English
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Technical Data Sheet

3M™ VHB™ Tape 5908

Product Description

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

3M™ VHB™ Tape 5908 is a 0.010 inch (0.25 mm) thick black double-sided acrylic foam tape with PET liner. The modified acrylic adhesive on both sides bonds to a broad range of high, medium and medium/low surface energy substrates including metals, glass and a wide variety of plastics and paints, including many powder coated paints. The very conformable foam provides good contact between substrates even when they are slightly mismatched. 3M™ VHB™ Tape 5908 is part of the 5952 tape family. Each product in this family has modified acrylic adhesive and very conformable foam but varies in thickness, color and liner type.

Product Features

- Fast and easy-to-use permanent bonding method provides high strength and long-term durability
- Can replace mechanical fasteners or liquid adhesives
- Black, 0.010 in (0.25 mm), modified acrylic adhesive and very conformable acrylic foam core bonds to a wide variety of substrates
- Creates a permanent seal against water, moisture and more
- Pressure sensitive adhesive bonds on contact to provide immediate handling strength
- Allows the use of thinner, lighter weight and dissimilar materials

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	Modified Acrylic	
Foam Type	Very Conformable Acrylic Foam	
Color	Black	
Liner Color	Clear	

View

Test Name: Primary

Liner

PET

Liner Thickness

0.08 mm

Total Tape Thickness (mil)

10 mil

View

Test Method: ASTM D3652

Total Tape Thickness (mm)

0.25 mm

View

Test Method: ASTM D3652

Total Tape Thickness

0.01 in

View

Test Method: ASTM D3652

Liner Thickness

3 mil

Liner Thickness

0.003 in

Thickness Tolerance

±15 %

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

12 lb/in

View

Test Method: ASTM D3330

Dwell/Cure Time: 24.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F
Environmental Condition: 50%RH
Backing: 5 mil Aluminum Foil

Notes: 12 in/min (300 mm/min)

90° Peel Adhesion

21 N/cm

View

Test Method: ASTM D3330

Dwell/Cure Time: 72.0
Dwell Time Units: hr
Temp C: 70C
Temp F: 158F
Environmental Condition: 50%RH
Substrate: Stainless Steel
Backing: 2 mil Aluminum Foil

Notes: 12 in/min (300 mm/min)

Normal Tensile

690 kPa

View

Test Method: ASTM D897

Dwell/Cure Time: 72.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Substrate: Aluminum

Notes: 1 in.² (6.45 cm²), Jaw Speed 2 in./min. (50 mm/min.)

Normal Tensile

100 lb/in²

View

Test Method: ASTM D897

Dwell/Cure Time: 72.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Substrate: Aluminum

Notes: 1 in.² (6.45 cm²), Jaw Speed 2 in./min. (50 mm/min.)

Overlap Shear Strength

690 kPa

View

Test Method: ASTM D1002

Notes: 1 in² (6.45 cm²), Jaw Speed 0.5 in/min (12.7 mm/min)

Overlap Shear Strength

100 lb/in²

View

Test Method: ASTM D1002

Notes: 1 in² (6.45 cm²), Jaw Speed 0.5 in/min (12.7 mm/min)

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

121 °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

250 °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

10 °C

Minimum Application Temperature

50 °F

Static Shear

1000 g

View

Test Method: ASTM D3654

Temp C: 23C
Temp F: 73F
Substrate: Stainless Steel

Notes: Tested at various temperatures and gram loadings. 0.5 in² (3.23 cm²). Will hold listed weight for 10,000 minutes (approximately 7 day).

Static Shear

500 g

View

Test Method: ASTM D3654

Temp C: 66C
Temp F: 150F
Substrate: Stainless Steel

Notes: Tested at various temperatures and gram loadings. 0.5 in² (3.23 cm²). Will hold listed weight for 10,000 minutes (approximately 7 day).

Available Sizes

Property
Values
Additional Information

Standard Roll Length

65.8 m

Standard Roll Length

72 yd

Minimum Available Width

12.7 mm

Minimum Available Width

0.5 in

Maximum Available Width

1168 mm

Maximum Available Width	46 in
Normal Slitting Tolerance	±0.79 mm
Normal Slitting Tolerance	±1/32 in
Core Size (ID)	76.2 mm
Core Size (ID)	3 in
Available Sizes	

Solvent and Fuel Resistance

Additional Performance Characteristics

Property	Values	Additional Information
Water Vapor Transmission	See 3M™ VHB™ Tape 5952 g/m²/24 hr View	Test Method: ASTM F1249 Temp C: 38C Environmental Condition: 100%RH
Shear Modulus	See 3M™ VHB™ Tape 5952 Pa	
Coefficient of Thermal Expansion	See 3M™ VHB™ Tape 5952 m/m/°C	

Electrical and Thermal Properties

Property	Values	Additional Information
Dielectric Constant 1KHz	See 3M™ VHB™ Tape 5952	View
Dielectric Constant 1MHz	See 3M™ VHB™ Tape 5952	View
Dissipation Factor 1KHz	See 3M™ VHB™ Tape 5952	View
Dissipation Factor 1MHz	See 3M™ VHB™ Tape 5952	View
Dielectric Strength	See 3M™ VHB™ Tape 5952 V/µm	View
Thermal Conductivity	See 3M™ VHB™ Tape 5952 W/m/K	
Volume Resistivity	See 3M™ VHB™ Tape 5952 Ω-cm	

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F
Test Condition: 1 KHz

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F
Test Condition: 1MHz

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F
Test Condition: 1 KHz

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F
Test Condition: 1MHz

Test Method: ASTM D140

View

Test Method: ASTM D257

Temp C: 23C
Temp F: 73F

Surface Resistivity

See 3M™ VHB™ Tape 5952 Ω

View

Test Method: ASTM D257

Test Condition: Room Temperature

Design Considerations

Adhesion to the substrate is important in achieving bonding success. Adhesives must flow onto the substrate surfaces in order to achieve intimate contact area and allow the molecular force of attraction to develop. The degree of flow of the adhesive on the substrate is largely determined by the surface energy of the substrate. 3M™ VHB™ 5952 family tapes bond well to high (HSE), medium (MSE), and medium/low (M/LSE) surface energy materials. The image below shows typical materials in these categories.

Achieving good contact is also important. The necessary thickness of tape depends on the rigidity of substrates and their flatness irregularity. While the 3M™ VHB™ Tapes will conform to a certain amount of irregularity, they will not flow to fill gaps between the materials. For bonding rigid materials with normal flatness, consider use of tapes with thickness of 45 mils (1.1 mm) or greater. As the substrate flexibility increases thinner tapes can be considered.

Using the right amount of tape is important to handle the expected stresses. Because 3M™ VHB™ Tapes are viscoelastic by nature their strength and stiffness is a function of the rate at which they are stressed. They behave stronger with relatively faster rate of stress load (dynamic stresses) and will tend to show creep behavior with stress load acting over a long period of time (static stresses). As a general rule, for static loads, approximately four square inches of tape should be used for each pound (57 cm² of tape per kg) of weight to be supported in order to prevent excessive creep. For dynamic loads a useful design factor is 12 lb/in2 (85 kPa) for most dynamic stresses in general applications.

Allow for thermal expansion/contraction. 3M™ VHB™ Tapes can perform well in applications where two bonded surfaces may expand and contract differentially. Assuming good adhesion to the substrates, the tapes can typically tolerate differential movement in the shear plane up to 3 times their thickness.

Bond Flexibility: While an advantage for many applications where allowing differential movement is a benefit, the tape bonds are typically more flexible than alternative bonding methods. Suitable design modifications or periodic use of rigid fasteners or adhesives may be needed if additional stiffness is required.

Performance in Severe Cold Temperature can be challenging. Applications which require performance at severe cold temperatures must be thoroughly evaluated by the user if the intended use will subject the tape product to high impact stresses. A technical bulletin “3M™ VHB™ Tape Cold Temperature Performance” (70-0707-3991-0) is available for additional information.

Converting

In addition to standard and custom roll sizes available from 3M through the distribution network, 3M™ VHB™ Tapes are also available in limitless shapes and sizes through the 3M Converter network. For additional information, contact 3M Converter Markets at 1-800-223-7427 or on the web at www.3M.com/converter.

Storage and Shelf Life

All 3M™ VHB™ 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.

Performance of tapes is not projected to change even after shelf life expires; however, 3M does suggest that 3M™ VHB™ Tapes are used prior to the shelf life date whenever possible.

The manufacturing date is available on all 3M™ VHB™ Tapes as the lot number, typically marked on the core or on a label on the outer roll lap. The lot number, typically a 4 digit code, is a Julian date (Y D D D). The first digit refers to the year of manufacture, the last 3 digits refer to the days after January 1. Example: A lot number of 7266 (or 17266) would translate to a date of manufacture of Sept. 23 (266th day of year) in 2017.

Automotive Disclaimer

Select Automotive Applications: This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

Bottom Matter

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Handling/Application Information

Application Techniques

Clean: Most substrates are best prepared by cleaning with a 50:50 mixture of isopropyl alcohol (IPA*) and water prior to applying 3M™ VHB™ Tapes.

Exceptions to the general procedure that may require additional surface preparation include:

- Heavy Oils: A degreaser or solvent-based cleaner may be required to remove heavy oil or grease from a surface and should be followed by cleaning with IPA/water.
- Abrasion: Abrading a surface, followed by cleaning with IPA/water, can remove heavy dirt or oxidation and can increase surface area to improve adhesion.
- Adhesion Promoters: Priming a surface can significantly improve initial and ultimate adhesion to many materials such as plastics and paints.
- Porous surfaces: Most porous and fibered materials such as wood, particleboard, concrete, etc. need to be sealed to provide a unified surface.
- Unique Materials: Special surface preparation may be needed for glass and glass-like materials, copper and copper containing metals, and plastics or rubber that contain components that migrate (e.g. plasticizers).

Refer to 3M Technical Bulletin “Surface Preparation for 3M™ VHB™ Tape Applications” for additional details and suggestions. (70-0704-8701-5)

*Note: These cleaner solutions contain greater than 250 g/l of volatile organic compounds (VOC). Please consult your local Air Quality Regulations to be sure the cleaner is compliant. When using solvents, be sure to follow the manufacturer’s precautions and directions for use when handling such materials.

Pressure: 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. Typically, good surface contact can be attained by applying enough pressure to insure that the tape experiences approximately 15 psi (100 kPa) pressure. Either roller or platen pressure can be used. Note that rigid surfaces may require 2 or 3 times that much pressure to make the tape experience 15 psi.

Temperature: Ideal application temperature range is 70°F to 100°F (21°C to 38°C). Pressure sensitive adhesives use viscous flow to achieve substrate contact area. Minimum suggested application temperature for the 3M™ VHB™ Tape 5952 family is 50°F (10°C). Minimum application temperature does vary by 3M™ VHB™ tape family and ranges from 32°F to 60°F (0°C to 15°C)

Note: Initial tape application to surfaces at temperatures below these suggested minimums is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory. To obtain good performance with all 3M™ VHB™ Tapes, it is important to ensure that the surfaces are dry and free of condensed moisture.

Time: After application, the bond strength will increase as the adhesive flows onto the surface (also referred to as “wet out”). At room temperature approximately 50% of ultimate bond strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours. This flow is faster at higher temperatures and slower at lower temperatures. Ultimate bond strength can be achieved more quickly (and in some cases bond strength can be increased) by exposure of the bond to elevated temperatures (e.g. 150°F [66°C] for 1 hour). This can provide better adhesive wetout onto the substrates. Abrasion of the surfaces or the use of primers/ adhesion promoters can also have the effect of increasing bond strength and achieving ultimate bond strength more quickly.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40065685/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=5908

Family Group

Link Tags:

5906 5907 5908 5909 5915 5915P 5915WF 5925 5925P 5925WF 5930
5930P 5930WF 5952 5952P 5952WF 5958FR 5962 5962P 5962WF 5913

Products	Liner	Liner Thickness	Liner Color	Total Tape Thickness (mm)	Foam Type	Color	Adhesive Type
5908	PET	0.08 mm	N/A	N/A	N/A	N/A	N/A
5952	N/A	N/A	Red (printed)	1.1 mm	N/A	Black	Modified Acrylic
5906	PET	N/A	Clear	N/A	Very Conformable Acrylic Foam	Black	N/A
5909	PET	0.08 mm	N/A	N/A	N/A	N/A	N/A
5958FR	PE Film	N/A	Red (printed)	1 mm	Very Conformable Acrylic Foam	Black	Modified Acrylic
5907	PET	0.08 mm	Clear	N/A	N/A	Black	N/A
5915	PE Film	0.13 mm	Red (printed)	0.4 mm	Very Conformable Acrylic Foam	Black	Modified Acrylic
5925	PE Film	N/A	Red (printed)	N/A	Very Conformable Acrylic Foam	Black	N/A
5930	PE Film	0.13 mm	N/A	N/A	N/A	N/A	N/A
5962	PE Film	N/A	Red (printed)	N/A	Very Conformable Acrylic Foam	Black	N/A
5913	PET Film	0.05 mm	N/A	N/A	N/A	N/A	Modified Acrylic
5952P	PCK Paper	N/A	White (printed)	N/A	Very Conformable Acrylic Foam	Black	Modified Acrylic
5952WF	PE Film	0.13 mm	N/A	1.1 mm	N/A	N/A	N/A
5915P	PCK Paper	N/A	N/A	N/A	N/A	N/A	N/A
5915WF	PE Film	N/A	Red (printed)	N/A	Very Conformable Acrylic Foam	White	N/A
5925P	PCK Paper	N/A	N/A	N/A	N/A	N/A	N/A
5925WF	PE Film	0.13 mm	Red (printed)	N/A	Very Conformable Acrylic Foam	White	Modified Acrylic
5962P	PCK Paper	N/A	N/A	N/A	N/A	N/A	N/A
5962WF	PE Film	N/A	Red (printed)	N/A	Very Conformable Acrylic Foam	White	Modified Acrylic
5930P	PCK Paper	N/A	N/A	N/A	N/A	N/A	N/A
5930WF	PE Film	N/A	Red (printed)	N/A	Very Conformable Acrylic Foam	White	Modified Acrylic

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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