TBP Converting, Inc.
3M VHB Architectural Panel Tape G16F

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Technical Data Sheet

3M™ VHB™ Architectural Panel Tape G16F

Product Description

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

3M™ VHB™ Architectural Panel Tapes are durable, high performance double-sided pressure sensitive acrylic foam tapes. These tapes have been used for many applications in the construction industry, including the manufacture of architectural panels for curtain walls, exterior building cladding and interior panel and trim attachment. In many situations, 3M™ VHB™ Architectural Panel Tapes can replace rivets, spot welds, liquid adhesives, sealants and other permanent fasteners and provide immediate handling strength during the fabrication process.

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

Property	Values	Additional Information
Adhesive Type	Multi-purpose	
Adhesive Carrier	Acrylic Foam (closed cell)	
Liner	Film	
Color	Gray	
Liner Color	Red (printed)	View
Test Name: Primary		
Total Tape Thickness (mil)	62 mil	View
Test Method: ASTM D3652		
Total Tape Thickness (mm)	1.6 mm	View
Test Method: ASTM D3652		

Density	720 kg/m³	View

Test Method: ASTM D3574

Notes: Foam with adhesive

Density	45 lb/ft³

Typical Performance Characteristics

Property	Values	Additional Information
90° Peel Adhesion Anodized Aluminum	52.5 N/cm	View

Test Method: ASTM D3330

Test Name: 90° Peel Adhesion
Substrate: Anodized Aluminum

90° Peel Adhesion Anodized Aluminum	30 lb/in	View

Test Method: ASTM D3330

Test Name: 90° Peel Adhesion
Substrate: Anodized Aluminum

Normal Tensile	550 kPa	View

Test Method: ASTM D897

Test Name: T-Block
Substrate: Aluminum T-block

Normal Tensile	80 lb/in²	View

Test Method: ASTM D897

Test Name: T-Block
Substrate: Aluminum T-block

Overlap Shear Strength Anodized Aluminum	480 kPa	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Substrate: Anodized Aluminum

Overlap Shear Strength Anodized Aluminum	70 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Substrate: Anodized Aluminum

Short Term Temperature Resistance	149 °C	View

Notes: 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).

Short Term Temperature Resistance	300 °F

View

Notes: 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).

Long Term Temp C	93 °C	View

Notes: Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

Long Term Temp F	200 °F	View

Notes: Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

Minimum Application Temperature	15 °C
Minimum Application Temperature	60 °F

Static Shear 23C	1000 g/3.2cm²	View

Test Method: ASTM D3654

Temp C: 23C
Temp F: 73F

Notes: Holds 10,000 min.

Static Shear 23C	2.2 lb/0.5 in²	View

Test Method: ASTM D3654

Temp C: 23C
Temp F: 73F

Notes: Holds 10,000 min.

Static Shear 66C	500 g/3.2cm²	View

Test Method: ASTM D3654

Temp C: 66C
Temp F: 150F

Notes: Holds 10,000 min.

Static Shear 66C	1.1 lb/0.5 in²	View

Test Method: ASTM D3654

Temp C: 66C
Temp F: 150F

Notes: Holds 10,000 min.

Static Shear 93C	500 g/3.2cm²	View

Test Method: ASTM D3654

Temp C: 93C
Temp F: 200F

Notes: Holds 10,000 min.

Static Shear 93C	1.1 lb/0.5 in²	View

Test Method: ASTM D3654

Temp C: 93C
Temp F: 200F

Notes: Holds 10,000 min.

Available Sizes

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

Design Considerations

Note: For tape area calculations the following guidelines can be used.
Dynamic Loads:
For dynamic tensile or shear loads, such as wind loads, a design strength of 12 lb/in² (85 kPa) is used for 3M™ VHB™ Architectural Panel Tapes. 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:
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/in² (1.7 kPa) is used for 3M™ VHB™ Architectural Panel Tapes. This means 4 in² of tape per 1 lb load (60 cm² of tape per 1 kg load) should be used to support constant stress loads. This guideline provides a safety factor of at least 5.
Differential Movement:
3M™ VHB™ Architectural Panel 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), 0.062 in (1.6 mm) thick tapes can tolerate shear strain up to 0.19 in (4.8 mm), and 0.045 in (1.1 mm) thick tapes can tolerate shear strain up to 0.14 in (3.3 mm).
Force/Stress Types:

In general, when designing with 3M™ VHB™ Architectural Panel 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.

Application Guidelines

Application Examples:
Typical applications include stiffener bonding, architectural panel bonding in cladding or curtain wall systems, interior panel bonding, break-metal bonding and decorative trim bonding. These tapes are not to be used for structural glazing applications.
Application Testing:
Typical applications include stiffener bonding, architectural panel bonding in cladding or curtain wall systems, interior panel bonding, break-metal bonding and decorative trim bonding. These tapes are not to be used for structural glazing applications.
Fabrication Guidelines:
A shop work environment is appropriate for bonding applications with 3M™ VHB™ Architectural Panel Tape. Tape application temperature should be at least 60°F (15°C). Field bonding may be considered if the exterior temperature meets this guideline. 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/in² (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/in² (100 kPa) at the tape bond line. 3M channel partners are available to provide training of operators for 3M™ VHB™ Architectural Panel Tape bonding applications.

Storage and Shelf Life

3M™ VHB™ Architectural Panel 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. The optimum storage conditions are 72°F (22°C) and 50% relative humidity.

Automotive Disclaimer

Automotive Applications: This product is an industrial product and has not been designed or tested for use in certain automotive applications, including, but not limited to, automotive electric powertrain battery or high voltage applications. This product does not fully adhere to typical automotive design or quality system requirements, such as IATF 16949 or VDA 6.3. This product may not be manufactured in an IATF certified facility and may not meet a Ppk of 1.33 for all properties. The product may not undergo an automotive production part approval process (PPAP). Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's automotive application and for conducting incoming inspections before use of the product. Failure to do so may result in injury, death, and/or harm to property. No written or verbal statement, report, data or recommendation by 3M related to automotive use of the product shall have any force or effect unless in an agreement signed by the Technical Director of 3M's Automotive Division. Customer assumes all responsibility and risk if customer chooses to use this product in an automotive electric powertrain battery or high voltage application, and 3M will not be liable for any loss or damage arising from or related to the 3M product or customer's use of the product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity or recall costs), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability. In no event shall 3M be liable for any damages in excess of the purchase price paid for the product.
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Trademarks

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References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40065640/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=G16F

ISO Statement

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

Information

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