VHB™ Tapes
Design Guide

Improve process, improve products

Permanently bonding and sealing worldwide for 25 years
For 25 years, industries worldwide have been using 3M™ VHB™ Tapes to permanently bond and seal many substrates for increased productivity, high strength, long term durability, and improved appearance.

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### 3M™ VHB™ Tapes Product Information

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Tape Thickness w/o liner Mil(s) (mm)</th>
<th>Description</th>
<th>Adhesive Type</th>
<th>Temperature Resistance</th>
<th>Solvent Resistance</th>
<th>Relative Adhesion</th>
<th>Application Ideas</th>
<th>Liner Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>4926</td>
<td>15 (0.4)</td>
<td>Gray, closed-cell acrylic foam carrier. Conformable. Good adhesion to many painted metals. Plasticizer resistant. UL 746C.</td>
<td>Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4936</td>
<td>25 (0.64)</td>
<td>Black version of 4936 tape.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4936F</td>
<td>25 (0.64)</td>
<td>Black version of 4941 tape. Black version of 4956 tape.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4941</td>
<td>45 (1.1)</td>
<td>Black version of 4941 tape.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4941F</td>
<td>45 (1.1)</td>
<td>Black version of 4941 tape. Black version of 4956 tape.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4947F</td>
<td>45 (1.1)</td>
<td>Bond pre-painted truck and trailer skins.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4956</td>
<td>62 (1.6)</td>
<td>Bond pre-painted truck and trailer skins.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4956F</td>
<td>62 (1.6)</td>
<td>Bond pre-painted truck and trailer skins.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4962</td>
<td>62 (1.6)</td>
<td>Bond pre-painted truck and trailer skins.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4962F</td>
<td>62 (1.6)</td>
<td>Bond pre-painted truck and trailer skins.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
<tr>
<td>4979F</td>
<td>90 (2.3)</td>
<td>Bond pre-painted truck and trailer skins.</td>
<td>Modified Acrylic</td>
<td>300°F (149°C)</td>
<td>200°F (93°C)</td>
<td>High</td>
<td>High</td>
<td>Med.</td>
</tr>
</tbody>
</table>

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3M™ VHB™ Tapes all-acrylic construction provides strength and durability in highly demanding applications.

- Bond with high holding strength for static or dynamic stress
- Provide a continuous bond to distribute stress over the entire surface
- Viscoelastic properties absorb shock and flexing for reliability against wind, vibration, and other stresses
- Eliminate pull-through, dimpling and weld distortion
- Damp vibration

Damps vibration and noise producing a quieter ride.

Aeroporto Fortaleza, Fortaleza, Brazil
Architect: Claudio Silva, 1997
Stainless steel panels bonded to steel frame.

Securely bonds stainless steel scuff strips to aluminum wing flaps despite extreme ground-to-air temperature swings of 150°F to -40°F (65°C to -40°C).

Jumeirah Beach Hotel, Dubai, UAE
Curtain wall design: Schmidlin AG, 1998
Aluminum panels bonded to steel stiffeners.

Stainless steel panel
3M™ VHB™ Tape
Steel structure

Welded steel frame
3M™ VHB™ Tape
Aluminum exterior panel

ACM
Steel

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Signs that resist cold winds in Denmark (installed 1985)

Replace rivets in bonding truck side panels to steel frames for a much smoother, cleaner appearance and a strong bond. VHB tape can also reduce vibration in the box.

• Resists all of the following:
  - High temperature
  - Cold
  - Temperature cycling
  - UV light
  - Moisture and solvents
• Seal against environmental conditions
• Prevent bi-metallic corrosion
• Damp vibration to prevent metal fatigue
• Compensate for differential of thermal expansion

O’Hare Airport, Chicago, IL, USA
Architect: Custom Products of Southgate, CA, 1987
Mirror-finish composite ceiling panels bonded to a suspension frame.

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For assembly efficiency, die-cut pieces of 3M™ VHB™ Tape bond components in a water-resistant video camera case. The foam conforms to help seal the unit.

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• Virtually invisible fastening helps keep surface smooth and clean to enhance design and appearance

• Expand the range of material options
  - Bond most painted and powder coated surfaces, and plastics such as acrylic, polycarbonate, and ABS
  - Bond metal and most plastics with minimal surface preparation

• Use lighter weight and thinner materials

• Use a wider variety of materials more readily for high impact visual combinations

• Prevent bi-metallic corrosion

• Join dissimilar materials

• Uniform thickness creates repeatable results without expensive equipment

Assembled with 3M™ VHB™ Tape.

Assembled with rivets.

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

Gas station canopy, Sydney, Australia
Fabricator: Albert Smith Signs, 1989

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Fast application to permanently bond many materials flat or curved
Glass bonded to aluminum framework.
Subway station platform door, Korea.

Bond muntin bars made of vinyl, primed wood, or painted aluminum to glass windows or doors. Resists UV exposure.

Glass bonded to aluminum framework.
Subway station platform door, Korea.

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Versatility and reliable performance throughout any sign

Signs limited only by the imagination

Twin pole monument sign, Medina, Ohio
Fabricator: Lawrence Sign, 2003

Channel letter sign with decorative backdrop, Seattle, Washington

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Monolith style monument sign, St. Paul, Minnesota
Fabricator: Lawrence Sign, 1991
Routed aluminum face
3M™ VHB™ Tape
Acrylic panel

Characters on glass, Fort Lee, New Jersey
Fabricator: Spanjer Brothers, Inc., 1989
Routed aluminum face
3M™ VHB™ Tape
Glass (silane primer used on glass)

Grocery store signage, Sagamihara, Japan
Fabricator: Sanwa Neon, 1993
Routed aluminum face
3M™ VHB™ Tape
Metal stiffener
Post Sign face

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Choice of 3M™ VHB™ Tapes for bare or painted metal

Metal fabrication – strength and durability with ease

Under equal stress conditions, metal panels bonded with VHB tape show no visible signs of stress compared to those with mechanical fasteners.

Permanently bond metal skin to enclosure frame.

Permanently attach brackets and stiffeners.

Permanently attach plastic pocket to enclosure panel without priming in most applications.

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Built tough with smooth sides to look good for the long haul

- Eliminate rivets and screws that can loosen, rattle, and leak
- Damp vibration and noise for a quieter ride
- Keep sides smooth for graphics
- Separate metals to reduce potential for galvanic corrosion

Transportation – built fast to last
Flexibility to meet rigid standards of the electronics industry

Bond and seal polycarbonate viewing window into the door of a process control system.

Bond rigidizer to flex circuit and withstand process heat.

Bond and weather-seal a fish finder lens.

A precise fit with die-cut VHB tape.

Bond screen to high definition television.

Electronics from board to “box”

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3M™ VHB™ Tape removal systems

3M™ VHB™ Tape removal systems are designed to make it easy to separate bonded parts and remove residue. They are easy-to-use and offer a fast, effective job.

**3M™ SMART Tool**
Use by hand or in an air chisel to quickly separate bonded assemblies as overlapped panels and stiffeners.

**3M™ Stripe Off Wheel**
Takes residue off faster and easier than solvents or adhesive cleaners. Resilient rounded edge follows contours and irregular surfaces and cleans without scratches or damage to acrylic enamel or urethane paint.

**3M™ VHB™ Tapes**
These tapes bond most surfaces permanently, but if you have to separate the surfaces and remove residue, 3M also has the tools for a fast, effective job.

When using 3M™ VHB™ Tapes, it's important to prepare the surface thoroughly. In most cases, simply clean the substrate with an IPA/water mixture.

**Application Pressure**
Apply 15 psi at the bond line.

**Application Temperature**
Typically apply at 50-60°F (10-26°C). Some VHB tapes can be applied as low as 32°F (0°C).

**Application Time**

<table>
<thead>
<tr>
<th>Time</th>
<th>Bond strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 min.</td>
<td>50%</td>
</tr>
<tr>
<td>60 min.</td>
<td>75%</td>
</tr>
<tr>
<td>24 hrs.</td>
<td>90%</td>
</tr>
<tr>
<td>3 days</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Instant Tack**
Instant tack at room temperature.

**Clean**
In most cases, simply clean substrate with an IPA/water mixture.

**Temperature**
Typically apply at 50-60°F (10-26°C). Some VHB tapes can be applied as low as 32°F (0°C).

**Pressure**
Apply 15 psi at the bond line.

**Time**
Instant tack at room temperature.

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• Technical experts at your service backed with more than 25 years experience in putting 3M™ VHB™ tape to work improving products and processes in many applications
• 3M will be there to make sure you are satisfied
• 3M is constantly developing new solutions for constantly changing customer needs

For Additional Information: To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550. Address correspondence to 3M Industrial Adhesives and Tapes Division, 3M Center, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144. Our fax number is 651-778-4244.

Limited Product 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 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. Important Notice: User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user’s method of application. Please remember that many factors can affect the use and performance of a 3M product in a particular application. The materials to be bonded with the product, the surface preparation of these materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which are uniquely within the user’s knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user’s method of application. 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 negligence, warranty, or strict liability.