



# VHB™ Acrylic Foam Tape 4947F

## Product Data Sheet

Updated : Sept 2003

Supersedes : Jan 2003

### Product Description

4947F is a double coated pressure sensitive adhesive tape for bonding a wide range of materials. The closed cell acrylic foam is conformable to increase contact with the surfaces. This product is identical to 4941, except black in colour.

### Physical Properties

Not for specification purposes

<b>Adhesive Type</b>	Acrylic
<b>Thickness</b> (ASTM D-3652)	1.1 mm
<b>Foam Density</b>	720 kg/m <sup>3</sup>
<b>Release Liner</b>	Red Polyethylene Film
<b>Tape Colour</b>	Black
<b>Shelf Life</b>	24 months from date of manufacture when stored in the original carton at 20°C & 50 % Relative Humidity

### Performance

#### Characteristics

Not for specification purposes

<b>Peel Adhesion to Stainless Steel</b> 90° peel @ room temp, 72 hr dwell, jaw speed 300mm/min	35 N/10mm
<b>Dynamic Shear</b> (stainless steel)	480 kPa
<b>Static Shear Strength</b> weight held for 10,000 mins to stainless steel with ½ sq in (3.23 sq cm) overlap	1000 g @ 22°C 500 g @ 68°C
<b>Normal Tensile (T-Block)</b> to Aluminium at room temp, 6.45 sq cm, jaw speed 50 mm/min	585 kPa
<b>Temperature Performance</b> Max (hours/minutes) Max Continuous (days/weeks)	150 °C 90 °C
<b>Solvent Resistance</b> Splash testing cycle - 20 seconds submersion - 3 cycles.	High.

**Additional Product Information**

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and thus improves 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 40°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 4947F 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 application from 0 to 10°C use 3M Acrylic Foam Tape 4943.

**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 fasteners should be thoroughly evaluated by the user under actual use conditions with intended substrates, especially if expected use involves 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, teflon, silicones and other low surface energy materials.

Plasticised vinyl bonding is dependent on the types and concentrations of plasticisers which can migrate into the adhesives causing a reduction in bond strength; 3M Acrylic Foam Tape 4945 is most resistant to plasticiser migration.

Galvanised surfaces are potential problems and should be carefully evaluated.

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

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

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.



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