English
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Technical Data Sheet

3M™ VHB™ Adhesive Transfer Tape F9469PC

Product Description

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

3M™ VHB™ Adhesive Transfer Tape F9469PC utilizes the 3M™ High Performance Acrylic Adhesive 100MP, which has excellent long term holding power with much higher adhesion strength than typical pressure sensitive adhesive systems. This 3M™ VHB™ Adhesive Transfer Tape is transparent and is ideal for use in many interior and exterior industrial applications to replace rivets, spot welds, liquid adhesives, and other permanent fasteners.

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	
Liner	58# Polycoated Kraft Paper (PCK)	
Liner Thickness	0.106 mm	
Liner Print	3M VHB	
Total Tape Thickness (mil)	5.2 mil	View
Test Method: ASTM D3652		
Total Tape Thickness (mm)	0.13 mm	View
Test Method: ASTM D3652		
Liner Thickness	4.2 mil	

Density	1.012 g/cm³
Density	0.04 lb/in³
UL Listing	3M™ Adhesive 100MP has UL 746C listings with different temperature ratings on many commonly used substrate materials as indicated in the table below. Qualification for this listing requires high strength retention after extended exposure to high temperatures, humidity, cold, and cyclic conditions. - Substrates Temperature Rating Stainless Steel, Glass/Epoxy, Enameled Steel, Ceramic, Phenolic, Nickel Plated Steel: 110°C ABS, Polycarbonate, Aluminum, Galvanized Steel: 90°C Unplasticized PVC: 75°C - - Our testing has shown that 3M™ Adhesive 100MP yielded 92% retention of peel adhesion after the roll was aged for more than 5 years at an elevated temperature of 150°F (65°C). The initial tack and liner release properties were still excellent. This testing result suggests that the tape is relatively unaffected by long-term exposure to elevated temperatures. Bonds made with 3M™ Adhesive 100MP can tolerate periodic short-term exposures to temperatures up to 500°F (260°C). - 3M™ Adhesive 100MP is thermoplastic in nature, becoming softer as temperature increases and firmer as temperature decreases. As the adhesive becomes firmer, the performance generally increases. This performance increase is demonstrated graphically in Figure 1 for 3M™ VHB™ Adhesive Transfer Tape F9473PC. It shows the breakaway and peel forces as a function of temperature. The exception of the performance increase is at very low temperatures when high impact stresses along with high frequencies are encountered. At low temperatures, the tape becomes very firm and glassy; the ability to absorb impact energy is reduced.

Dynamic Mechanical Properties

For engineers who have to use adhesive properties for modeling and analysis purpose, we suggest a Young's modulus of 4.5 x 102 kPA (measured at 23°C & 1 Hz) and a Poisson's ratio of 0.499. For detailed adhesive modulus and damping properties, please refer to the nomograph for 3M™ VHB™ Adhesive Transfer Tapes, which is available upon request through our technical service group. The nomograph presents adhesive modulus and damping properties as functions of temperature and frequency.

Typical Performance Characteristics

Additional Test notes

3M™ VHB™ Adhesive Transfer Tapes F9460PC, F9469PC, and F9473PC are 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 3M™ VHB™ Adhesive Transfer Tape becomes very firm and glassy

Property	Values	Additional Information
180° Peel Adhesion	14 N/cm	View
Test Method: ASTM D3330 Backing: 2 mil Aluminum Foil Notes: 12 in/min (300 mm/min)		
180° Peel Adhesion	128 oz/in	View
Test Method: ASTM D3330 Backing: 2 mil Aluminum Foil Notes: 12 in/min (300 mm/min)		
Normal Tensile	690 kPa	View
Test Method: ASTM D897 Substrate: Aluminum		
Normal Tensile	100 lb/in²	View
Test Method: ASTM D897 Substrate: Aluminum		
Overlap Shear Strength	550 kPa	View
Test Method: ASTM D1002 Substrate: Stainless Steel		
Overlap Shear Strength	80 lb/in²	View
Test Method: ASTM D1002 Substrate: Stainless Steel		
Short Term Temperature Resistance	260 °C	View
Notes: No change in room temperature dynamic shear properties following 4 hour conditioning at indicated temperature with 100 g/static load. (Represents minutes, hour in a process type temperature exposure).		
Short Term Temperature Resistance	500 °F	View
Notes: No change in room temperature dynamic shear properties following 4 hour conditioning at indicated temperature with 100 g/static load. (Represents minutes, hour in a process type temperature exposure).		
Long Term Temp C	149 °C	View

Notes: Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

Long Term Temp F	300 °F	View

Notes: Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

Short Term Temperature Resistance	500 °F	View

Test Condition: Short Term (minutes, hour)

Short Term Temperature Resistance	260 °C	View

Test Condition: Short Term (minutes, hour)

Long Term Temp C	149 °C	View

Test Condition: Long Term (day, weeks)

Long Term Temp F	300 °F	View

Test Condition: Long Term (day, weeks)

Static Shear	1000 g	View

Test Method: ASTM D3654

Test Condition: Room Temperature

Notes: Static shear measured at various temperatures and gram loadings on stainless steel. Will hold listed weight for 10,000 minutes.

Static Shear	1000 g	View

Test Method: ASTM D3654

Test Condition: 66°C (150°F)

Notes: Static shear measured at various temperatures and gram loadings on stainless steel. Will hold listed weight for 10,000 minutes.

Static Shear	1000 g	View

Test Method: ASTM D3654

Test Condition: 93°C (200°F)

Notes: Static shear measured at various temperatures and gram loadings on stainless steel. Will hold listed weight for 10,000 minutes.

Static Shear	1000 g	View

Test Method: ASTM D3654

Test Condition: 121°C (250°F)

Notes: Static shear measured at various temperatures and gram loadings on stainless steel. Will hold listed weight for 10,000 minutes.

Static Shear	500 g	View

Test Method: ASTM D3654

Test Condition: 149°C (300°F)

Notes: Static shear measured at various temperatures and gram loadings on stainless steel. Will hold listed weight for 10,000 minutes.

Static Shear	500 g	View

Test Method: ASTM D3654

Test Condition: 177°C (350°F)

Notes: Static shear measured at various temperatures and gram loadings on stainless steel. Will hold listed weight for 10,000 minutes.

Solvent Resistance	No apparent degradation when exposed to splash testing of many common solvents and fluids including gasoline, JP-4 fuel, mineral spirits, motor oil, ammonia cleaner, acetone and methyl ethyl ketone. (3 splash testing cycles: 20 seconds submersion, & 20 seconds air dry.)
UV Resistance	Excellent UV resistance through outdoor weathering tests and weather-O-meter tests.

Available Sizes

Property	Values	Additional Information
Note	Subject to Minimum Order Requirements	
Standard Roll Length	55 m	
Standard Roll Length	60 yd	
Maximum Length	55 m	View

Width: 1/4 in to 3/8 in widths

Maximum Length	60 yd	View

Width: 1/4 in to 3/8 in widths

Maximum Length	220 m	View

Width: 3/8 in to 1 in widths

Maximum Length	240 yd	View

Width: 3/8 in to 1 in widths

Maximum Length	330 m	View
Width: 1 in to 3 in		
Maximum Length	360 yd	View
Width: 1 in to 3 in		
Maximum Length	330 m	View
Width: 3 in and wider		
Maximum Length	360 yd	View
Width: 3 in and wider		
Normal Slitting Tolerance	0.8 mm	
Normal Slitting Tolerance	±1/32 in	

Electrical and Thermal Properties

Property	Values	Additional Information
Insulation Resistance	> 1 x 10^6 MΩ/in²	View
Test Method: ASTM D1000		
Dielectric Strength	3000 V	View
Test Method: ASTM D149 Test Condition: Room Temperature		
Dielectric Strength	2600 V	View
Test Method: ASTM D149 Test Condition: 125°C		
Dielectric Strength	1900 V	View
Test Method: ASTM D149 Test Condition: 175°C		
Dielectric Strength	4.08	View
Test Method: ASTM D150 Test Condition: 1kHz, 86°F(30°C)		
Thermal Conductivity	0.16 W/m/K	

		View
Test Method: ASTM C177		
Thermal Conductivity	1.1 (btu-in)/(h-ft²-°F)	View
Test Method: ASTM C177		
Coefficient of Thermal Expansion	770 x 10^-6 m/m/°C	

Weight Loss and Outgassing Performance

Property	Values	Additional Information
Total Mass Loss	1.29 %	View
Test Method: ASTM E595-77/84/90		
Volatile Condensible Materials	0.02 %	View
Test Method: ASTM E595-77/84/90		
Note	The testing was done per ASTM E595-77/84/90 as indicated in the NASA Reference Publication 1124, Revision 4, “Outgassing Data for Selecting Spacecraft Materials”, June 1997. The results are reported as percentage of total mass loss (TML) and percentage of Volatile Condensible Materials (VCM), respectively, as shown below.	

Storage and Shelf Life

Humidity controlled storage: 60° to 80°F (16° to 27°C) and 40-60% R.H.
If stored properly, product retains its performance and properties for 24 months from date of manufacture. If the products have been exposed to severe weather conditions, we suggest to precondition the products at the above storage conditions for at least 24 hours before using them.

Industry Specifications

Property	Values	Additional Information
Industry Specifications	UL 746C UL 879 (File E65361)	
FDA Statement	This product might be suitable for use in indirect food contact applications. Please see the applicable Regulatory Data Sheet for more information relating to FDA	

compliance.

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 Ul 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.
Note: One of 3M's core values is to respect our social and physical environment. 3M is committed to comply with ever-changing, global, regulatory and consumer environmental, health, and safety (EHS) requirements. As a service to our customers, 3M is providing information on the regulatory status of many 3M products. Further regulation information including that for OSHA, USCPSI, California Proposition 65, READY and RoHS, can be found at 3M.com/regs.

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.

Bottom Matter

3M
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Trademarks

3M and VHB are trademarks of 3M.

Handling/Application Information

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.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40065862/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=F9469PC

ISO Statement

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

Information

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