



# Technical Data Sheet

## 3M™ Membrane Switch Product with Adhesive 200MP 9059MP



[Product Details](#)



[Regulatory Info/SDS](#)

### Product Description

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

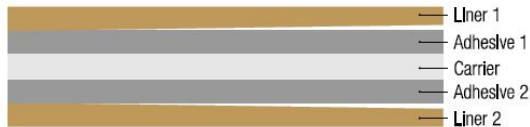
3M™ High Performance Acrylic Adhesive 200MP is a popular choice and industry standard, for graphic attachment and general industrial joining applications. It provides outstanding adhesion to metal and high surface energy plastics. This adhesive provides some initial repositionability for placement accuracy 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

- The High Performance Acrylic Adhesive 200MP offers excellent short-term heat resistance and will perform at temperatures up to 400°F (204°C)
- The 200MP adhesive provides high resistance to solvents and humidity
- The 2 mil nominal adhesive tape delivers excellent shear strength to metal surfaces

- 3M Membrane Switch products use the 200MP adhesive, which provides long lasting membrane switches

3M™ Double Coated Membrane Switch Spacers feature 2.0 mil adhesive layer 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

Attribute Name	Test Method	Test Condition	Value
Adhesive Type			200MP Acrylic
Adhesive Carrier			Polyester Film (PET)
Adhesive Thickness		Faceside	0.05 mm (2 mil) <sup>1</sup>
Carrier Thickness			0.13 mm (5 mil)
Adhesive Thickness		Backside	0.05 mm (2 mil) <sup>2</sup>
Total Tape Thickness	ASTM D3652		0.23 mm (9 mil)
Liner Print			200MP
Primary Liner Type			94# Polycoated Kraft Paper (PCK) <sup>3</sup>
Secondary Liner Type			94# Polycoated Kraft Paper (PCK) <sup>3</sup>

Attribute Name	Test Method	Test Condition	Value
Primary Liner Thickness			0.18 mm (7 mil)
Secondary Liner Thickness			0.18 mm (7 mil)

<sup>1</sup> Facese adhesive is on the interior of the roll, exposed when unwound and liner removed.

<sup>2</sup> Backside adhesive is on the exterior of the roll, exposed when liner is removed.

<sup>3</sup> Inner liner is primary (stays with die-cut part); Outer liner is secondary (removed first)

## Typical Performance Characteristics

Dwell Time: 72 h  
Backing: 2 mil Aluminum Foil  
Test Method: ASTM D3330

Attribute Name	Temperature	Substrate	Value
90° Peel Adhesion	22 °C (72 °F)	Stainless Steel	9.1 N/cm (83 oz/in) <sup>1</sup>
90° Peel Adhesion	70 °C (158 °F)	Stainless Steel	10.2 N/cm (93 oz/in) <sup>1</sup>
180° Peel Adhesion	22 °C (72 °F)	Stainless Steel	9.3 N/cm (85 oz/in) <sup>1</sup>
90° Peel Adhesion	22 °C (72 °F)	Aluminum	9.4 N/cm (86 oz/in) <sup>1</sup>
90° Peel Adhesion	22 °C (72 °F)	Polyester (PET)	3.8 N/cm (35 oz/in) <sup>1</sup>
90° Peel Adhesion	22 °C (72 °F)	Polycarbonate (PC)	9.7 N/cm (89 oz/in) <sup>1</sup>

<sup>1</sup> 12 in/min (300 mm/min)

Substrate: Aluminum  
Temperature: 22 °C (72 °F)  
Dwell Time: 72 h

Attribute Name	Test Method	Value
Overlap Shear Strength	ASTM D1002, ISO 4587	2.1 MPa (305 lb/in <sup>2</sup> ) <sup>1</sup>

<sup>1</sup> Pressure was obtained via a Mechanical Press set at 20psi for 15 seconds on 1 x 1 sample Crosshead speed 12 in/min

## Static Shear

Substrate: Stainless Steel  
Dwell Time: 72 h  
Backing: 2 mil Aluminum Foil  
Test Method: ASTM D3654

Temperature	Test Condition	Value
22 °C (72 °F)	1000g	10,000 min <sup>1</sup>
70 °C (158 °F)	500g	10,000 min <sup>1</sup>

<sup>1</sup> 1 in x 1 in sample area, test terminated after 10,000 minutes

Substrate: Stainless Steel  
Temperature: 22 °C (72 °F)  
Dwell Time: 72 h  
Backing: 2 mil Aluminum Foil  
Test Method: ASTM D3654

Attribute Name	Environmental Condition	Test Condition	Value
Long Term Temperature Resistance	149°C (300°F)	500g wt for at least 10,000 min	10,000 min <sup>1</sup>
Short Term Temperature Resistance	204°C (400°F)	500g wt for at least 60 min	500 min <sup>1</sup>

<sup>1</sup> 6.5cm<sup>2</sup> (1in<sup>2</sup>) Sample area

## Typical Environmental Characteristics

### Environmental Resistance

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).

## Electrical and Thermal Properties

Attribute Name	Test Method	Temperature	Test Condition	Value
Coefficient of Thermal Expansion	ASTM D696		First Heat (125°C to 175°C)	3.5 x 10 <sup>-1</sup> m/m/°C
Thermal Conductivity	ASTM C518	43 °C (109 °F)		0.171 W/m/K <sup>1</sup>

<sup>1</sup> results listed are at 109°F

Attribute Name	Test Method	Temperature	Value
Dissipation Factor	ASTM D150	22 °C (72 °F)	0.013
Dielectric Strength	ASTM D149		1,661 V/mil <sup>1</sup>
Volume Resistivity	ASTM D257	22 °C (72 °F)	7.8 x 10 <sup>14</sup> Ω-cm
Breakdown Voltage			15,683 V

<sup>1</sup> Short time method (air)

## **Handling/Application Information**

### **Application Examples**

- 3M™ Double Coated Membrane Switch Spacers are ideal for circuit separation

### **Storage and Shelf Life**

Store under normal conditions of 16° to 27°C (60° to 80°F) and 40 to 60% relative humidity in the original packaging, out of direct sunlight. For best performance, use this product within 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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### **Automotive Disclaimer**

#### **Select Automotive Applications:**

This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

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### **ISO Statement**

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

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