



VHB™ Architectural Panel Tapes

G11F • B11F • G16F • B16F • G90F • B90F

Technical Data **October 2016**

Product Description

3M™ VHB™ Architectural Panel Tapes are durable, high performance double-sided pressure sensitive acrylic foam tapes. These tapes have been used for many applications in the construction industry, including the manufacture of architectural panels for curtain walls, exterior building cladding and interior panel and trim attachment. In many situations, 3M™ VHB™ Architectural Panel Tapes can replace rivets, spot welds, liquid adhesives, sealants and other permanent fasteners and provide immediate handling strength during the fabrication process.

Construction

Tape Type:	G11F	B11F	G16F	B16F	G90F	B90F
Tape Color:	Gray	Black	Gray	Black	Gray	Black
Adhesive:	Multi-Purpose Acrylic					
Adhesive Carrier:	Acrylic Foam (closed cell)					
Thickness:	0.045" (1.1 mm)		0.062" (1.6 mm)		0.090" (2.3 mm)	
Density:	45 lb./ft. ³ (720 kg/m ³)					
Liner:	Red film		Red film (printed)		Red film (printed)	

Typical Physical Properties

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

Tape Type:	G11F	B11F	G16F	B16F	G90F	B90F
Peel Adhesion: ASTM D3330 Anodized Aluminum	25 lb./in. (438 N/100 mm)		30 lb./in. (525 N/100 mm)		30 lb./in. (525 N/100 mm)	
Normal Tensile: ASTM D897 Aluminum T-block	85 lb./in. ² (585 kPa)		80 lb./in. ² (550 kPa)		70 lb./in. ² (480 kPa)	
Dynamic Shear: ASTM D1002 Anodized Aluminum	70 lb./in. ² (480 kPa)		70 lb./in. ² (480 kPa)		65 lb./in. ² (450 kPa)	
Static Shear: ASTM D3654 Stainless Steel - Holds 10,000 min.	72°F (22°C) 150°F (66°C) 200°F (93°C)		2.2 lb./0.5 in. ² (1000 g/3.2 cm ²) 1.1 lb./0.5 in. ² (500 g/3.2 cm ²) 1.1 lb./0.5 in. ² (500 g/3.2 cm ²)			
Temperature Resistance: Short Term: (minutes, hours) Long Term: (days, weeks)	300°F (149°C) 200°F (93°C)		300°F (149°C) 200°F (93°C)		250°F (121°C) 200°F (93°C)	

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Short Term: 300°F (149°C) 300°F (149°C)
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Available Sizes	Tape Type:	G11F	B11F	G16F	B16F	G90F	B90F
	Standard Length:	36 yds. (32.9 m)					
	Standard Width:	1/2 in. (12 mm)		1 in. (25 mm)			
		5/8 in. (15 mm)		1.25 in. (30 mm)			
		3/4 in. (20 mm)		1.5 in. (35 mm)			
	Slitting Tolerance:	± 1/32 in. (± 0.8 mm)					
	Core Size (ID):	3.0 in. (76.2 mm)					

Design Guidelines

Note: For tape area calculations the following guidelines can be used. Each application should be reviewed by a 3M Architectural Market or 3M Technical Service Specialist.

Dynamic Loads: For dynamic tensile or shear loads, such as wind loads, a design strength of 12 psi (85 kPa) is used for 3M™ VHB™ Architectural Panel Tapes. This design strength guideline provides a safety factor of at least 5 and was established based on material property testing as well as ASTM dynamic load testing for curtain wall applications.

Static Loads: For static tensile or shear loads, such as dead weight loads with no mechanical support, snow loads and other long-term loads, a design strength of 0.25 psi (1.7 kPa) is used for 3M™ VHB™ Architectural Panel Tapes. This means 4 in² of tape per 1 lb load (60 cm² of tape per 1 kg load) should be used to support constant stress loads. This guideline provides a safety factor of at least 5.

Differential Movement: 3M™ VHB™ Architectural Panel Tapes can tolerate shear movement up to 3 times its original thickness (300% shear strain). This means 0.090" (2.3 mm) thick tapes can tolerate shear strain up to 0.27" (6.9 mm), 0.062" (1.6 mm) thick tapes can tolerate shear strain up to 0.19" (4.8 mm), and 0.045" (1.1 mm) thick tapes can tolerate shear strain up to 0.14" (3.3 mm).

Force/Stress Types: In general, when designing with 3M™ VHB™ Architectural Panel Tapes, forces acting on the tape should consist of either shear or tensile type stress loads. This allows the stress or force to be applied over the entire tape area. Applications placing cleavage or peel type stress on the tape should be avoided as this will place the stress on the leading edge of the peel or cleaving.

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Application Guidelines	Application Review	Project applications with 3M™ VHB™ Architectural Panel Tapes should be reviewed by a 3M Architectural Market or 3M Technical Service Specialist. Typical applications include stiffener bonding, architectural panel bonding in curtain wall or cladding systems, break-metal bonding and decorative trim bonding. These tapes are not to be used for structural glazing applications.
	Adhesion Testing	Adhesion testing should be conducted on project specific substrates to determine the most appropriate surface preparation method leading to high bond strength of the 3M™ VHB™ Architectural Panel Tape. Adhesion testing should be coordinated through a 3M Architectural Market Specialist. Adhesion test results will provide guidance on proper surface preparation methods, including cleaning and priming techniques, for project specific substrates and finishes.
	Fabrication Guidelines	A shop work environment is most appropriate for bonding applications with 3M™ VHB™ Architectural Panel Tape. Tape application temperature should be at least 60°F (15°C). Field bonding may be considered if the exterior temperature meets this guideline. It is also important to provide adequate pressure to the tape after it has been applied to the first prepared substrate surface and after the two parts are joined together. A pressure of 15 psi (100 kPa) or greater should be applied over the whole tape area to facilitate good contact of the tape to both substrate surfaces. Rigid surfaces may require 2 or 3 times that much pressure to make the tape experience 15 psi (100 kPa). 3M Architectural Market or 3M Technical Service Specialists are available to provide training of operators for 3M™ VHB™ Architectural Panel Tape bonding applications.

Shelf Life 3M™ VHB™ Architectural Panel Tapes have a shelf life of 24 months from date of shipment when stored at 40°F to 100°F (4°C to 38°C) and 0-95% relative humidity. The optimum storage conditions are 72°F (22°C) and 50% relative humidity.

Technical Information The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Limited Warranty

3M warrants for 24 months from the date of shipment that 3M™ VHB™ Tape will be free of defects in material and manufacture. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. This limited warranty does not cover damage resulting from the use or inability to use 3M™ VHB™ Tape due to misuse, workmanship in application, or application or storage not in accordance with 3M recommended procedures. AN APPLICATION WARRANTY EXPRESSLY APPROVED AND ISSUED BY 3M IS AN EXCEPTION. THE CUSTOMER MUST APPLY FOR A SPECIFIC APPLICATION WARRANTY AND MEET ALL WARRANTY AND PROCESS REQUIREMENTS TO OBTAIN AN APPLICATION WARRANTY. CONTACT 3M FOR MORE INFORMATION ON APPLICATION WARRANTY TERMS AND CONDITIONS.

Limitation of Remedies and Liability

If the 3M™ VHB™ Tape is proved to be defective within the warranty period stated above. THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M™ VHB™ TAPE. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

ISO 9001

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2008 standards.



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