



VHB™ Structural Glazing Tapes

G23F • B23F

Technical Data

December, 2007

Product Description

3M™ VHB™ Structural Glazing Tape is a high performance double-coated pressure sensitive acrylic foam tape. It is used to attach glass to metal frames in glass curtain wall systems and commercial windows 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.

Application Requirements

All 3M™ VHB™ Structural Glazing Tape projects must be reviewed on a project-specific basis by a 3M representative to begin the structural glazing process. 3M™ VHB™ Structural Glazing Tape Sales and Technical Service Specialists are available to assist the customer to determine the suitability of 3M™ VHB™ Structural Glazing Tape for structural glazing applications.

Construction

Tape Type:	3M™ VHB™ Structural Glazing Tape G23F	3M™ VHB™ Structural Glazing Tape B23F
Adhesive:	High Performance Acrylic	
Adhesive Carrier:	Conformable Acrylic Closed Cell Foam	
Thickness:	2.3 mm (0.090 in.)	
Tolerance:	± 10%	
Density:	720 kg/m ³ (45 lb./ft. ³)	
Tape Color:	Gray (G)	Black (B)
Liner:	0.125 mm (0.005 in.) Red Polyethylene Film	

Typical Physical Properties and Performance Characteristics

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

Peel Adhesion: (stainless steel, ASTM D 3330)	25 lb./in. width (350 N/100 mm)	
Normal Tensile: (aluminum T-block, ASTM D 897)	70 lb./in. ² (480 kPa)	
Dynamic Overlap Shear: (stainless steel, ASTM D 1002)	65 lb./in. ² (450 kPa)	
Static Shear: (stainless steel, ASTM D 3654)	72°F (22°C)	1000 g/0.5 sq. in. (holds 10,000 min.)
	150°F (66°C)	500 g/0.5 sq. in. (holds 10,000 min.)
	200°F (93°C)	500 g/0.5 sq. in. (holds 10,000 min.)
Solvent Resistance:	Excellent	
U.V. Resistance:	Excellent	
Temperature Resistance:		
Short Term: (minutes, hours)	300°F (149°C)	
Long Term: (days, weeks)	200°F (93°C)	

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Design Guidelines

Note: For tape area calculation the following guidelines can be used. Please ensure that each project is reviewed and approved by local 3M Technical Service.

Tape Design Strength

Dynamic Loads: (deadload support)	For dynamic tensile or shear loads (such as windloads), a design strength of 12 psi (85 kPa) is used for 3M™ VHB™ Structural Glazing Tape. 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: (no deadload support)	For static tensile or shear loads (such as dead weight loads, snow loads and other long-term loads), a design strength of 0.25 psi (1.7 kPa) is used for 3M™ VHB™ Structural Glazing Tape. This means 4 in ² of 3M™ VHB™ Structural Glazing Tape per 1 lb load should be used to support static loads. This guideline provides a safety factor of at least 5.

***Important:** Static load and dynamic load calculations should be performed on unsupported deadload structural glazing applications. The calculation resulting in the wider tape width should be used as the appropriate tape width for the application.

Available Sizes

Standard Length:	36 yds. (32.9 m)
Maximum Length:	1/2 in. (12.7 mm) and wider - 72 yds. (65.8 m)
Core Diameter (ID):	3.0 in. (76.2 mm)
Width Tolerance:	± 1/32 in. (± 0.031 in., ± 0.8 mm)

Precision slitting with a tolerance of ± 1/64 in. (0.44 mm) is available with a minimum order of full web increments.

Application Guidelines

Each 3M™ VHB™ Structural Glazing Tape application will be reviewed on a project specific basis. Application guidelines will be based upon adhesion test results generated by 3M Technical Service. These project specific application guidelines will be provided to the customer and must be followed during the glass bonding process. Listed below are some typical application guidelines for a 3M™ VHB™ structural glazing project. However, these do not replace the project specific application guidelines provided by the 3M Technical Service Representative.

- For maximum bond strength, all non-glass surfaces should be thoroughly cleaned with a 50/50 IPA/water mixture to remove contaminants. Glass surfaces should be cleaned with a mixture of an IPA/water/silane solution prior to tape application. Contact 3M for further information on appropriate silane mixtures. Surfaces may require additional surface preparation that will be determined on a project specific basis.
- Ideal tape application is accomplished when temperature is between 70° and 100°F (21° and 38°C) and the bond is allowed to dwell 72 hours. Initial tape application to surfaces at temperatures below 60°F (16°C) is not recommended. However, the use of a primer may lower the minimum application temperature. Contact 3M for more information.
- Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and helps improve bond strength. Generally, this means that the tape should experience at least 15 psi (100 kPa) in roll down or platen pressure.
- After application, the bond strength will increase as the adhesive flows onto the surface. At room temperature, approximately 50% of the ultimate strength will be achieved in 10-20 minutes after pressure application, 90% after 24 hours and 100% after 72 hours. The use of a primer may accelerate the bond strength build rate. Contact 3M for more information.

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Storage	Store in original cartons at 70°F (21°C) and 50% relative humidity.
Shelf Life	When stored under proper conditions, product retains its performance and properties for 24 months from date of manufacture.
Product Use	All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.
Limited Warranty	3M warrants for 24 months from the date of manufacture 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 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.



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