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Technical Data Sheet

3M™ VHB™ Tape 5908

English-US

Last Revision Date: April, 2025

Supersedes: September, 2024

Product Details

Regulatory Info/SDS

Product Description

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

Attribute Name	Test Method	Value
Adhesive Type		Modified Acrylic
Foam Type		Very Conformable Acrylic Foam
Density	ASTM D3574	720 kg/m³ (45 lb/ft³) [1]
Total Tape Thickness	ASTM D3652	0.25 mm (0.01 in) (10 mil)
Color		Black
Liner		PET
Liner Thickness		0.08 mm (3 mil) (0.003 in)
Primary Liner Color		Clear
Thickness Tolerance		±15 %

[1] Foam with adhesive

Attribute Name	Test Method	Temperature	Environmental Condition	Value
Water Vapor Transmission	ASTM F1249	38 °C	100 %RH	See 3M™ VHB™ Tape 5952 g/m²/24 h
Shear Modulus				See 3M™ VHB™ Tape 5952 Pa

Typical Performance Characteristics

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Dwell Time	Substrate	Backing	Value
90° Peel Adhesion	ASTM D3330	72 h	Stainless Steel	5 mil Aluminum Foil	21 N/cm (12 lb/in) [1]
Overlap Shear Strength	ASTM D1002, ISO 4587				690 kPa (100 lb/in²) [2]
Normal Tensile	ASTM D897	72 h	Aluminum		690 kPa (100 lb/in²) [3]
Overlap Shear Strength	ASTM D1002, ISO 4587	72 h	Aluminum		x [4]

[1] 300 mm/min (12 in/min)

[2] 6.45 cm² (1 in²), Jaw Speed 12.7 mm/min (0.5 in/min)

[3] 6.45 cm² (1 in²), Jaw Speed 51 mm/min (2 in/min)

[4] Jaw speed 300 mm/min (12 in/min) on 6.45 cm² (1 in²) sample area

Static Shear

Substrate: Stainless Steel
Test Method: ASTM D3654

Temperature	Value
23 °C (73 °F)	1,000 g [1]
66 °C (150 °F)	500 g [1]
93 °C (200 °F)	500 g [1]
121 °C (250 °F)	250 g [1]

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

Attribute Name	Test Method	Test Condition	Substrate	Value
Minimum Application Temperature				10 °C (50 °F)
Short Term Temperature Resistance				149 °C (300 °F) [1]
Long Term Temperature Resistance	ASTM D3654	500 g	Stainless Steel	121 °C (250 °F) [2]

[1] 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).

[2] Maximum temperature where tape supports indicated load per 6.5cm² (1 in²) in static shear for 10,000 minutes.

Typical Environmental Performance

90° Peel Adhesion

Substrate: Stainless Steel
Dwell Time: 72 h
Backing: 5 mil Aluminum Foil

Environmental Condition	Value
Water	100 % [1]
Salt Water	100 % [1]
Hydraulic Fluid	100 % [1]

Environmental Condition	Value
10W30 Motor Oil	100 % [1]
Ethylene Glycol	100 % [1]
Kerosene	90 % [1]
Isopropyl Alcohol (IPA)	50 % [1]
Jet Fuel	50 % [1]
Gasoline	35 % [1]
MEK	5 % [1]

[1] 72 hr dwell after adhesion followed by 72 hr immersion in solvent and testing within 45 min of removal at 12 in/min (300mm/min). Peel adhesion measured as relative to control.
Continuous submersion in chemical solutions is not recommended. The above information is presented to show that occasional chemical contact should not be detrimental to tape performance in most applications in ordinary use.

Electrical and Thermal Properties

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Test Condition	Value
Dielectric Constant	ASTM D150	1 KHz	See 3M™ VHB™ Tape 5952
Dielectric Constant	ASTM D150	1 MHz	See 3M™ VHB™ Tape 5952
Dissipation Factor	ASTM D150	1 KHz	See 3M™ VHB™ Tape 5952
Dissipation Factor	ASTM D150	1 MHz	See 3M™ VHB™ Tape 5952
Surface Resistivity	ASTM D257		See 3M™ VHB™ Tape 5952 Ω
Volume Resistivity	ASTM D257		See 3M™ VHB™ Tape 5952 Ω-cm

Attribute Name	Test Method	Value
Coefficient of Thermal Expansion		See 3M™ VHB™ Tape 5952 m/m/°C
Dielectric Strength	ASTM D140	See 3M™ VHB™ Tape 5952 V/µm
Thermal Conductivity		See 3M™ VHB™ Tape 5952 W/m/K

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.

Handling/Application Information

Application Techniques

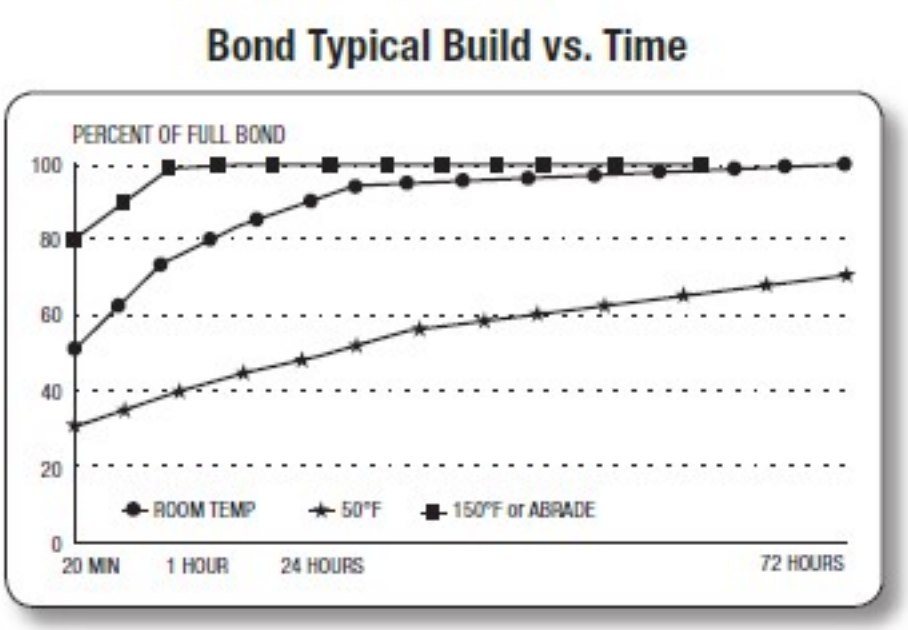
Clean: Most substrates are best prepared by cleaning with a 50:50 mixture of isopropyl alcohol (IPA*) and water prior to applying 3M™ VHB™ Tapes.
Exceptions to the general procedure that may require additional surface preparation include:
• Heavy Oils: A degreaser or solvent-based cleaner may be required 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.



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 cm^2 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.

Storage and Shelf Life

This product has a shelf life of 24 months from date of manufacture when stored at 4°C to 38°C (40°F to 100°F) and 0-95% relative humidity. The optimum storage conditions are 22°C (72°F) 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.

Available Sizes

Attribute Name	Value
Core Size (ID)	76.2 mm (3 in)
Maximum Available Width	1168 mm (46 in)
Minimum Available Width	12.7 mm (0.5 in)
Normal Slitting Tolerance	±0.79 mm (±1/32 in)
Standard Roll Length	65.8 m (72 yd)

Available Sizes - Detailed

Available Sizes

Tape Thickness inches (mm)	Standard Length yards (meters)	Minimum Width inches (mm)	Maximum Width inches (mm)	Maximum Roll Length: Width 1/4"up to 3/8" (6.4mm up to 9.5mm) yards (meters)	Maximum Roll Length: Width >3/8" up to 1/2" (>9.5mm up to 12.7mm) yards (meters)	Maximum Roll Length: Width 1/2" and wider (12.7mm and wider) yards (meters)
< 0.015 (0.4)	72 (65.8)	0.5 (13)	46 (1168)	N/A N/A	N/A N/A	See Note Below
0.015/0.016 (0.4)	72 (65.8)	0.25 (6)	48* (1219)	144 (131.7)	175 (160.0)	360 (329.2)
0.025 (0.6)	72 (65.8)	0.25 (6)	48* (1219)	72 (65.8)	108 (98.8)	175 (160.0)
0.032 (0.8)	72 (65.8)	0.25 (6)	48 (1219)	72 (65.8)	108 (98.8)	175 (160.0)
0.040 (1.0)	36 (32.9)	0.25 (6)	48 (1219)	72 (65.8)	108 (98.8)	144 (131.7)
0.045 (1.1)	36 (32.9)	0.25 (6)	48 (1219)	72 (65.8)	108 (98.8)	144 (131.7)
0.062 (1.6)	36 (32.9)	0.25 (6)	46 (1168)	72 (65.8)	72 (65.8)	108 (98.8)
0.090 (2.3)	36 (32.9)	0.25 (6)	46 (1168)	36 (32.9)	36 (32.9)	72 (65.8)

*Exception – 5915 (P) max. width 46 inches (1168 mm); 5925 (P) max. width 47 inches (1194 mm).

Note: 5952 family tapes thinner than 0.015 in (0.4 mm) have max. length 360 yd (329.2 m) for widths 1 in (25 mm) to 8 in (203 mm) and 180 yd (164.6 m) for all other widths.

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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.

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ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

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