

3M™ Water Based Foam Adhesive

Temporary Technical Data

April, 2006

Product Description

3M™ Water Based Foam Adhesive is a water-dispersed, fast setting adhesive. This neoprene-based product bonds many porous substrates to porous or non-porous substrates with minimal dry time. Adheres to many types of flexible polyurethane foam, latex foam fabric, polyester fiberfill, wood, plywood, particleboard and many plastic and metal surfaces.

Features/Advantages

Features

- Water-dispersed
- High solids
- One component
- Available two component
- Neoprene-based
- Low pressure sprayable
- Non-dimpling

Advantages

- Non-flammable in the wet state
- High coverage
- Simplified dispensing
- Instant bond
- High heat resistance
- Reduces misting and overspray
- Soft bondlines

Note: This product is designed to be applied between two substrates. Application to substrates that results in direct exposure of the adhesive to light may result in eventual discoloration of the exposed adhesive. Direct exposure can be controlled by proper spray application. Adhesive may soak through very thin fabrics.

Not recommended for exterior bare metal surfaces unless metal surfaces are completely dried by force drying and protected from moisture.

Primed or painted steel surfaces must be thoroughly tested for corrosion and compatibility with 3M™ Water Based foam adhesive and spray activator #1 before use.

Typical Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

	One-Part System	Two-Component System	
	3M™ Water Based Foam Adhesive	3M™ Water Based Foam Adhesive	3M™ Fastbond™ Spray Activator #1
Viscosity (Brookfield RVF #1 sp @ 20 rpm)	10-40 cps	10-40 cps	Water thin
Solids (by weight)	45-49%	45-49%	15-19%
Color (wet)	Neutral / Lavender	Neutral / Lavender	Clear
Density	9.0-9.4 lbs. / gal.	9.0-9.4 lbs. / gal.	9.4-9.8 lbs. / gal.
Flashpoint (Setaflash closed cup tester)	None	None	None
Coverage (approx.) (@ 2 grms/sq ft dry wt)	1000 sq ft per gallon	1000 sq ft per gallon	Included in adhesive
pH	8.4-9.0	8.4-9.0	4.4-5.4
Set Time (foam to foam)	15 seconds	<5 seconds*	
Bonding Range	20 minutes	20 minutes	
Co-Spray Ratio	N/A	20 parts**	1 part
Application Method	Single Component Spray	Co-spray	Co-spray

* Bonding porous to porous materials.

**The ratio may vary based on application requirements.

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Application Equipment for One-Part Adhesive

Note: Appropriate application equipment can enhance adhesive performance. We suggest the following application equipment for the user's evaluation in light of the user's particular purpose and method of application.

Contact your local 3M sales representatives or Adhenco Ltd. (1-800-265-1438 or 1-416-291-3504) if there are any questions about application equipment.

Air Atomizing Spray Equipment

Low to Medium Volume Applications				
Equipment Type	Equipment Example*	Air Cap	Fluid Tip	Atomizing Air Pressure**
Siphon Gun	Critter Siphon Gun #118	N/A	N/A	10 psi
Gravity Feed Gun	Binks Model 95G	66SD	65 SS (.059")	6 psi
	Binks M1-G	93P	94 (.055")	10 psi

Medium to High Volume Applications				
Equipment Type	Equipment Example*	Air Cap	Fluid Tip***	Atomizing Air Pressure**
Pressure Fed Hand Held Spray Guns	Binks 2001 SS	63P	63 SS (.028")	10 psi
	Binks 95	63P	63 SS (.028")	10 psi
	Binks Cub SL	25	25 T (.025")	10 psi

*Systems other than those listed can be used with 3M™ Water Based Foam Adhesive. Existing spray equipment can also be adapted. Fluid hoses used previously with solvent-based adhesive or cleaning compounds must be replaced with new hose. Be sure to follow the equipment manufacturer's precautions, directions for use, and recommendations for such equipment. For additional information, contact your local 3M representative.

**Starting air pressure on regulator. Adjust up or down based on application requirements.

*** Also available are 2 piece fluid tips as replacements fluid tips. These 2 piece tips allow for easier cleaning with less chance of adhesive contamination of the air passages in the spray gun. For additional information, contact your local 3M representative.

Pressure Pots

Stainless steel pressure pots recommended. Non-stainless may be used with plastic liners if dip tube and fittings are changed to plastic or stainless steel.

Water Based Foam Adhesive

Application Equipment for Two-Component Adhesive

Note: Appropriate application equipment can enhance adhesive performance. We suggest the following application equipment for the user's evaluation in light of the user's particular purpose and method of application.

Contact your local 3M sales representatives or Adhenco Ltd. (1-800-265-1438 or 1-416-291-3504) if there are any questions about application equipment.

Air Atomizing Spray Equipment:

When hand spraying, plural component (co-spray) applicators are used. These applicators spray activator and adhesive through separate fluid nozzles with mixing occurring outside the spray applicator.

For automatic spray systems, separate spray applicators are used for the activator and adhesive, with the applicators aimed so the spray patterns converge and mix together before reaching the substrate.

Note: Premixing of the adhesive and activator prior to spraying is NOT possible and makes the adhesive unusable.

Hand Held Spray Applicators	Air Cap	Fluid Nozzle	Atomizing Air Pressure *
Binks® Mach 1PC H.V.L.P.	91 PC	94F (.055")	10-20 psi
95 PCXT**	NA	0.070" or 0.031"	10-20 psi
Graco™ Optimizer™ 2K H.V.L.P.	188-754	185-702 (.055")	10-20 psi
DeVilbiss Pro Bond 2K	28L	FF (.055")	10-20 psi

* The pressure setting can vary to match adhesive flow rate.

**This is a Binks gun outfitted with the exclusive USL, plural component Tornado Nozzle assembly.

Pressure Pots

Stainless steel pressure pots recommended. Non-stainless may be used with plastic liners if dip tube and fittings are changed to plastic or stainless steel.

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Handling/Application Instructions

Directions for Use:

Note: When using 3M™ Water Based Foam Adhesive, it is required that at least one of each pair of substrates to be bonded be porous or water permeable.

1. **Surface Preparation:** Use only on clean, dry surfaces. Contamination of surfaces with oil, grease or release agents will prevent good, strong bonds.
2. **Application:** Adhesive does not require agitation before use. Adjust the spray equipment to give a fine, mist-like spray pattern. Spray a uniform, light coat of adhesive to **both** surfaces holding spray applicator 10-15 inches from surface.
3. **Coverage:** Coverage will depend on foam density, surface porosity of substrates, and strength of adhesive bond required. Typically one gallon of adhesive will cover up to 1000 square feet of substrate surface at a coating weight of approximately 2 dry grams of adhesive/sq. ft. In all cases, user evaluation will be required to determine the optimum coverage levels.

Note: Application of adhesive at coating weights above 2 dry grams/sq. ft. or using a coarse spray pattern may result in longer activation times.

4. **Activation Time:** For one-part adhesive system, the adhesive activates sufficiently to permit making foam/foam bonds within 15 seconds after application. If two-component adhesive system is used with proper mixing of adhesive and activator and depending on ambient conditions, adhesive activates sufficiently to make foam/foam bonds within 5 seconds after application. Bonds of foam or fabric to smooth, non-porous surfaces such as plastic or metal will require longer activation times. Bonds may be made up to 20 minutes after application depending on ambient temperature and humidity conditions. See Note above.
5. **Assembly and bonding:** For foam bonding and foam fabrication, pressure sufficient to compress the foam should be applied to the bond line by manual or mechanical methods. Bond the adhesive coated surfaces with sufficient pressure to ensure good contact across the entire adhesive bond line.
6. **Cleanup:** Wet adhesive may be removed with water containing a small amount of detergent.* Dry adhesive may be removed with a combination of 3M™ Citrus Base Cleaner or equivalent and mechanical systems such as wire brushing or 3M™ Scotch Brite™ pads.**
Dry adhesive cannot be removed from porous surfaces such as foams or fabrics. Flush the adhesive wetted surfaces of spray equipment with water containing a small amount of detergent.* Follow with a flush of clean water.

*Cleaning Solution: One pint of detergent to five gallons of water.

****Note:** When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

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Typical Adhesive Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Heat Resistance: After air drying 24 hours, 4-inch cube knife edge foam bonds made with 3M™ Water Based Foam Adhesive on 1.2 lb./cu. ft. density urethane foam specimens withstood operating temperatures at 230°F (110°C) for 24 hours without showing any signs of failure along the bonded seams. The adhesive exhibited no indication of attacking or deteriorating the foam and the bondlines remained strong and flexible.

Peel Adhesion: Peel bonds of cotton duck (canvas) to various substrates were tested at a peel angle of 180 degrees at two inches per minute separation rate at a temperature of 77°F (25°C). The value listed is the average force required to peel the canvas from the substrates in pounds per inch of bond width (PIW).

Foam Tear: Polyurethane foam of 1.2 lb./cu. ft. density was bonded to various substrates at a dry coating weight of 2-3 gms./sq. ft. After bonds were made they were air-dried at ambient temperature for 24 hours. At the end of the drying period, an effort was made to pull the foam from the surface of the substrate. It was noted if the adhesive released from the substrate or if there was tearing of the foam.

Substrate	Peel Adhesion (PIW)	Foam Tear
ABS	2.0	Yes
Polyethylene	1.5	Yes
Polypropylene	0.9	Yes
PVC	1.9	Yes
Aluminum	1.1	Yes
Galvanized Steel	1.1	Yes
Cold Rolled Steel	1.1	Yes

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Storage	Best storage temperature is 60-80°F (15-27°C). Higher temperatures reduce normal storage life. Lower temperatures cause increased viscosity of a temporary nature. This water-dispersed adhesive will become unusable with prolonged storage below 40°F (4°C). Rotate stock on a “first in, first out” basis. Protect from freezing.
Shelf Life	When stored at the recommended temperature in the original, unopened container, this product has a shelf life of 12 months from date of shipment.
Precautionary Information	Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.
For Additional Information	To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit www.3M.com/adhesives . Address correspondence to: 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.
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