



# Technical Data Sheet

## 3M™ VHB™ Structural Glazing Tape G23F



[Product Details](#)



[Regulatory Info/SDS](#)

### Product Description

Finite Element Analysis (FEA) data is available for this product at: [3m.com/FEA](https://3m.com/FEA)

3M™ VHB™ Structural Glazing Tapes are fully-cured, durable, high performance double-sided pressure sensitive acrylic foam tapes. They are used for attaching glass and other infill 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.

### Technical Information Note

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

### Typical Physical Properties

Attribute Name	Test Method	Value
Adhesive Type		High Performance Acrylic
Adhesive Carrier		Acrylic Foam (closed cell)
Total Tape Thickness	ASTM D3652	2.3 mm (90 mil)
Density	ASTM D3574	720 kg/m <sup>3</sup> (45 lb/ft <sup>3</sup> ) <sup>1</sup>
Color		Gray
Liner		Red Polyethylene Film
Liner Thickness		0.125 mm (5 mil)

<sup>1</sup> Foam with adhesive

### Typical Performance Characteristics

Temperature: 22 °C (72 °F)

Attribute Name	Test Method	Substrate	Value
90° Peel Adhesion	ASTM D3330	Anodized Aluminum	52.5 N/cm (30 lb/in) <sup>1</sup>
Overlap Shear Strength	ASTM D1002	Anodized Aluminum	450 kPa (65 lb/in <sup>2</sup> )
Normal Tensile	ASTM D897	Aluminum T-block	480 kPa (70 lb/in <sup>2</sup> )

<sup>1</sup> 12 in/min (300 mm/min)

### Static Shear

Test Method: ASTM D3654

Temperature	Value
22 °C (72 °F)	1000 g/3.2cm <sup>2</sup> (2.2 lb/0.5 in <sup>2</sup> ) <sup>1</sup>
66 °C (150 °F)	500 g/3.2cm <sup>2</sup> (1.1 lb/0.5 in <sup>2</sup> ) <sup>1</sup>
93 °C (200 °F)	500 g/3.2cm <sup>2</sup> (1.1 lb/0.5 in <sup>2</sup> ) <sup>1</sup>

<sup>1</sup> Holds 10,000 min.

Attribute Name	Value
Minimum Application Temperature	15 °C (60 °F)
Short Term Temperature Resistance	149 °C (300 °F) <sup>1</sup>

Attribute Name	Value
Long Term Temperature Resistance	93 °C (200 °F) <sup>2</sup>

<sup>1</sup> No change in room temperature dynamic shear properties following 4 hour conditioning at indicated temperature with 100 g/static load. (Represents minutes, hour in a process type temperature exposure).

<sup>2</sup> Maximum temperature where tape supports at least 250 g load per 0.5 in<sup>2</sup> in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

## **Application Guidelines**

### **Application Review:**

Project applications with 3M™ VHB™ Structural Glazing Tapes must be reviewed by a 3M Application Engineer. Project drawings must be submitted to 3M to initiate the project-specific application review.

### **Adhesion Testing:**

Adhesion testing must be conducted on project specific substrates to determine the appropriate surface preparation methods leading to high bond strength of the 3M™ VHB™ Structural Glazing Tape. Adhesion testing should be coordinated through a 3M Application Engineer. 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 appropriate for bonding applications with 3M™ VHB™ Structural Glazing Tape. Tape application temperature should be at least 60°F (15°C). Field bonding is only considered for deglaze/reglaze activities but only after consultation with a 3M Application Engineer. 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 lb/in<sup>2</sup> (100 kPa) or greater should be applied over the whole tape area to facilitate good contact of the adhesive to both substrates. Rigid surfaces may require 2 or 3 times more pressure to achieve >15 lb/in<sup>2</sup> (100 kPa) at the tape bond line. Pressure application methods must achieve acceptable wet-out (contact) of the adhesive to the bonding substrates. 3M Application Engineers or their channel partners are available to provide training of operators for 3M™ VHB™ Structural Glazing Tape bonding applications.

## **Design Considerations**

**Note:** For tape area calculations the following guidelines can be used. Each application should be reviewed by a 3M Application Engineer.

### **Dynamic Loads:**

For dynamic tensile or shear loads, such as wind loads, a design strength of 12 lb/in<sup>2</sup> (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 lb/in<sup>2</sup> (1.7 kPa) is used for 3M™ VHB™ Structural Glazing Tapes. This means 4 in<sup>2</sup> of tape per 1 lb load (60 cm<sup>2</sup> 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 in (2.3 mm) thick tapes can tolerate shear strain up to 0.27 in (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.

## **Storage and Shelf Life**

The optimum storage conditions are 72°F (22°C) and 50% relative humidity.

3M™ VHB™ Structural Glazing Tapes have a shelf life of 24 months from date of manufacture when stored at 40°F to 100°F (4°C to 38°C) and 0-95% relative humidity.

## Available Sizes

Attribute Name	Value
Core Size (ID)	76.2 mm (3 in)
Normal Slitting Tolerance	±0.8 mm (±1/32 in)
Standard Roll Length	32.9 m (36 yd)
Standard Width	15, 20, 25, 30 mm (1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4 in)

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## ISO Statement

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

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