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Technical Data Sheet

3M™ VHB™ Adhesive Transfer Tape F9460PC

Product Details

Regulatory Info/SDS

Product Description

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

3M™ VHB™ Adhesive Transfer Tape F9460PC 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

Attribute Name	Test Method	Value
Adhesive Type		Acrylic
Density		1.012 g/cm³ (0.04 lb/in³)
Total Tape Thickness	ASTM D3652	0.06 mm (2.3 mil)
Liner		58# Polycoated Kraft Paper (PCK)
Liner Print		3M VHB
Liner Thickness		0.106 mm (4.2 mil)

Typical Performance Characteristics

Temperature: 22 °C (72 °F)
Backing: 2 mil Aluminum Foil

Attribute Name	Test Method	Value
180° Peel Adhesion	ASTM D3330	12.3 N/cm (112 oz/in) [1]

[1] 12 in/min (300 mm/min)

Attribute Name	Test Method	Temperature	Substrate	Value
Overlap Shear Strength	ASTM D1002		Stainless Steel	550 kPa (80 lb/in²)
Normal Tensile	ASTM D897	22 °C (72 °F)	Aluminum	690 kPa (100 lb/in²)

Static Shear

Test Method: ASTM D3654

Temperature	Value
22 °C (72 °F)	1,000 g [1]
66 °C (150 °F)	1,000 g [1]
93 °C (200 °F)	1,000 g [1]
121 °C (250 °F)	1,000 g [1]
149 °C (300 °F)	500 g [1]
177 °C (350 °F)	500 g [1]

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

Attribute Name	Value
Short Term Temperature Resistance	260 °C (500 °F) [1]
Long Term Temperature Resistance	149 °C (300 °F) [2]

[1] 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).

[2] Maximum temperature where tape supports at least 250 g load per 0.5 in^2 in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

Attribute Name	Value
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

Typical Environmental Performance

Attribute Name	Value
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.

Electrical and Thermal Properties

Attribute Name	Test Method	Value
Thermal Conductivity	ASTM C177	0.16 W/m/K (1.1 (btu-in)/(h-ft^2-°F))

Attribute Name	Test Method	Temperature	Test Condition	Value
Dielectric Constant	ASTM D150	22 °C (72 °F)	1 KHz	4.08
Dielectric Strength	ASTM D149	125 °C (257 °F)		1,000 V
Dielectric Strength	ASTM D149	177 °C (350 °F)		1,000 V
Dielectric Strength	ASTM D149	22 °C (72 °F)		1,200 V
Insulation Resistance	ASTM D1000			> 1 x 10^6 MΩ/in^2

Weight Loss and Outgassing Performance

Attribute Name	Test Method	Value
Total Mass Loss	ASTM E595-77/84/90	0.85 %
Volatile Condensible Materials	ASTM E595-77/84/90	0 %
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.

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.

Industry Specifications

UL 746C
UL 879 (File E65361)

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.

Available Sizes

Attribute Name	Width	Value
Maximum Length	1/4 in to 3/8 in widths	55 m (60 yd)
Maximum Length	3/8 in to 1 in widths	220 m (240 yd)
Maximum Length	1 in to 3 in	330 m (360 yd)
Maximum Length	3 in and wider	330 m (360 yd)
Normal Slitting Tolerance		0.8 mm (±1/32 in)
Note		Subject to Minimum Order Requirements
Standard Roll Length		55 m (60 yd)

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.

Information

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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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