



# VHB™ Structural Glazing Tape

## G23F / B23F

Technical Data

08/2006

### 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 replacing commonly used mechanical fasteners, gaskets or structural silicone sealants. Application performance and test results demonstrate the outstanding durability, UV resistance and temperature performance of 3M™ VHB™ Tape acrylic foam chemistry.

### Application Requirements

All 3M™ VHB™ Tapes glazing projects must be reviewed on a project-specific basis by a 3M representative to begin the structural glazing process. 3M™ VHB™ Structural Glazing 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.

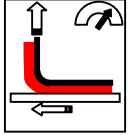

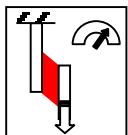
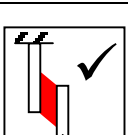
### Construction

		VHB™ G 23 F / B 23 F
<b>Adhesive</b>		High Performance Acrylic
<b>Adhesive Carrier</b>		Conformable Acrylic Closed Cell Foam
<b>Colour</b>		Grey (G23F) / Black (B23F)
<b>Thickness</b>	mm	2,3 mm ± 10%
<b>Density</b>	kg/m <sup>3</sup>	720
<b>Liner</b>		Red Polyethylene Film

**Typical Physical Properties and Performance Characteristics:<sup>1</sup>**

**VHB™ G 23 F / VHB™ B 23 F**

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

<b>Temperature resistance</b>		°C	
• long term			90
• short term			150
	<b>Peel adhesion (N/100mm)</b> according to A.F.E.R.A. 4001; after 72 h, speed 300 mm/Min.; Angle 90°; RT; Steel		350
	<b>Tensile (N/cm<sup>2</sup>)</b> ASTM D-897, nach 72 h, Al 50 mm/Min.; 6,45 cm <sup>2</sup> ; RT		48 (=480 kPa)
	<b>Dynamic Shear</b> ASTM D-1002; after 72h; steel; 12,7 mm/min; 6,45cm; RT		45 (=450 kPa)
	<b>Static Shear, static (g)</b> according to A.F.E.R.A. 4012, after 72 h RT; Steel; >10.000 Min.; 3,23 cm <sup>2</sup> ;	<b>20°C</b>	1000
		<b>65°C</b>	500
		<b>90°C</b>	500
		<b>120°C</b>	<b>Caution: The higher the temperature the more the viscous characteristic of the tape will dominate. Always do tests according to your construction.</b>
		<b>150°C</b>	

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

<b>Tape Design Strength dynamic loads</b>  (deadload support)	For dynamic tensile or shear loads (such as windloads), a design strength of  <b>8435 kg/m<sup>2</sup> or 85 kPa</b>  is used for 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.
<b>Tape Design Strength static loads</b>  (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  <b>173.5 kg/m<sup>2</sup> or 1.7 kPa</b>  can generally be used. This means that 60 cm <sup>2</sup> VHB™ per 1 kg 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. Always round up to the nearest by 5 dividable tape size.

**Note:** Always round up to the nearest whole number dividable by 5 and never round down for metric (mm) calculations.

Available Sizes:	VHB™ G23F / VHB™ B23F
Standard Length (m) (other length on request)	16.5
Standard Width (mm) (other width on request)	15, 20, 25, 30, 35, 40
Width Tolerances (mm)	± 0,4 mm
Core Diameter	76,2 mm

## Application Guidelines

Each 3M™ VHB™ Structural Glazing Tapes 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 70/29.5/0.5% mixture of IPA/water/silane solution prior to tape application.

Surfaces may require additional surface preparation that will be determined on a project specific basis. Ideal tape application is accomplished when temperature is between 20°C and 38°C and the bond is allowed to dwell 72 hours. Initial tape application to surfaces at temperatures below 16°C is not recommended. 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 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 after 20 minutes, 90% after 24 hours and 100% after 72 hours.

## 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** Storage in original cartons at 21°C and 50% relative humidity.

**Shelf Life** When stored under proper conditions product retains its performance and properties for 12 months.

**Limitations 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.

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