

## How to contact us

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® VHB SP 01 July 05

# 3M™ VHB™ Tapes

## Surface Preparation Guide





# Why is surface preparation important?

For more than 25 years, engineers worldwide have been specifying 3M™ VHB™ Tapes to permanently bond and seal many surfaces. To obtain optimum adhesion, the bonding surfaces must be well unified, clean and dry. Bond strength will be dependant upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contacts and helps improve bond strength.

Proper preparation of a surface prior to the application of 3M VHB tape is a key factor in ensuring maximum bond strength. Many failures can be attributed to poor surface preparation. Contaminants act as a barrier between adhesive and substrate, and can prevent the adhesive from gaining full strength. Even a fingerprint on an otherwise clean surface will impair adhesion.

Care must also be taken to examine surfaces for moisture, particularly during periods of high humidity as it is quite possible for an invisible film of water to be present.

## The golden rule –

Assume that all surfaces are contaminated and must be cleaned!

### Wood : soft, hard particle board, etc

Common Concerns	Surface cleaning & preparation	Primer Required
Weak fiber layer on surface (e.g. low surface strength)	<ol style="list-style-type: none"> <li>1 Sand with coarse abrasive to remove weak fibers, remove all dust with a fine brush or high pressure air.</li> </ol>	80 Contact Neoprene Adhesive or paint with Acrylic or Urethane paint.

### Plastics : Polyolefin (ie, Polyethylene, Polypropylene)

Common Concerns	Surface cleaning & preparation	Primer Required
Low adhesion	<ol style="list-style-type: none"> <li>1 Clean with hIPA Clean 300.</li> <li>2 If adhesion is still poor, try first abrading with Scotch-Brite™ Hand Pad 7447.</li> </ol>	3M™ Primer 94 (additional surface preparation may also be required).

### Plastics : Non-olefin

Common Concerns	Surface cleaning & preparation	Primer Required
Additives and low adhesion	<ol style="list-style-type: none"> <li>1 For heavy contaminants and oils, clean with 3M™ Adhesive Cleaner 700 and Solvent. If mold release agents present, clean with 3M™ Prep-Solvent 70.</li> <li>2 Clean with hIPA Clean 300.</li> <li>3 If adhesion is still poor, try first abrading with Scotch-Brite™ Hand Pad 7447.</li> </ol>	Optional : 3M Primer 94 for lower surface energy plastics such as ABS, HIPS.

### Polyurethane (Molded or Rubber)

Common Concerns	Surface cleaning & preparation	Primer Required
Mold release agents	<ol style="list-style-type: none"> <li>1 If mold release agents present, clean with 3M™ Prep-Solvent 70.</li> <li>2 Clean with hIPA Clean 300.</li> <li>3 If adhesion is still poor, try first abrading with Scotch-Brite Hand Pad 7447.</li> </ol>	Optional : Scotch-Grip™ Plastic Adhesive 1099 to improve adhesion.

### Rubber: Neoprene, Santoprene

Common Concerns	Surface cleaning & preparation	Primer Required
Migrating oils Low adhesion	<ol style="list-style-type: none"> <li>1 For heavy contaminants and oils, clean with 700 Adhesive Cleaner and Solvent.</li> <li>2 Clean with hIPA Clean 300.</li> </ol>	Scotch-Grip 1099 or 3M Primer 94.

**Steel • Galvanized Steel • Aluminium**

Common Concerns	Surface cleaning & preparation	Primer Required
Surface oxidation, oil.	<ol style="list-style-type: none"> <li>1 Clean with hIPA Clean 300. For heavy oils, clean with 700 Adhesive Cleaner and Solvent.</li> <li>2 Lightly abrade with Scotch-Brite Hand Pad 7447 or Roloc equivalent.</li> <li>3 Clean with hIPA Clean 300.</li> </ol>	None Required.

**Copper • Brass • Bronze**

Common Concerns	Surface cleaning & preparation	Primer Required
Oxidation after bonding	<ol style="list-style-type: none"> <li>1 Clean with hIPA Clean 300. For heavy oils, clean with 700 Adhesive Cleaner and Solvent.</li> <li>2 Lightly abrade with Scotch-Brite Hand Pad 7447 or Roloc equivalent.</li> <li>3 Clean with hIPA Clean 300.</li> </ol>	Acrylic Lacquer or varnish preferred, 3M™ Primer 94 can be used as a substitute.

**Concrete • Brick**

Common Concerns	Surface cleaning & preparation	Primer Required
Non-unified or rough surface, moisture	<ol style="list-style-type: none"> <li>1 Remove dust and loose debris with a wire brush. Remove all dust with a fine brush or high pressure air.</li> </ol>	80 Contact Neoprene Adhesive. Heavily textured surfaces may need rendering.

**Glass • Stone • Ceramic Tile**

Common Concerns	Surface cleaning & preparation	Primer Required
High humidity, moisture	<ol style="list-style-type: none"> <li>1 Clean with hIPA Clean 300.</li> </ol>	<p>Required in humid environments: Apply Silane coupling agent in IPA/ water cleaner to increase adhesion durability. If Silane coupling agent is not available, apply 3M Primer 94 and allow 15 minutes to dry.</p> <p>Indoor, non humid environments: None required.</p>

**EPDM**

Common Concerns	Surface cleaning & preparation	Primer Required
Low adhesion	<ol style="list-style-type: none"> <li>1 For heavy contaminants and oils, clean with 700 Adhesive Cleaner and Solvent.</li> <li>2 Clean with hIPA Clean 300.</li> </ol>	3M™ Primer 94.

**Paints : brushable or spray paint**

Common Concerns	Surface cleaning & preparation	Primer Required
Poor adhesion	<ol style="list-style-type: none"> <li>1 Clean with hIPA Clean 300.</li> <li>2 If adhesion is still poor, try 3M Primer 94 and/or first abrading with Scotch-Brite™ Hand Pad 7447.</li> </ol>	Optional : 3M Primer 94.

**Paints : powder coated paints**

Common Concerns	Surface cleaning & preparation	Primer Required
Waxy layer, low adhesion	<ol style="list-style-type: none"> <li>1 Lightly abrade with Scotch-Brite Hand Pad 7447.</li> <li>2 Clean with hIPA Clean 300.</li> </ol> <p>Note : 3M™ VHB 5952 may be suitable for some surfaces without the need for abrasion. The end user should evaluate suitability.</p>	

**Anodised Aluminium**

Common Concerns	Surface cleaning & preparation	Primer Required
Low Adhesion	<ol style="list-style-type: none"> <li>1 Clean with HIPA Clean 300.</li> <li>2 If adhesion is still poor, try 3M Primer 94 and/or first abrading with Scotch-Brite Hand Pad 7447.</li> </ol>	Optional : 3M Primer 94.

**Flexible PVC (Vinyl)**

Common Concerns	Surface cleaning & preparation	Primer Required
Plasticizer migration	<ol style="list-style-type: none"> <li>1 If mold release agents present, clean with 3M™ Prep-Solvent 70.</li> <li>2 Clean with hIPA Clean 300.</li> </ol>	<p>Required : for non plasticizer resistant tapes : 80 Contact Neoprene Adhesive.</p> <p>Optional : 3M Primer 94 if low adhesion.</p>



### 3M™ Adhesive Cleaner 700 & 300

Versatile and convenient general purpose cleaners. Ideal for cleaning surfaces prior to bonding with 3M™ VHB™ Tapes. 3M Adhesive Cleaner 700 is especially useful for cleaning highly contaminated surfaces, removal of adhesive residue or dismantling previously bonded articles.



### VHB™ Surface Wipes

A cloth packed in a convenient sachet which is soaked in Isopropyl Alcohol and is ideal for cleaning substrates prior to the application of VHB Tape. Ideal for small areas that need cleaning, or in taping kits.



### Scotch-Brite™ General Purpose Hand Pad 7447

The most versatile hand pad. Scotch-Brite General Purpose Hand Pad 7447 has excellent denibbing, deburring and mild scale or burn removal properties. The pad produces a medium grade finish, ready for cleaning.



### Roloc™ Surface Conditioning Discs

Roloc™ Surface Conditioning Discs can be used to clean surfaces by removing rust, oxidization, paint, discolouration and other surface contaminants.



### 3M™ Primer 94

With 3M Primer 94, you can take advantage of VHB Tape on a wider range of surfaces. You can promote adhesion and promote bond strength on difficult surfaces. It dries quickly for fast tape application. (Availability subject to 3M technical approval).



### 80 Contact Neoprene Adhesive

Aerosol contact adhesive that is ideal for priming porous surfaces, such as brick, concrete, wood and flexible PVC.



### Scotch-Grip™ 1099

Can be used for priming polyurethane or rubber surfaces.

## Run an evaluation

As 3M cannot anticipate all of the different possible surfaces and contaminants that may exist, it is imperative that the user conduct an evaluation to determine the suitability of 3M VHB Tapes, surface preparation procedures, and any other processes that may have an influence on the tape or bonded parts. Likewise, where there are any changes in plastic or paint formulation, or suppliers of these materials, it is advisable to run evaluations to ensure that the change has not influenced the compatibility of the surface with 3M VHB Tapes