225°F (107°C)	35 lb/in ² (240 kPa)	30 lb/in ² (210 kPa)
300°F (150°C)	30 lb/in ² (210 kPa)	25 lb/in ² (170 kPa)
350°F (175°C)	20 lb/in ² (140 kPa)	15 lb/in ² (100 kPa)
450°F (230°C)	15 lb/in ² (100 kPa)	10 lb/in ² (70 kPa)

Normal Tensile (or T-block) on Aluminum (ASTM D-987)

Products	3M™ Ultra High Temperature 100 HT Adhesive Transfer Tape	
	9082/9082UV	9085/9085UV
72°F (23°C)	50 lb/in ² (345 kPa)	50 lb/in ² (345 kPa)
225°F (107°C)	15 lb/in ² (100 kPa)	10 lb/in ² (70 kPa)
300°F (150°C)	15 lb/in ² (100 kPa)	10 lb/in ² (70 kPa)
350°F (175°C)	10 lb/in ² (70 kPa)	10 lb/in ² (70 kPa)
450°F (230°C)	10 lb/in ² (70 kPa)	5 lb/in ² (35 kPa)

Holding Power (or Static Shear) on Aluminum (ASTM D-3654):

Hold listed weight at various temperatures for 10,000 minutes

Products	3M™ Ultra High Temperature 100 HT Adhesive Transfer Tape	
	9082/9082UV	9085/9085UV
72°F (23°C)	1000 gram	1000 gram
200°F (93°C)	1000 gram	1000 gram
250°F (121°C)	1000 gram	1000 gram
300°F (150°C)	1000 gram	1000 gram
350°F (175°C)	1000 gram	1000 gram

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Weight Loss Performance

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The testing is done using a constant temperature Thermogravimetric Analysis (TGA). Samples were analyzed by tested in a TA Instruments 2950 HI-RES Modulated Thermogravimetric running under air atmosphere in standard mode.

Isothermal TGA Analysis at 300°F (150°C) and 350°F (175°C)

The sample temperature was increased from ambient to the desired temperature using the instruments highest heating rate and maintained at that temperature for 3.5 hours. Results are reported as percent weight loss based on the original weight of the sample.

Temperature	Weight Loss
300°F (150°C)	0.64%
350°F (175°C)	1.09%

Ramped TGA Analysis

The sample temperature was increased from ambient to a high temperature above 1,000°F (537°C) at a rate of 10°C per minute. Results are reported as percent weight loss at the desired temperature points based on the original weight of the sample.

Temperature	Weight Loss
225°F (107°C)	0.15%
300°F (150°C)	0.21%
350°F (175°C)	0.26%
450°F (230°C)	0.61%
500°F (260°C)	1.00%
585°F (307°C)	5.00%

Available Sizes

Available Lengths (subject to minimum order requirements):

Standard	60 yd. (54.9 m)
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Maximum in:

1/2 in. widths	60 yd. (54.9 m)
1/2 in. to 1 in. widths	120 yd. (110 m)
1 in. up to 3 in.	120 yd. (110 m)
3 in. and wider	180 yd. (165 m)

Normal Slitting Tolerance	± 1/32 in. (0.8 mm)
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Application Techniques

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure helps develop better adhesive contact and improve 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:** Be sure to follow the manufacturer’s precautions and directions for use when using solvents.

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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.
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ISO 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.



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