



Technical Data Sheet

3M™ Membrane Switch Product with Adhesive 200MP 7953MP

Product Description

Finite Element Analysis (FEA) data is available for this product at: [3m.com/FEA](https://www.3m.com/FEA)

3M™ High Performance Acrylic Adhesive 200MP is a popular choice and industry standard, for graphic attachment and general industrial joining applications. It provides outstanding adhesion to metal and high surface energy plastics. This adhesive provides some initial repositionability for placement accuracy when bonding to plastics. It also performs well after exposure to humidity and hot/cold cycles and provides the assurance the switch will perform through difficult environmental conditions and millions of actuations.

Product Features

- Up to 400°F short-term heat resistance
- Excellent solvent resistance
- Excellent shear strength to resist slippage and edge lifting

3M™ Double Coated Membrane Switch Spacers feature 2.0 or 5.0 mil adhesive layers for industry-standard, high-performance requirements.

Technical Information Note

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

Typical Physical Properties

Property	Values	Additional Information
Adhesive Type	Acrylic	
Adhesive Carrier	Polyester Film (PET)	
Liner	PCK	
Primary Liner Type	58# Polycoated Kraft Paper (PCK)	View
Notes: Inner liner is primary (stays with die-cut part); Outer liner is secondary (removed first)		
Secondary Liner Type	58# Polycoated Kraft Paper (PCK)	View
Notes: Inner liner is primary (stays with die-cut part); Outer liner is secondary (removed first)		
Liner Thickness	0.11 mm	

Primary Liner Thickness	0.11 mm	
Secondary Liner Thickness	0.11 mm	
Adhesive Thickness	0.04 mm	View 
Test Name: Backside		
Notes: The caliper listed is based on a calculation from manufacturing controlled adhesive coat weight. While past data pages have listed nominal thicknesses of 1 and 2 mils, the coat weight (and theoretical caliper) has not changed.		
Carrier Thickness	0.01 mm	
Total Tape Thickness (mil)	1.5 mil	View 
Test Method: ASTM D3652		
Total Tape Thickness (mm)	0.04 mm	View 
Test Method: ASTM D3652		
Adhesive Thickness	1.5 mil	View 
Test Name: Backside		
Notes: Backside adhesive is on the exterior of the roll, exposed when liner is removed.		
Adhesive Thickness	0.04 mm	View 
Test Name: Faceside		
Notes: Faceside adhesive is on the interior of the roll, exposed when unwound and liner removed.		
Adhesive Thickness	1.5 mil	View 
Test Name: Faceside		
Notes: Faceside adhesive is on the interior of the roll, exposed when unwound and liner removed.		
Carrier Thickness	0.5 mil	
Liner Print	200MP	
Liner Thickness	4.2 mil	
Primary Liner Thickness	4.2 mil	

Secondary Liner Thickness	4.2 mil
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Typical Performance Characteristics

Property	Values	Additional Information
90° Peel Adhesion	5.5 N/cm	View 
Test Method: ASTM D3330		
Test Name: 90° Peel Adhesion		
Temp C: 23C		
Temp F: 72F		
Substrate: Stainless Steel		
Backing: 2 mil PET		
Notes: 12 in/min (300 mm/min)		
90° Peel Adhesion	50 oz/in	View 
Test Method: ASTM D3330		
Test Name: 90° Peel Adhesion		
Temp C: 23C		
Temp F: 72F		
Environmental Condition: 50%RH		
Substrate: Stainless Steel		
Backing: 2 mil PET		
90° Peel Adhesion	18 N/cm	View 
Test Method: ASTM D3330 (modified)		
Test Name: 90° Peel Adhesion		
Dwell/Cure Time: 72.0		
Dwell Time Units: hr		
Temp C: 70C		
Temp F: 158F		
Environmental Condition: 50%RH		
Substrate: Stainless Steel		
Backing: PET Film		
Notes: 12 in/min (300 mm/min)		
90° Peel Adhesion	160 oz/in	View 
Test Method: ASTM D3330 (modified)		
Test Name: 90° Peel Adhesion		
Dwell/Cure Time: 72.0		
Dwell Time Units: hr		
Temp C: 70C		
Temp F: 158F		
Environmental Condition: 50%RH		
Substrate: Stainless Steel		
Backing: PET Film		
Notes: 12 in/min (300 mm/min)		
90° Peel Adhesion	3.5 N/cm	View 
Test Method: ASTM D3330 (modified)		
Test Name: 90° Peel Adhesion		
Substrate: Aluminum		
Backing: PET Film		
90° Peel Adhesion	32 oz/in	

View 

Test Method: ASTM D3330
Test Name: 90° Peel Adhesion Temp C: 23C Temp F: 72F Environmental Condition: 50%RH Substrate: Aluminum Backing: 2 mil PET
Notes: 12 in/min (300 mm/min)

90° Peel Adhesion Aluminum

8.2 N/cm

View 

Test Method: ASTM D3330

Test Name: 90° Peel Adhesion

Dwell/Cure Time: 72.0

Dwell Time Units: hr

Temp C: 23C

Temp F: 72F

Environmental Condition: 50%RH

Substrate: Aluminum

Backing: 2 mil PET

Notes: 12 in/min (300 mm/min)

90° Peel Adhesion Aluminum	75 oz/in	View 
Test Method: ASTM D3330		
Test Name: 90° Peel Adhesion		
Dwell/Cure Time: 72.0		
Dwell Time Units: hr		
Temp C: 23C		
Temp F: 72F		
Environmental Condition: 50%RH		
Substrate: Aluminum		
Backing: 2 mil PET		
Notes: 12 in/min (300 mm/min)		

90° Peel Adhesion	16.6 N/cm	View 
Test Method: ASTM D3330 (modified)		
Test Name: 90° Peel Adhesion		
Dwell/Cure Time: 72.0		
Dwell Time Units: hr		
Temp C: 70C		
Temp F: 158F		
Environmental Condition: 50%RH		
Substrate: Aluminum		
Backing: PET Film		

90° Peel Adhesion	152 oz/in	View 
Test Method: ASTM D3330 (modified)		
Test Name: 90° Peel Adhesion		
Dwell/Cure Time: 72.0		
Dwell Time Units: hr		
Temp C: 70C		
Temp F: 158F		
Environmental Condition: 50%RH		
Substrate: Aluminum		
Backing: PET Film		

90° Peel Adhesion	4.8 N/cm	View 
Test Method: ASTM D3330 (modified)		

Test Name: 90° Peel Adhesion
Substrate: PET
Backing: PET Film

Notes: 12 in/min (300 mm/min)

90° Peel Adhesion	44 oz/in	View	^
Test Method: ASTM D3330 (modified) Test Name: 90° Peel Adhesion Substrate: PET Backing: PET Film Notes: 12 in/min (300 mm/min)			
90° Peel Adhesion	8 N/cm	View	^
Test Method: ASTM D3330 (modified) Test Name: 90° Peel Adhesion Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 23C Temp F: 72F Environmental Condition: 50%RH Substrate: PET Backing: PET Film			
90° Peel Adhesion	73 oz/in	View	^
Test Method: ASTM D3330 (modified) Test Name: 90° Peel Adhesion Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 23C Temp F: 72F Environmental Condition: 50%RH Substrate: PET Backing: PET Film			
90° Peel Adhesion	13.7 N/cm	View	^
Test Method: ASTM D3330 (modified) Test Name: 90° Peel Adhesion Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 70C Temp F: 158F Environmental Condition: 50%RH Substrate: PET Backing: PET Film			
90° Peel Adhesion	125 oz/in	View	^
Test Method: ASTM D3330 (modified) Test Name: 90° Peel Adhesion Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 70C Temp F: 158F Environmental Condition: 50%RH Substrate: PET Backing: PET Film			
90° Peel Adhesion	5.1 N/cm	View	^
Test Method: ASTM D3330 (modified)			

Substrate: Polycarbonate (PC)
Backing: PET Film

Notes: 12 in/min (300 mm/min)

90° Peel Adhesion	47 oz/in	View 
Test Method: ASTM D3330 (modified) Test Name: 90° Peel Adhesion Substrate: Polycarbonate (PC) Backing: PET Film Notes: 12 in/min (300 mm/min)		
90° Peel Adhesion	8.2 N/cm	View 
Test Method: ASTM D3330 (modified) Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 70C Temp F: 158F Substrate: Polycarbonate (PC) Backing: PET Film		
90° Peel Adhesion	75 oz/in	View 
Test Method: ASTM D3330 (modified) Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 70C Temp F: 158F Substrate: Polycarbonate (PC) Backing: PET Film		
Tensile Strength	1593 lb/in	View 
Test Method: ASTM D2370 Substrate: Stainless Steel Backing: PET Film		
Overlap Shear Strength	0.72 MPa	View 
Test Method: ASTM D1001 Substrate: Stainless Steel Backing: PET Film		
Overlap Shear Strength	105 lb/in²	View 
Test Method: ASTM D1001 Substrate: Stainless Steel Backing: PET Film		
Overlap Shear Strength	0.61 MPa	View 
Test Method: ASTM D1001 Substrate: Polycarbonate (PC) Backing: PET Film		
Overlap Shear Strength	88 lb/in²	View 

Test Method: ASTM D1001

Substrate: Polycarbonate (PC)
Backing: PET Film

Short Term Temperature Resistance	300 °F	
Short Term Temperature Resistance	149 °C	
Long Term Temperature Resistance	93 °C	
Long Term Temperature Resistance	200 °F	
Static Shear	10,000+ min	View ^
Test Method: ASTM D3654 Substrate: Stainless Steel Backing: PET Film Notes: 0.5 in² sample size		
Static Shear	10,000+ min	View ^
Test Method: ASTM D3654 Substrate: Stainless Steel Backing: PET Film Notes: 0.5 in² sample size		
90° Peel Adhesion Stainless Steel	113 oz/in	View ^
Test Method: ASTM D3330 Test Name: 90° Peel Adhesion Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 23C Temp F: 72F Environmental Condition: 50%RH Substrate: Stainless Steel Backing: 2 mil PET Notes: 12 in/min (300 mm/min)		
90° Peel Adhesion Stainless Steel	12.4 N/cm	View ^
Notes: 12 in/min (300 mm/min) ASTM D3330 72 hour dwell on Stainless Steel at 23°C (72°F) and 50% RH Backing: 2 mil Polyester		
90° Peel Adhesion Polycarbonate (PC)	8.3 N/cm	View ^
Test Method: ASTM D3330 Test Name: 90° Peel Adhesion Dwell/Cure Time: 72.0 Dwell Time Units: hr Temp C: 23C Temp F: 72F		

Environmental Condition: 50%RH
Substrate: Polycarbonate (PC)
Backing: 2 mil PET

Notes: 12 in/min (300 mm/min)

90° Peel Adhesion Polycarbonate (PC)	76 oz/in	View 
Test Method: ASTM D3330		
Test Name: 90° Peel Adhesion		
Dwell/Cure Time: 72.0		
Dwell Time Units: hr		
Temp C: 23C		
Temp F: 72F		
Environmental Condition: 50%RH		
Substrate: Polycarbonate (PC)		
Backing: 2 mil PET		
Notes: 12 in/min (300 mm/min)		

Electrical and Thermal Properties

Property	Values	Additional Information
Insulation Resistance	1.7 x 10^13 Ω	View 
Test Method: Mil-I-46058C		
Dissipation Factor	0.017	View 
Test Method: ASTM D150		
Dielectric Strength	1400 V/mil	View 
Test Method: ASTM D149		
Notes: Short time method (air)		
Volume Resistivity	5.8 x 10^14 Ω-cm	View 
Test Method: ASTM D257		
Temp C: 23C		
Temp F: 73F		
Surface Resistivity	>5.6 x 10^16 Ω	View 
Test Method: ASTM D257		
Coefficient of Thermal Expansion	6.7 x 10^-4 m/m/°C	View 
Test Method: ASTM D696		

Typical Environmental Performance

Humidity Resistance – High humidity has a minimal effect on adhesive performance. Bond strength shows no significant reduction after exposure for 7 days at 90°F (32°C) and 90% relative humidity.

UV Resistance – When properly applied, nameplates and decorative trim parts are not adversely affected by outdoor exposure.

Water Resistance – Immersion in water has no appreciable effect on the bond strength. After 100 hours at room temperature, the high bond strength is maintained.

Temperature Cycling Resistance – High bond strength is maintained after cycling four times through:

4 hours at 158°F (70°C)

4 hours at -20°F (-29°C)

4 hours at 73°F (22°C)

Chemical Resistance – When properly applied, nameplate and decorative trim parts will hold securely after exposure to numerous chemicals including oil, mild acids and alkalis.

Bond Build-up: The bond strength of 3M™ High Performance Acrylic Adhesive increases as a function of time and temperature as the adhesive further wets the surface and reaches maximum bond strength after 72 hours at room temperature.

Temperature/Heat Resistance: 3M™ High Performance Acrylic Adhesive on polyester carriers is usable for short periods (minutes, hours) at temperatures up to 300 °F (149°C) and for intermittent longer periods (days, weeks) up to 250°F (121°C).

Lower Temperature Service Limit: -40°F (-40°C).

Storage and Shelf Life

It is suggested that products are stored at room temperature conditions of 70°F (21°C) and 50% relative humidity.

If stored properly, product retains its performance and properties for 24 months from date of manufacture.

Recognition/Certification

TSCA: This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements

MSDS: 3M has not prepared a MSDS for this product which is not subjected to the MSDS requirements of the Occupational Safety and Health Administration’s Hazard Communication Standard, 29 C.F.R.1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, this product should not present a health and safety hazard. However, use or processing of the product in a manner not in accordance with the directions for use may affect its performance and present potential health and safety hazards.

UL: These products have been recognized by Underwriters Laboratories, Inc. under UI 746C and UL 969. For more information on the UL Certification, please visit the website at <http://www.3M.com/converter>, select UL Recognized Materials, then select the specific product area.

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Bottom Matter

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3M is a trademark of 3M Company

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Handling/Application Information

Application Examples

- 3M™ Double Lineree Adhesive Transfer Tapes are ideal for selective die cutting

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40071896/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=7953MP

ISO Statement

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

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