



**Adhesive
Solutions**

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VHB™ Structural Glazing Tape G/B 23F
June 2010

3M

VHB™ Structural Glazing Tape G/B23F

Product Data Sheet

June 2010

Supersedes: November 2009

Product Description

3M™ VHB™ Structural Glazing Tape G/B23F is a high performance double-coated pressure sensitive acrylic foam tape. It is used to attach glass to metal frames in curtain wall systems and commercial windows replacing commonly used structural silicone sealants or mechanical fasteners and gaskets. Application history since 1990 and 3rd party test results demonstrate the outstanding performance, durability, UV and temperature resistance 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 Representatives are available to assist the customer to determine the suitability of 3M™ VHB™ Structural Glazing Tape for structural glazing applications.

Physical Properties

Adhesive Type	High Performance Acrylic
Adhesive Carrier	Conformable Acrylic Closed Cell Foam
Thickness AFERA 5006	2.3 mm ± 10 %
Foam Density	720 kg/m ³
Tape Colour	B23F: Black surface, grey core G23F: Grey
Liner	0.125 mm Red Polyethylene Film

Performance Characteristics

Peel Adhesion (stainless steel, ASTM D 3330)	440 N/100 mm
Tensile Strength (aluminium T-block, ASTM D 897)	480 kPa
Dynamic Overlap Shear (stainless steel, ASTM D 1002)	450 kPa
Static Shear (stainless steel, ASTM D 3654)	
22 °C, 1000 g/3.2cm ²	> 10,000 min
66 °C, 500 g/3.2cm ²	> 10,000 min
93 °C, 500 g/3.2cm ²	> 10,000 min
Solvent Resistance	Medium
UV Resistance	Excellent
Temperature Resistance	
Short Term: (minutes, hours)	150 °C
Long Term: (days, weeks)	93 °C

Design Guidelines

Tape Design Strength for Dynamic Loads

(dead load support)*

For dynamic tensile or shear stress such as wind loads, a design strength of **85 kPa** is used for 3M™ VHB™ Structural Glazing Tape G/B23F. 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.

Tape Design Strength for Static Loads

(no dead load support)

For static tensile or shear stress such as dead weight loads, snow loads and other long-term loads, a design strength of **1.7 kPa** is used for 3M™ VHB™ Structural Glazing Tape G/B23F. This means 60 cm² of tape per 1 kg load should be used to support static loads. This guideline provides a safety factor of at least 5.

Differential Movement

(shear strain)

Two bonded surfaces like glass and an aluminium frame may experience differential movement relative to each other as a result of thermal expansion and contraction or other events such as seismic movement or slab deflection. 3M™ VHB™ Structural Glazing Tape G/B23F can tolerate shear movement up to 3 times its original thickness (300 % shear strain). This means 2.3 mm thick 3M™ VHB™ Structural Glazing Tape can safely experience shear strain up to **6.9 mm**.

*Important: 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 application.

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 Tape project. However, these do not replace the project specific application guidelines provided by the 3M Technical Service Representative.

- For maximum bond strength, non-glass surfaces should be thoroughly cleaned with a 50/50 IPA/water mixture to remove contaminants. Glass surfaces should also be cleaned with a 50/50 IPA/water mixture followed by treatment of the glass with a mixture of an IPA/water/Silane solution prior to tape application. Contact 3M for further information on appropriate Silane mixtures. Some surfaces may require additional surface preparation that will be determined on a project specific basis by a 3M Technical Services Representative.
- Ideal tape application is accomplished when temperature is between 21 °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. 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. Flat bonding surfaces and 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, vacuum or platen pressure. 3M must approve pressure application equipment for 3M™ VHB™ Structural Glazing Tape applications.
- After final bonding of the parts, immediate handling strength is achieved and glazed units can be moved as there is no curing mechanism in this process. However, the bond strength will continue to 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.

Storage	Store 3M™ VHB™ Structural Glazing Tape G/B23F in original cartons at 21°C and 50% relative humidity.
Shelf Life	3M™ VHB™ Structural Glazing Tape G/B23F has a shelf life of 24 months from date of manufacturing by 3M.
For Additional Information	To request additional product information or to arrange for sales assistance, please see below for contact details.
Important Notice	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 or application. All questions of liability relating to this product are governed by the terms of the sale subject, where applicable, to the prevailing law

Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications.

This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations

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