



VHB™ Acrylic Foam Tape 4951F

Product Data Sheet

Updated : Sept. 2002
Supersedes : March 1996

Product Description VHB Joining Systems utilise firm acrylic adhesives which have excellent long term holding power. The peel adhesion and tensile holding power of products in the VHB family are significantly higher than typical pressure sensitive tape products. Resistance to solvents, temperature extremes, and U.V. light make VHB products suitable for many interior and exterior applications.

Physical Properties
Not for specification purposes

Adhesive Type	Acrylic	3M ref : A-35
Thickness (ASTM D-3652) Tape Liner Total	1.1 mm 0.05 mm 1.15 mm	
Foam Density	800 k/gm ³	
Release Liner	Clear Film	
Tape Colour	White	
Shelf Life	24 months from date of despatch by 3M when stored in the original carton at 21° & 50 % Relative Humidity	

Performance Characteristics
Not for specification purposes

Peel Adhesion to Stainless Steel 90° peel @ room temp, 72 hr dwell, jaw speed 300mm/min	31.5 N/10mm	
Static Shear Strength weight held for 10,000 mins to stainless steel with ½ sq in (3.23 sq cm) overlap	1250 g @ 20°C 500 g @ 65°C 500 g @ 90°C	
Normal Tensile (T-Block) to Aluminium at room temp, 6.45 sq cm, jaw speed 50 mm/min	760 kPa	

Date : Sept. 2002
4951F Acrylic Foam Tape

Performance Characteristics (Cont...)

Not for specification purposes

Temperature Performance (Minutes/Hours) (Days/Weeks)	150 °C 90 °C	
Solvent Resistance <small>Splash testing cycle - 20 seconds submersion - 3 cycles.</small>	No apparent degradation when exposed to splash testing of most solvents including gasoline, JP-4 jet fuel, mineral spirits, motor oil, ammonia cleaner, acetone, methyl ethyl ketone. 20 seconds air dry.	
UV Light Resistance	Excellent.	

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.

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.

Acrylic Foam Tape 4951F utilises a unique low temperature acrylic adhesive which allows initial applications to be made at temperatures as low as (0°C).

At room temperature the adhesive is very aggressive and provides excellent initial adhesion to many surfaces.

- Low temperature application.

Most high performance pressure sensitive acrylic adhesives have very low initial tack at temperatures below 15°C. Acrylic Foam Tape 4951F was designed to allow outdoor assembly of signs and construction materials and assembly of cold materials in large manufacturing plants above (0°C).

- Room temperature applications.

At room temperature 4951F offers better tack/quick stick than other tapes in the VHB family. This can be important in a wide range of applications where a more aggressive adhesive is desirable.

Date : Sept. 2002
4951F Acrylic Foam Tape

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 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; 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.

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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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