



VHB™

4945 Acrylic Foam Tape

Product Data Sheet

Updated : March 1996
Supersedes : October 1993

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-30 |
| Thickness (ASTM D-3652) Tape Liner Total | 1.1 mm 0.08 mm 1.18 mm | |
| Foam Density | 800 kg/m ³ | |
| Adhesive Carrier | Acrylic Foam cc | |
| Release Liner | Red Plaid Printed Paper | |
| Tape Colour | White | |
| Shelf Life | 24 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

| | | |
|--|---|--|
| Peel Adhesion to Stainless Steel 90° peel @ room temp, 72 hr dwell, jaw speed 300mm/min | 44 N/10mm | |
| Static Shear Strength weight held for 10,000 mins to stainless steel with ½ sq in (3.23 sq cm) overlap | 1500 g @ 20°C 500 g @ 66°C 500 g @ 93°C | |
| Normal Tensile (T-Block) to Aluminium at room temp, 6.45 sq cm, jaw speed 50 mm/min | 97 N/cm ² | |

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Performance Characteristics (Cont...)
Not for specification purposes

| | | |
|--|---|--|
| Temperature Performance (Minutes/Hours) (Days/Weeks) | 150 °C 93 °C | |
| Solvent Resistance Splash testing cycle - 20 seconds submersion - 3 cycles. | 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.

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.

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.

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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Special Feature Products

4945 has very good plasticiser resistance and adhesion to vinyl. Because of the wide variation in vinyl formulation, however, evaluation must be conducted with the specific vinyl used to insure that performance is satisfactory. Problems related to plasticiser migration can often be predicted by accelerated ageing at 65°C for one week.

4945 Feature

Acrylic Foam Tape 4945 utilises an acrylic adhesive which provides excellent adhesion to many paint finishes and plasticised vinyls.

Adhesion to painted surfaces.

There is a wide variety of paint systems available and specific recommendations cannot be made. For painted surface, Acrylic Foam Tape 4945 should be evaluated along with other VHB Tape products.

Adhesion to plasticised materials.

Plasticisers are common ingredients in many soft, flexible plastics. These plasticisers can migrate into adhesives causing a reduction in bond strength. Adhesive bond performance is dependent on the types and concentrations of plasticisers used in the plastic formulation. Acrylic Foam Tape 4945 is resistant to migration of many plasticisers and should be evaluated for applications requiring bonding to flexible plastics.

Underwriters Laboratories (U.L.) Recognition

U.L. 746-C Temperature Rating

| Substrate | Temperature (°C) |
|--------------------------------|------------------|
| Unplasticised (Nylon 6-6) | 75 |
| ABS and Polycarbonate | 90 |
| Polyamide (Nylon 6-6) | 90 |
| Galvanised Steel and Aluminium | 110 |
| Enamelled Steel and Phenolic | 110 |

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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.



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