

Heat Ready Performance

with 3M™ High Temperature Masking Tapes

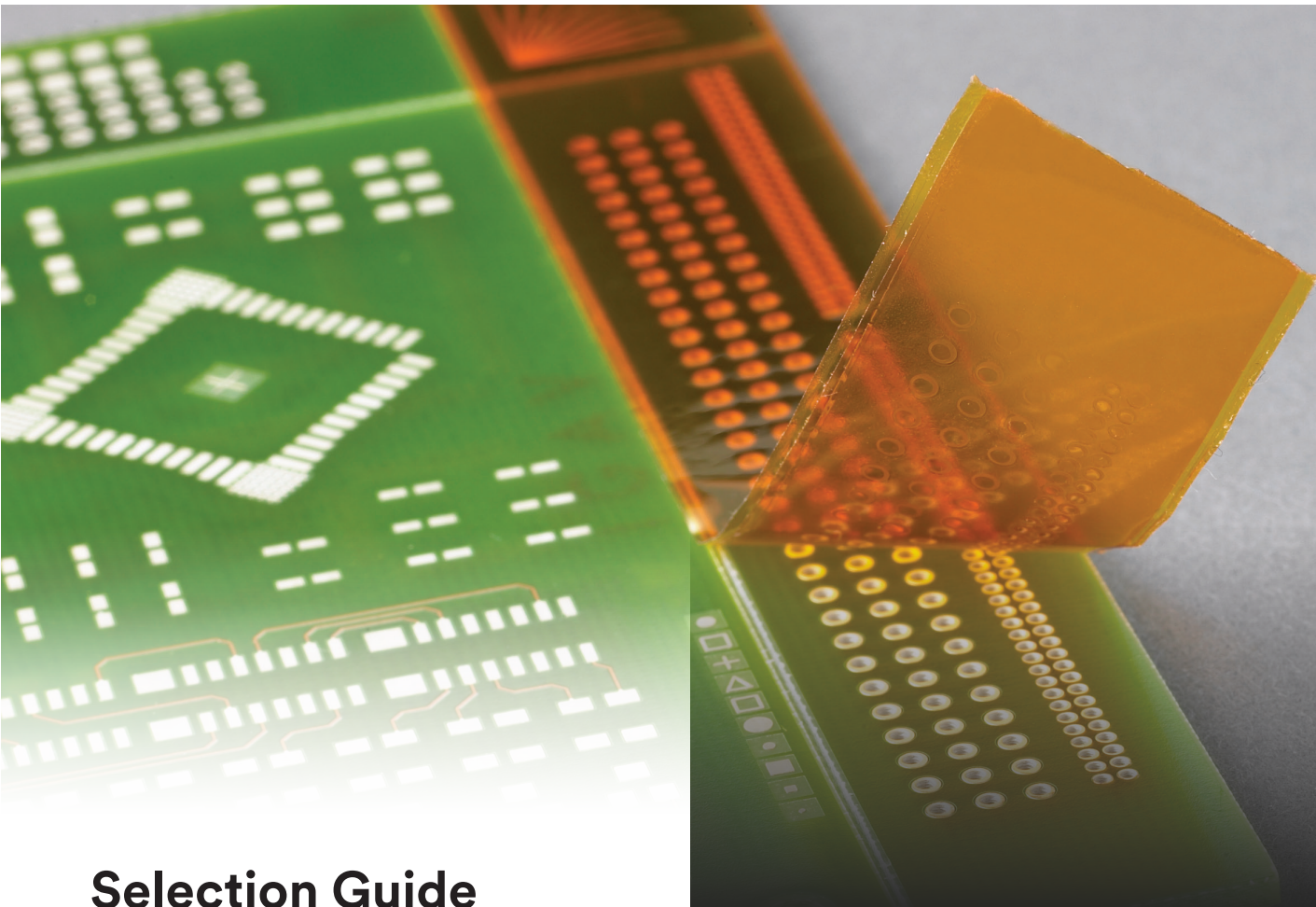
3M™ High Temperature Masking Tapes

When the heat rises, leading PCB manufacturers keep their cool and trust 3M™ High Temperature Masking Tapes.

3M™ High Temperature Masking Tapes have exceptional performance at high temperatures while providing excellent chemical resistance and virtually residue-free removal. They also help enable consistent, predictable, and reliable circuit plating and help provide protection in electroplating, reflow, and wave-soldering processes.

These masking tapes are easy to apply and release cleanly. They provide robust protection in a wide range of PCB assembly processes. 3M offers multiple backing materials, adhesive chemistries, widths, and thicknesses to help you meet your application requirements. This guide will help you determine the right material for your PCB assembly needs.





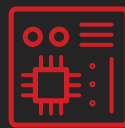
Selection Guide

3M™ High Temperature Tapes Selection Criteria

The following considerations are critical for selecting the right tape:

- 1 **What is the tape primarily being used for?**
- 2 **What are the process temperature requirements?**
- 3 **Does the process require low electrostatic discharge?**
- 4 **Does the process require a low outgassing material?**

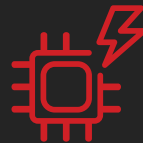
Use this guide to help you find the right material for your application.



Circuit plating tapes help mask against peak temperature hazard and solder pollution on gold finger and other critical areas. Wave and reflow solder processes are often very high temperature processes that require specialized masking solutions to help protect critical components.



3M High Temperature Tapes vary in temperature protection up to 500°F (260°C). Selecting the right masking solution for your process is critical to maximizing performance and reliability.



Many 3M High Temperature Tapes have low-static properties for use around devices and components sensitive to electrostatic discharge.



Some applications require low-outgassing materials to be used. 3M offers an acrylic adhesive with low-outgassing properties so you can meet your needs.



3M High Temperature Tapes offer clean release with virtually residue-free removal, which can help reduce rework needed and help increase productivity.

1 ▶ Polyester Tapes: Circuit Plating, Masking, Splicing, and Etching (PAGE 5)



3M™ Circuit Plating Tape 851

- High adhesion
- Low stretch
- Virtually no adhesive residue



3M™ Circuit Plating Tape 1280

- High adhesion
- Low stretch
- Virtually no adhesive residue

Temperature Range

2 ▶ -50°F to 311°F

1 ▶ Polyimide Tapes: PCB, Masking, and Soldering (PAGE 6)



3M™ Polyimide Film Tape 5413

- Chemical resistant
- Flame retardant (UL510FR)
- Halogen free*
- Radiation resistant
- Silicone adhesive
- Virtually no adhesive residue



3M™ Polyimide Film Tape 5419

- Chemical resistant
- Flame retardant (UL510FR)
- Halogen free*
- Radiation resistant
- Silicone adhesive
- Virtually no adhesive residue
- Low static



3M™ Polyimide Film Tape 7419

- Chemical resistant
- Virtually no adhesive residue
- 3 ▶ • Low static
- 4 ▶ • Acrylic adhesive

Temperature Range

2 ▶ -100°F to 500°F

* Halogen Free refers to the International Electrochemical Commission's Definition, IEC 61249-2-21, which sets the limits of: 900 ppm maximum chlorine; 900 ppm maximum bromine; 1500 ppm maximum total halogens

3M™ High Temperature Polyester Tapes

Need a masking solution for electroplating process in PCB Assembly?

3M™ High Temperature Polyester Tapes are designed for printed circuit board (PCB) masking, circuit plating, splicing, and etching. Their unique adhesive helps protect gold finger areas, plated through-holes, and other critical surfaces from peak soldering temperatures and solder contamination, while helping safeguard heat-sensitive components during surface mount processing.

Features:

- ▶ Low-stretch polyester film designed for automated and manual application
- ▶ Polyester backing helps reduce stretch and recovery of tape for cleaner, more consistent stop-off lines
- ▶ Thick adhesive coating helps reduce undercutting by helping block solutions from leaking between fingers

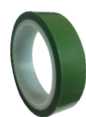
Typical Applications:

- ▶ Masking of many printed circuit boards during solder stripping and precious metal plating of fingers
- ▶ Splicing of silicone treated papers

 Up to 311°F / 155°C

 Up to 500°F / 260°C

1 ▶



3M™ Circuit Plating Tape 851



3M™ Polyester Tape 854



3M™ Circuit Plating Tape 1280



3M™ De-Taping Tape 3305

Performance Features		Low Stretch, Virtually No Adhesive Residue, Chemical Resistant	Anti-Erosion in Electrolyte, Chemical Resistant, Virtually No Adhesive Residue	Low Stretch, Virtually No Adhesive Residue, Chemical Resistant	Room Temperature Peeling, Inspection Friendly, Adhesive Removal from Surface
Color		Green	Cream	Red	Transparent
Total Thickness ATSM D-3652*		3.6 mil (0.09 mm)	2.56 mil (0.065 mm)	3.6 mil (0.091 mm)	2.7 mil (0.068 mm)
Adhesive		Silicone/Rubber Blend	Synthetic Rubber	Silicone/Rubber Blend	Synthetic Rubber
Backing		Polyester (PET)	Polyester (PET)	Polyester (PET)	Polyester (PET)
Primary Liner		None	None	None	None
Temp Range	°C	 -40°C to 155°C	 -50°C to 150°C	 -40°C to 155°C	 -40°C to 140°C
	°F	 -40°F to 311°F	 -58°F to 302°F	 -40°F to 311°F	 -40°F to 284°F
Adhesion to Stainless ATSM D-3330*		33 oz/in width (36 N/100 mm)	59 oz/in width (64 N/100 mm)	33 oz/in width (36 N/100 mm)	86 oz/in width (94 N/100 mm)
Tensile Strength at Break ATSM D-3759*		28 lbs/in width (490 N/100 mm)	29 lbs/in width (509 N/100 mm)	30 lbs/in width (525.4 N/100 mm)	45 lbs/in width (784 N/100 mm)
Dielectric Strength (volts) ATSM D-149*		—	—	—	—
Elongation at Break ATSM D-3759*		124%	123%	135%	125%

*Methods listed as ASTM are tested in accordance with the ASTM method noted

The above technical information and data should be considered representative or typical only and should not be used for specification purposes. Contact your 3M Technical Representative for details.

3M™ High Temperature Polyimide Tapes

Need a masking solution for reflow or wave-soldering process in PCB Assembly?

3M High Temperature Polyimide Tapes are designed to deliver maximum protection in some of the most demanding high-temperature applications. Featuring specifically engineered adhesives and a polyimide backing, these tapes help protect critical components and maintain performance at temperatures up to 500°F (260°C) even after 10 minutes.

Features:

- ▶ The polyimide film does not soften at elevated temperatures, providing an excellent release surface
- ▶ These 3M tapes are dimensionally stable at high temperatures, which helps reduce rework, allowing the tape to be more reliable while potentially increasing productivity
- ▶ Many of these tapes are flame retardant, chemical and radiation resistant which help protect surfaces and potentially reduce replacement costs

Typical Applications:

- ▶ Masking of printed circuit boards during wave solder, dip process, and much more
- ▶ Release surface in fabrication of parts cured at elevated temperatures



3M™ Polyimide Film Tape 5413



3M™ Low Static Polyimide Film Tape 5419



3M™ Low Static Polyimide Film Tape 7419



3M™ Lined Low-Static Polyimide Film Tape 7419L

1 ▶		3 ▶			
Performance Features		Chemical and Radiation Resistant, Flame Retardant*, Halogen Free**, Virtually No Adhesive Residue	Low Static, Chemical and Radiation Resistant, Flame Retardant*, Halogen Free**, Virtually No Adhesive Residue	Low Static, Acrylic Adhesive, Chemical Resistant, Virtually No Adhesive Residue	Low Static, Lined, Acrylic Adhesive, Chemical Resistant, Virtually No Adhesive Residue
Color		Amber	Gold	Amber	Amber
Total Thickness ATSM D-3652***		2.7 mil (0.07 mm)	2.7 mil (0.07 mm)	1.8 mil (0.046 mm)	1.8 mil (0.046 mm)
Adhesive		Silicone	Silicone	4 ▶ Acrylic	Acrylic
Backing		Polyimide	Polyimide	Polyimide	Polyimide
Primary Liner		None	None	None	Polyester
2 ▼ Temp Range	°C	-73 to 260	-73 to 260	-40 to 260	-40 to 260
	°F	-100 to 500	-100 to 500	-40 to 500	-40 to 500
Adhesion to Stainless ATSM D-3330***		22 oz/in width (24 N/100 mm)	20 oz/in width (22 N/100 mm)	4 oz/in width (4.4 N/100 mm)	4 oz/in width (4.4 N/100 mm)
Tensile Strength at Break ATSM D-3759***		34 lbs/in width (599 N/100 mm)	34 lbs/in width (599 N/100 mm)	34 lbs/in width (599 N/100 mm)	34 lbs/in width (599 N/100 mm)
Dielectric Strength (volts) ATSM D-149***		7,000	7,000	6,000	6,000
Elongation at Break ATSM D-3759***		62%	60%	—	—

*Flame Retardancy per UL-510 product category: OANZ2 File E230409

**Halogen Free is defined as having maximum 900ppm bromine, maximum 900ppm chlorine, and maximum 1500ppm total bromine and chlorine, per IEC 61429-2-21

***Methods listed as ASTM are tested in accordance with the ASTM method noted

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Up to 311°F / 155°C



Up to 500°F / 260°C



Are you still unsure which 3M™ High Temperature Tape solution is right for your application?

Our team of Electronics Assembly Materials specialists will help you select the right materials.

Regulatory: For regulatory information about this product, contact your 3M representative.

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