



# VHB™ Tapes

*Imagine your world without rivets, screws, and welding*





Marmon Motors, 1989

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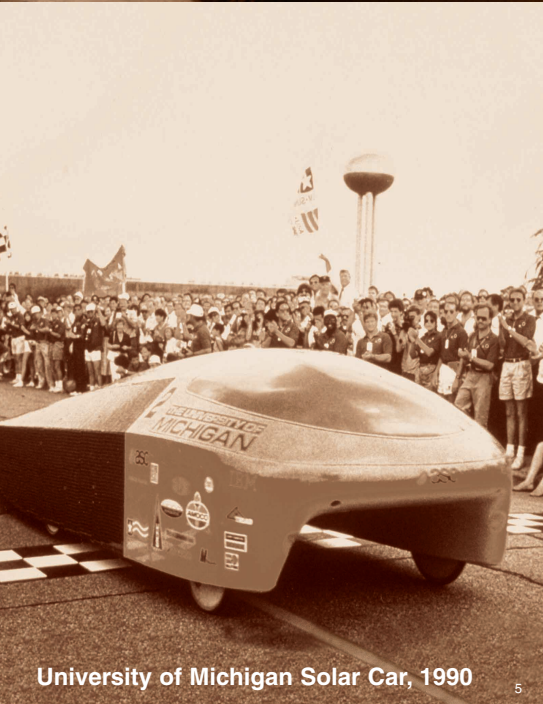
Denmark Sign, 1985

3



Westinghouse Sign, 1986

4



University of Michigan Solar Car, 1990

5



Sony Sports Cam, 1989

6



Chicago O'Hare Terminal, 1987

7



Denham Springs Traffic Sign, 1991

8



Singapore Treasury, 1984

9



Computer Security Device, 1983

10

## Tough applications with proven performance

For over 20 years, 3M™ VHB™ Tape has been making a name for itself among design and manufacturing engineers. Look at the nine photos (at left) and you'll see where we've been.

Now imagine where you can go in a world without rivets, screws, and welding.

Your designs would be sleeker; seamless. Major equipment could be eliminated; labor and materials could cost less. And the finished product, overall, could be lighter, quieter, and more efficient.

Best of all, you would be freed from the restraints of working with mechanical fasteners. You could design projects the way you want. You could join dissimilar materials and set new standards for strength and aesthetics.

Impossible?

Hardly. You can dream it, design it, and produce it — just the way you want — by replacing your mechanical fasteners with VHB tape.

Flexible, durable, versatile, and strong. VHB tape will allow you to conceive projects you care about ... and achieve results you've dreamed about.



## What makes 3M™ VHB™ Tape so extraordinary?



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**VHB tape seals in liquids.**

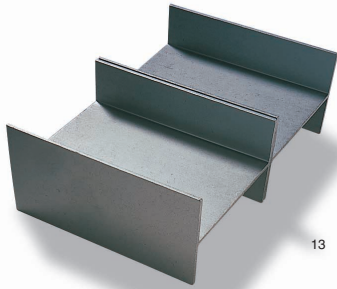
The first thing you notice about VHB tape is the sheer beauty it affords. Your completed projects look better than they did on paper; there are no visual interruptions for screws, rivets, welding, or any other type of fastener. But beauty is not the only advantage.

VHB tape consistently outperforms traditional fasteners in these vital areas.

**Strength and Durability** VHB tape's all acrylic construction provides strength and durability in extreme applications. VHB tape resists stress, fatigue, vibration, heat, cold, temperature cycling, moisture, solvents, and UV light. Unlike mechanical fasteners which concentrate stress, VHB tape provides a continuous bond — distributing stress along the entire surface.

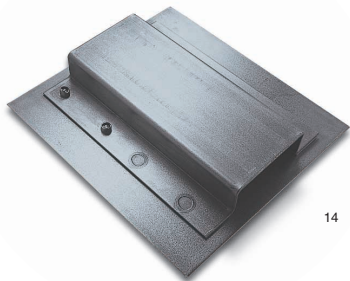
**Bonds and Seals** VHB tape's foam is 100 percent closed cell; as it bonds it creates a durable shield. Liquids can be sealed in or out. And a protective barrier is formed which resists stress and fatigue.

**Viscoelasticity** Remove the sample and try to pull it apart. Notice how it stretches. The foam absorbs energy yet when you release it, it returns to its original shape.



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**I-beam withstands tensile, cleavage, and shear.**



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**Replace mechanical fasteners (on left) with a seamless bond (on right).**

Now, try again.

This time stress it as far as you can and hold it. What happens? As you hold the two sides apart the foam relaxes and becomes easier to grip.

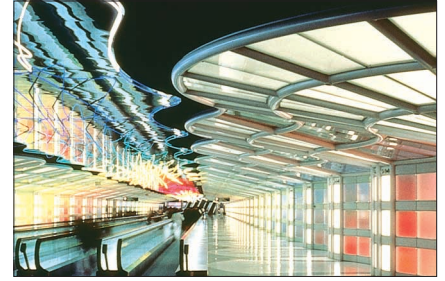
You've just seen two examples of VHB tape's unique property, viscoelasticity — energy absorption and stress relaxation. These are both important for dynamic strength and vibration damping.

For over 20 years, design and manufacturing engineers have used VHB tape. Some of their results are featured here and on the following pages. Review them, then call us at 800-362-3550. We'll talk with you, one-on-one, about applying VHB tape to your next project.

VHB tape. It's going to change the way you work.

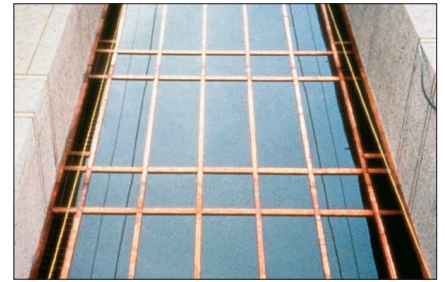
### **3M™ VHB™ Tape attributes:**

- Fast, easy assembly
- No drilling, riveting, welding, screw fastening, or clean-up
- Eliminates grinding and refinishing
- Damps vibration and noise
- Absorbs impact
- Joins dissimilar materials
- Compensates for differential thermal expansion or contractions
- Lighter, less expensive materials
- Uniform thickness
- Diecutting available
- Resists plasticizer migration
- No investment in major equipment
- Minimal application training



***At Chicago O'Hare International Airport, 9,600 lbs. of mirror are secured to the ceiling using VHB tape in place of traditional fasteners. VHB tape is strong, sturdy, and seamless.***

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***This building in St. Petersburg, Florida, has decorative copper cladding attached with VHB tape. The tape withstands heat and moisture.***

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***After hundreds of thousands of miles of jarring and bouncing, seams sealed with VHB tape remain securely locked in place. VHB tape absorbs shock, fatigue, and vibration.***

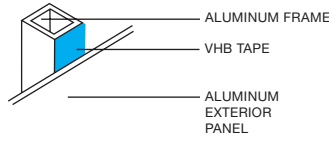
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# Commercial Vehicles

Look better and last longer



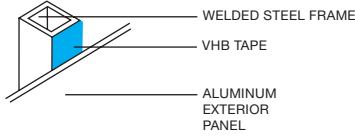
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**VHB tape damps vibrations and noise producing a quieter ride.**



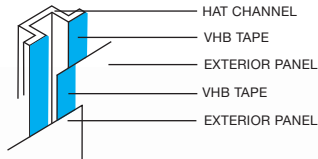
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**Metal surfaces are separated reducing potential for galvanic corrosion.**



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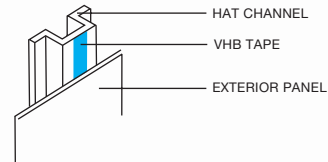


**VHB tape bonds panels to the frame and seals the seam eliminating rivets and screws that will loosen, rattle, and leak.**

Traditional fasteners get in the way when you add graphic film to any mode of transportation. Only by eliminating rivets, screws, and welding and attaching stiffeners to panels using 3M™ VHB™ Tape can your trailers, trucks, buses, and trains become seamless.

Further, every hole drilled into a vehicle for a screw or rivet provides a leak potential. VHB tape eliminates the holes — and therefore the problem — while creating a moisture seal.

Commercial vehicles, which constantly battle the elements, become truly weather resistant.

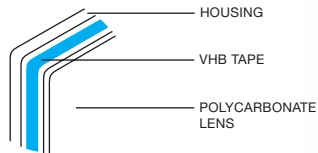


**Specialty trailers, such as this race car transporter, use smooth sides to highlight their image and sponsor.**



## Electronics

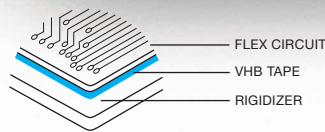
Create a rugged and resistant seal



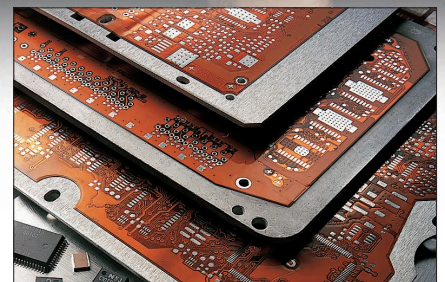
**Lens bonds to housing providing a weather-tight seal in this fish finder.**

Today, electronic products are smaller, more powerful, and more portable than ever before. Engineers in this industry need materials that are rugged, durable, and lightweight. 3M™ VHB™ Tape rises to the occasion.

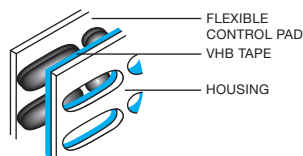
Not only does VHB tape bond, seal, and absorb shock, it is also easy to apply, lightweight, and can be die cut to fit even the smallest, most unusual shapes. Engineers say these attributes, along with a UL 746C listing, make VHB tape ideal for a wide range of electronic products.



**Sheldahl Flex Circuits withstand process heat and benefit from low outgassing properties.**



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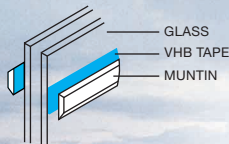
**Precisely die cut VHB tape bonds and seals the parts in this underwater camera case.**



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**Construction**

*Make it durable and distortion-free*



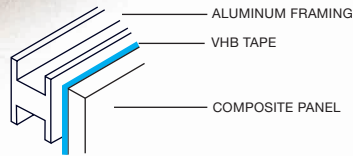
**Muntin bars are bonded to glass compensating for differential coefficients of expansion.**

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Indoors and out, 3M™ VHB™ Tape withstands even the toughest environmental elements. For 20 years, VHB tape has achieved amazing results in buildings and construction projects. Durable and strong, VHB tape fastens smoothly — keeping surfaces distortion free.



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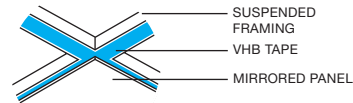


**Architectural panels bond to frames eliminating all visible fasteners.**

VHB tape also provides an excellent seal against moisture. Not only can it join dissimilar materials and resist differing coefficients of thermal expansion, VHB tape also forms a barrier preventing galvanic corrosion between different metals.

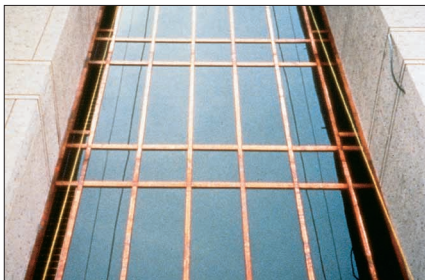


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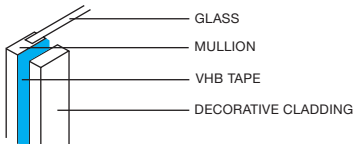


**This ceiling seamlessly holds 9,600 lbs. of mirrored panels at Chicago O'Hare International Airport.**

Quick and easy to apply, using lighter, thinner materials, VHB tape saves time and labor costs.



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**Decorative copper cladding adheres to window system creating a unique appearance.**

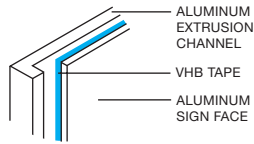


## Signs

*Produce sleeker, cleaner signs*

When signs are built with 3M™ VHB™ Tape, surfaces are clean and sleek, free of rivets or bolts for greater graphic impact. Lighter, easier-to-handle material can also be used without worry about pull-through or dimpling — providing greater flexibility for fresh, aesthetically pleasing signs.

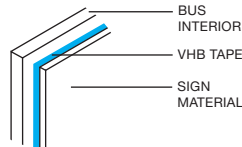
And because VHB tape seals against the environment while compensating for different coefficients of thermal expansion, your signs will be stronger, more resilient, and last longer than before.



**Sign face easily mounts to extrusions saving time and providing a smooth, clean finish.**



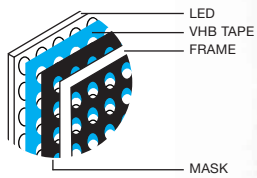
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**A polycarbonate overlay adheres to a polyvinyl material creating vandal-proof train signs for Globe Transportation Graphics.**



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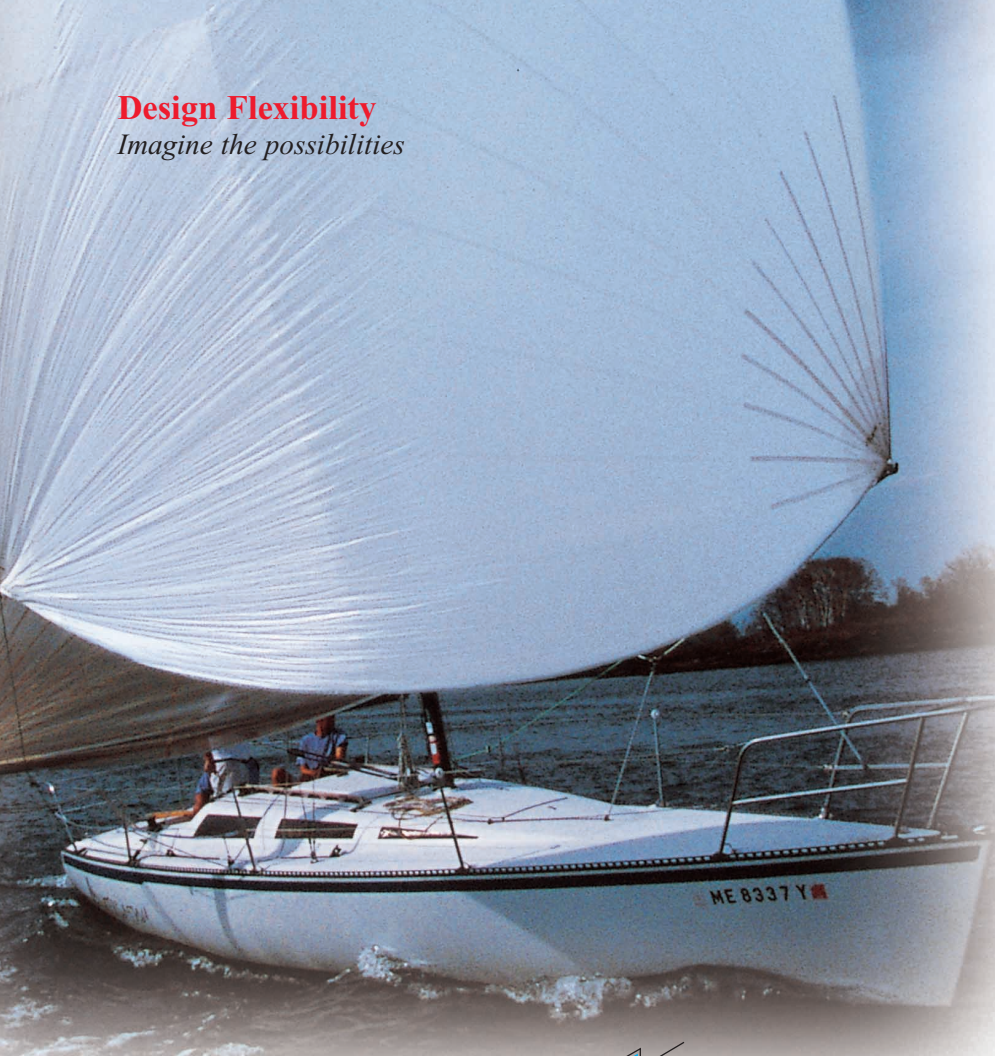


**Aluminum face joins LED providing bonding and sealing in one easy step.**



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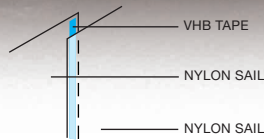
**Design Flexibility**  
*Imagine the possibilities*



Until now, your projects may have been restricted by the limitations of traditional fasteners. But, proven in the marketplace for over 20 years, 3M™ VHB™ Tape gives you the freedom to create projects the way you know they should be.

When you are ready to conceive projects you care about and achieve results you've dreamed about, consider the attributes of VHB tape.

- Produces long-lasting strength
- Absorbs shock
- Distributes stress
- Creates an invisible bond
- Joins dissimilar materials
- Allows thinner, lighter materials
- Eliminates pull-through, dimpling, rivet heads, and weld distortions
- Compensates for differential thermal expansion
- Seals against the environment
- Resists UV light
- Damps vibration and noise
- Reduces labor and material costs

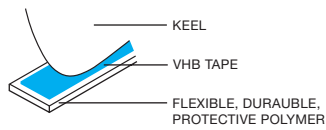


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**VHB tape, instead of stitching on sails, distributes stress and withstands harsh environmental conditions.**



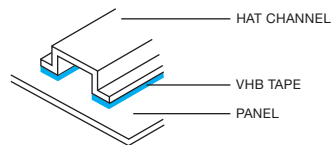
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**Keel Shield™ Hull Protectors use VHB tape which resists both salt and freshwater.**



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**VHB tape bonds panel stiffeners to preprinted metal cabinetry. Using tape doesn't damage the finish the way mechanical fasteners can and it eliminates the need to refinish.**

For more information on 3M VHB tape, call 800-362-3550, or visit our Web site at [www.3M.com/bonding](http://www.3M.com/bonding).

# Product Information, 3M™ VHB™ Tape

	Product Number	Tape Thickness w/o liner (mm)	Description	Adhesive Type	Temperature Resistance		Solvent Resistance	Relative Adhesion		Application Ideas	Liner Type	
					Minutes Hours	Days Weeks		HSE	LSE			
3M™ VHB™ Conformable Tape	4926	15 (0.4)	Dark gray, closed-cell acrylic foam carrier. Conformable. Good adhesion to many painted metals. Plasticizer resistant. UL Listing 746C.	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Med.	Bond muntin bars to windows. Bond and seal polycarbonate lens over LCD. Bond pre-painted metals in truck assembly. Bond and seal plastic windows to pre-painted control panels/switch gear. Mount vinyl wiring ducts and conduit channels.	A	
	4936	25 (0.64)									A	
	4936F	25 (0.64)									B	
	4941	45 (1.1)									A	
	4941F	45 (1.1)									D	
	4956	62 (1.6)									A	
	4956F	62 (1.6)									B	
	4979F	62 (1.6)	B									
		4943F	45 (1.1)	Gray conformable foam. Can be applied as low as 32°F (0°C).	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Low	Bond cellular phone antennas. Bond automatic toll tags to vehicle bumpers.	C
		4957F	62 (1.6)									C
3M™ VHB™ Tape	4920	15 (0.4)	White, closed-cell acrylic foam carrier. Features an all-purpose adhesive. UL Listing 746C.	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Low	Attach stiffeners in air conditioners, office furniture and telecommunications equipment. Bond aluminum skin to steel support of trucks, vans, ambulances. Bond architectural signs to frames.	A	
	4930	25 (0.64)									A	
	4950	45 (1.1)									A	
	4955	80 (2.0)									C	
	4959	120 (3.0)									C	
		4929	25 (0.64)	Black version of 4930 tape. Black version of 4950 tape.	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Low	Attach letters and signs to windows. Mount black trim.	C
		4949	45 (1.1)									C
		4945	45 (1.1)	White, closed-cell acrylic foam carrier. Plasticizer resistant. UL Listing 746C. Same as 4945 tape with film liner.	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Med.	Attach vinyl trim. Bond vinyl extrusions to window frames. Bond pre-painted truck and trailer skins.	A
		4946	45 (1.1)									B
		4905	20 (0.5)	Clear, closed-cell acrylic carrier. Excellent for joining transparent material.	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Low	Seal between inner/outer dome of skylights. Attach handle to sliding glass doors. Mount back lit translucent signs. Edge-bond resin filled glass.	D
	4910	40 (1.0)	D									
	4951	45 (1.1)	White, closed-cell acrylic foam carrier. Can be applied as low as 32°F (0°C).	Acrylic	300°F (149°C)	200°F (93°C)	High	High	Low	Applications requiring installation down to 32°F. Mount panels to aluminum frames in buildings, trucks, and trailers. Mount trim to portable buildings.	C	
	4932	25 (0.64)	White, closed-cell acrylic foam carrier. Adhesive provides good adhesion to polypropylene and many powder paints.	Synthetic	200°F (93°C)	160°F (71°C)	High	High	High	Bond powder painted metal stiffeners to office desks and file cabinets. Bond polypropylene, polystyrene and other low surface energy plastics.	A	
	4952	45 (1.1)									A	
Transfer Tape	F-9460 PC	2.0 (0.05)	Clear adhesive transfer tape. Features high shear strength adhesive. UL Listing 746C.	100 MP	500°F (260°C)	300°F (149°C)	High	High	Low	Bond decorative metal trim. Bond flexible circuits to aluminum rigidizers or heat sinks.	E	
	F-9469 PC	5.0 (0.13)									E	
	F-9473 PC	10 (0.25)									E	

NOTE: The technical information and data provided here should be considered representative or typical only and should not be used for specification purposes. User should evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of application.

**Liner Types:**

- A – 3 mil 54# Densified Kraft Paper
- B – 5 mil Clear Polyethylene Film
- C – 2 mil Polyester Film
- D – 5 mil Red Polyethylene Film
- E – 4 mil 58# Polycoated Kraft Paper
- F – 4 mil Green Polyethylene Film

**Relative Adhesion:**

- HSE – High Surface Energy
- LSE – Low Surface Energy

# 3M™ VHB™ Double Coated Acrylic Foam Tapes and Adhesives Transfer Tapes

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## For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit [www.3M.com/bonding](http://www.3M.com/bonding). Address correspondence to: 3M Bonding Systems Division, 3M Center, Building 220-7E-01, St. Paul, MN 55144-1000. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone 1-809-750-3000. In Mexico, phone: 5-728-2180.

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## Important Notice

The statements and technical information contained herein are based on tests and data which 3M believes to be reliable, but the accuracy or completeness of such statements and technical information is not guaranteed. User is responsible for determining whether a specific 3M™ VHB™ Tape is fit for a particular purpose and suitable for user's method of application.

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## Limited Warranty

3M warrants for 24 months from the date of manufacture that 3M™ VHB™ Tape will be free of defects in material and manufacture. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. This Limited Warranty does not cover damage resulting from the use or inability to use 3M™ VHB™ Tape due to misuse, workmanship in application, or application or storage not in accordance with 3M recommended procedures.

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## Limitation of Remedies and Liability

If the 3M™ VHB™ Tape is proved to be defective within the warranty period stated above, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M™ VHB™ TAPE. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.



### Bonding Systems Division

3M Center, Building 220-7E-01  
St. Paul, MN 55144-1000



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