



# VHB™

## 9473PC Adhesive Transfer Tape

### Product Data Sheet

Updated : November 2001

Supersedes : February 1999

#### Product Description

9473 has a very firm acrylic pressure-sensitive adhesive. It features very high shear holding power.

Bond strength increases substantially with natural ageing.

#### Physical Properties

Not for specification purposes

<b>Adhesive Type</b>	Acrylic	<b>3M ref</b> : A-10
<b>Thickness</b> (ASTM D-3652) Tape Liner Total	0.25 mm      10 Thou 0.10 mm 0.35 mm	
<b>Release Liner</b>	Poly Coated Tan Paper.	Printed Green 3M VHB™
<b>Tape Colour</b>	Clear	
<b>Shelf Life</b>	12 months from date of despatch by 3M when stored in the original carton at 21°C (70°F) & 50 % Relative Humidity	

#### Performance

#### Characteristics

Not for specification purposes

<b>Peel Adhesion to Steel</b> <small>180° peel @ room temp, 72 hr dwell, jaw speed 300mm/min ASTM D-3330</small>	14.2 N/10mm	Please see Peel Adhesion Continued on next page.
<b>Static Shear Strength</b> <small>weight held for 10,000 mins to stainless steel with ½ sq in (3.23 sq cm) overlap</small>	1000g @ 20°C 1000g @ 65°C 1000g @ 95°C 1000g @ 120°C 500g @ 150°C 500g @ 175°C	Minutes to failure 10,000+ 10,000+ 10,000+ 10,000+ 10,000+ 5,000+
<b>Temperature Performance</b> Minutes/Hours Days/Weeks	260°C 150°C	

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<b>Performance Characteristics Contd...</b> Not for specification purposes	<b>Solvent Resistance</b>	When properly laminated between two impervious materials, adhesive will resist mild acids and alkalis, most oils, grease, gasoline, kerosene, JP-4 fuel, hydraulic fluids and other typical aromatic and aliphatic hydrocarbon and ketone solvents.
	<b>UV Light Resistance</b>	Excellent.

<b>Performance Characteristics (Cont..)</b> Not for specification purposes	<b>Water Resistance</b>	When properly laminated between two impervious materials and submitted to 100 hour immersion in water at 20°C the adhesive bond is not affected.																							
	<b>Environmental Resistance</b>	Peel adhesion tests on tapes applied to glass, stainless steel, and aluminium and subjected to 1000 hours Weather - ometer exposure showed no decrease in bond strength and no degradation of the adhesive. Adhesive laminated between glass and clear polyester and exposed to Florida sunshine for 1 year showed no degradation of the adhesive.																							
	<b>Insulation Resistance</b>	$>1 \times 10^6$																							
	<b>Peel Adhesion (Cont...)</b> <small>180° peel @ room temp, 72 hr dwell, jaw speed 300mm/min ASTM D-3330</small>	<table border="1"> <tr> <td>Stainless Steel</td> <td>14.2</td> <td>N/10mm</td> </tr> <tr> <td>Aluminium</td> <td>14.2</td> <td>N/10mm</td> </tr> <tr> <td>Rigid Vinyl</td> <td>12.0</td> <td>N/10mm</td> </tr> <tr> <td>ABS</td> <td>9.8</td> <td>N/10mm</td> </tr> <tr> <td>Polycarbonate</td> <td>12.5</td> <td>N/10mm</td> </tr> <tr> <td>Glass</td> <td>12.5</td> <td>N/10mm</td> </tr> <tr> <td>Acrylic</td> <td>12.5</td> <td>N/10mm</td> </tr> <tr> <td>Epoxy</td> <td>12.5</td> <td>N/10mm</td> </tr> </table>	Stainless Steel	14.2	N/10mm	Aluminium	14.2	N/10mm	Rigid Vinyl	12.0	N/10mm	ABS	9.8	N/10mm	Polycarbonate	12.5	N/10mm	Glass	12.5	N/10mm	Acrylic	12.5	N/10mm	Epoxy	12.5
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<b>Additional Product Information</b>	<b>Thermal Conductivity</b>	<b>Dielectric Strength</b>	A-10 acrylic adhesive is designed for applications requiring high peel and shear strength. Performance data on various tests are shown above.
	<b>Watt/cm °C</b>	<b>(Volts/25µm)</b>	
	0.0016	5,500 Volts	

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## Application Techniques

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and thus improving bond strength.

To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Typical surface cleaning solvents are isopropyl alcohol/water mixture (rubbing alcohol) or heptane. Use proper safety precautions for handling solvents.

It may be necessary to seal or prime some substrates prior to bonding.

a. Most porous or fibred materials (e.g. wood) will require sealing to provide a unified surface.

b. Some materials (e.g. copper, brass, plasticised vinyl) will require priming or coating to prevent interaction between adhesive and substrates.

Ideal tape application temperature range is 20 to 38°C. Initial tape application to surfaces at temperatures below 10°C is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

In some cases bond strength can be increased and ultimate bond strength can be achieved more quickly by exposure of the bond to elevated temperatures (e.g. 65°C) for one hour. This provides better adhesive wetout on to the substrates.

## CAUTION

The following situations must be evaluated thoroughly to determine whether VHB products are suitable for the intended use.

Applications of 4950F which require performance at severe cold temperatures must be thoroughly evaluated, if the expected use will subject the VHB Joining System fastener to high impact stresses. For cold temperature applications from 0 to 10°C use 4951 (see VHB Special Feature products data sheet).

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## Applications

VHB Joining Systems are suited for use in many interior and exterior industrial applications. In many situations, they can replace rivets, spot welds, liquid adhesives, and other permanent fasteners. Each product in the VHB family has specific strengths. These can include high tensile, shear and peel adhesion and resistance to solvents, moisture and plasticiser migration. All VHB tapes should be thoroughly evaluated by the user under actual use conditions with intended substrates, especially if expected use involved extreme environmental conditions.

VHB Joining Systems are suitable for bonding a variety of substrates, including sealed wood, many plastics, composites and metals. Plastics which can be a problem are polyethylene, polypropylene, PTFE, silicones and other low surface energy materials.

Plasticised vinyl bonding is dependent upon the types and concentrations of plasticisers which can migrate into the adhesives causing a reduction in bond strength; 4945 is most resistant to plasticiser migration. (see VHB Special Feature products data sheet).

Galvanised surfaces are potential problems and should be carefully evaluated.

To prevent corrosion on copper and brass, only lacquer coated material should be used with VHB Joining Systems.

**Thorough evaluations are recommended when bonding is required to any questionable surface.**

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Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications.

This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations.



## Tapes & Adhesives

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