VHB™ Structural Glazing Tapes

B23F • G23F

Technical Data **August 2014**

Product Description

3M™ VHB™ Structural Glazing Tapes are fully-cured, durable, high performance double-sided pressure sensitive acrylic foam tapes. They are used for attaching glass panels to metal frames in curtain wall systems, commercial windows and doors, skylight and canopy systems replacing commonly used mechanical fasteners, gaskets or structural silicone sealants. Application performance history since 1990 and 3rd party test results demonstrate the outstanding durability, UV resistance and temperature performance of 3M™ VHB™ Tape acrylic foam chemistry.

Product Construction

Tape Type:	B23F	G23F
Tape Color:	Black	Gray
Adhesive:	High Performance Acrylic	
Adhesive Carrier:	Acrylic Foam (closed cell)	
Thickness:	0.090 in (2.3 mm)	
Density:	45 lb/ft^3 (720 kg/m^3)	
Liner:	Red Polyethylene Film [0.05 in (0.125 mm)]	

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:	B23F	G23F
Peel Adhesion: (ASTM D 3330 Anodized Aluminum)	25 lb/in (350 N/100 mm)	
Normal Tensile: (ASTM D897 Aluminum T-block)	70 lb/in^2 (480 kPa)	
Dynamic Shear: (ASTM D1002 Anodized Aluminum)	65 lb/in^2 (450 kPa)	
Static Shear: (ASTM D3654, Stainless Steel)	72°F (22°C) 2.2 lb / 0.5 in^2 (1000 g/ 3.2 cm^2) 150°F (66°C) 1.1 lb / 0.5 in^2 (500 g/ 3.2 cm^2) 200°F (93°C) 1.1 lb / 0.5 in^2 (500 g/ 3.2 cm^2)	
Temperature Resistance:		
Short Term: (Minutes, Hours)	300°F (149°C)	
Long Term: (Days, Weeks)	200°F (93°C)	

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Available Sizes

Tape Type:	B23F	G23F
Standard Length:	36 yds (32.9 m)	
Standard Widths:	1/2 in (12mm) 5/8 in (15 mm) 3/4 in (20 mm)	1 in (25 mm) 1.25 in (30 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 Specialist or a 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™ Structural Glazing Tapes. This design strength guideline provides a safety factor of >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™ Structural Glazing Tapes. This means 4 in^2 of tape per 1 lb load (60 cm^2 of tape per 1 kg load) should be used to support constant stress loads. This guideline provides a safety factor of >5. Dead load support is required for glass panel bonding in most structural glazing applications. **Note:** Static load and dynamic load calculations should be performed on unsupported dead load structural glazing applications. The calculation resulting in the wider tape width should be used as the appropriate tape width for the specific application.
Differential Movement:	3M™ VHB™ Structural Glazing 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).
Force/Stress:	In general, when designing with 3M™ VHB™ Structural Glazing 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™ Structural Glazing tapes must be reviewed by a 3M Architectural Market Specialist or 3M Technical Service Specialist. Project drawings must be submitted to 3M to initiate the project-specific design review.
Adhesion Testing	Adhesion testing must be conducted on project specific substrates to determine the most appropriate surface preparation method leading to high bond strength of the 3M™ VHB™ Structural Glazing 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™ Structural Glazing Tape. Tape application temperature should be at least 60°F (15°C). Field bonding may be considered for deglaze/reglaze activities but only after consultation with a 3M Architectural Market or Technical Service Specialist. 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 must approve pressure application equipment for 3M™ VHB™ Structural Glazing Tape applications. 3M Architectural Market or Technical Service Specialists are available to provide training of operators for 3M™ VHB™ Architectural Panel Tape bonding applications.

Shelf Life

3M™ VHB™ Structural Glazing 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.

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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.

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 standards.

3M

Industrial Adhesives and Tapes Division

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