



Fastbond™

2000-NF Adhesive

Spray Activator #1

Technical Data

February, 1995

(Supersedes Dec., 1994 and Sept., 1993)

Product Description 3M™ Fastbond™ 2000-NF Adhesive with Spray Activator #1 is a water-dispersed, high solids, activated adhesive which provides immediate bonding capabilities and handling strength without forced drying equipment.

Features

- Immediate bonding without heat.
- Immediate handling strength.
- Bonds flexible polyurethane and latex foams, plastic laminate, wood, plywood, particle board, fabrics, fiber, aluminum, galvanized steel and many plastics.
- Post-formable and heat resistant.
- Co-sprayed with plural component, external mix spray systems – no premixing, no limited pot life.
- Available in blue, light orange or neutral color.

Note: Not recommended for bonding bare steel surfaces (unless force dried and protected from moisture). Primed or painted steel surfaces must be thoroughly tested for corrosion and compatibility with Fastbond 2000-NF Adhesive and Fastbond 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.

	Fastbond 2000-NF Adhesive	Fastbond Spray Activator #1
Viscosity (approx.)	200-750 cps	Water thin
Brookfield Viscometer	RVF #2 sp. @ 20 rpm @ 80°F	
Solids (by weight)	47-51%	15-19%
Base	Polychloroprene	Inorganic Salt
Color(s)	Blue, Light Orange or Neutral	Clear
Net Weight	8.9-9.3 lbs./gal.	9.4-9.8 lbs./gal.
Flash Point (Setflash® closed cup tester)	None	None
Volatiles	Water and less than 5% Toluene and Methanol	Water
Coverage @ 3 gms./ft. ² dry weight	690 ft. ² /gal. (including activator)	Included in adhesive
Application Method	Co-Spray	Co-Spray
Co-Spray Ratio	15 parts	1 part
pH	10-11	4.4-5.4

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2000-NF Applicator Spray Activator #1

Application Equipment Suggestions

Appropriate application equipment enhances 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.

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 Tip	Air Press.	Approximate Air Requirement	Fluid Flow*
Binks Mach 1PC H.V.L.P.	91 PC	94 F	15-30 psi	6 scfm @ 15 psi	9-12 fl. oz./min.
Graco Optimizer 2K H.V.L.P.	188-754	185-702	15-30 psi	6 scfm @ 15 psi	9-12 fl. oz./min.
Mattson Cross-Fire H.V.L.P.	81270	30024	15-30 psi	6 scfm @ 15 psi	9-12 fl. oz./min.

Automatic Spray Applicators	Air Cap.	Fluid Tip	Air Press.	Approximate Air Requirement	Fluid Flow*
Binks Mach 1PCA H.V.L.P.	91 PC	94 F	15-30 psi	6 scfm @ 15 psi	9-12 fl. oz./min.
Binks Mach 1A H.V.L.P. (Adhesive)	91 PT	94 F	15-30 psi	11 scfm @ 30 psi	9-12 fl. oz./min.
Binks Mach 1A H.V.L.P. (Activator)	91 PT	90 F	15-30 psi	11 scfm @ 30 psi	one-fifteenth of adhesive flow
Binks No. 61 (Adhesive)	66 SF	65 SS	15-30 psi	6 scfm @ 20 psi	9-12 fl. oz./min.
Binks No. 61 (Activator)	66 S	63 SS	10-15 psi	3.4 scfm @ 30 psi	one-fifteenth of adhesive flow
DeVilbiss AGB (Adhesive)	30	FF	15-30 psi	6 scfm @ 20 psi	9-12 fl. oz./min.
DeVilbiss AGB (Activator)	30	G	10-15 psi	6 scfm @ 20 psi	one-fifteenth of adhesive flow

*TO MEASURE FLUID FLOW

Hand Held Applicators: Pressurize adhesive source only. Direct adhesive fluid nozzle into a measuring device. Pull trigger and flow material into measuring device for 60 seconds. Increase or decrease fluid source pressure to obtain desired fluid flow. The fluid flow of the activator should be adjusted to 15 to 1 ratio when co-sprayed. The measurement can be done by either weight or volume.

Automatic Applicators: Pressurize adhesive fluid source only. Activate trigger and flow adhesive into measuring device for 60 seconds. Increase or decrease fluid pressure to obtain desired fluid flow. When adhesive fluid flow is correctly adjusted repeat the process with the activator spray applicator, setting fluid flow to one-fifteenth of the adhesive fluid flow. The measurement can be done by either weight or volume.

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Application Equipment Suggestions (*continued*)

Material Supply:

Pressure Pots

Adhesive and Activator: For best results, use stainless steel pressure pots. Non-stainless pressure pots may be used if used with plastic liner and the dip tube and fittings are changed to plastic or stainless steel.

Pumps

Adhesive: A 1 inch or larger plastic or stainless steel bodied, double diaphragm pump with Teflon® diaphragms and ball checks is suggested. Do not use piston type reciprocating pumps or diaphragm pumps smaller than 1 inch (outlet diameter).

Activator: A 1:1 or 2:1 pogo or piston type reciprocating pump is suggested. All pump parts in contact with activator must be plastic or stainless steel.

Diaphragm pumps and fluid regulators can be used (stainless steel or plastic on all wetted components).

Hoses

All fluid hoses should be nylon or polyethylene lined. Hose fittings should be stainless steel or plastic.

Note: Do not use fluid lines that have previously been used with solvent whether flammable or nonflammable.

Handling/Application Information

When using Fastbond 2000-NF Adhesive and Fastbond Spray Activator #1 it is required that at least one of each pair of substrates to be bonded be porous or water permeable.

Surface Preparation

Surfaces must be clean, dry and dust free.

Spray Mix Ratio of Activator to Adhesive

It is recommended that Fastbond 2000-NF Adhesive be spray mixed with Fastbond Spray Activator #1 at a ratio of 15 parts adhesive to 1 part activator (by weight or volume). When activated, slight adhesive transfer should occur when adhesive film is touched.

Application

Use a plural nozzle external mix spray applicator to mix adhesive with activator to achieve proper mix of Fastbond 2000-NF Adhesive and Fastbond Spray Activator #1. (Refer to Application Equipment Suggestions above for additional information about spray equipment.) Spray apply a uniform coat of mixed adhesive to both surfaces. (See coverage information below.) One coat should usually be sufficient for both surfaces. Be sure to overlap the spray pattern slightly with each pass of the spray applicator to ensure complete activation of adhesive and uniform coverage. A uniform dull film indicates sufficient mixture of Fastbond 2000-NF Adhesive and Fastbond Spray Activator #1.

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2000-NF Applicator Spray Activator #1

Handling/Application Information (*continued*)

Coverage

Approximately 690 sq. ft./gal. sufficient to apply 345 sq. ft. of bonded surface on most substrates such as decorative laminate and particle board. Optimum performance is obtained using 2.5-3.5 grams/sq. ft. dry adhesive on each surface

Note: Coverage will vary depending on the porosity of substrates and strength of adhesive bond desired. For decorative laminate to particle board, optimum performance is obtained at 2.5-3.5 grams of dry adhesive per square foot applied to each surface. Depending on the user's performance requirements, less adhesive is suggested if fabrics, foams, etc. are to be bonded. In all cases, users evaluation will be required to determine the optimum coverage levels.

Activation Time

With proper mixing of adhesive and activator and depending on ambient conditions, adhesive activates sufficiently to make bonds within 5-15 seconds after application. Depending on ambient conditions and substrates, bonds should be made within (2) hours. While bonds may be made immediately, the optimum initial strength will be obtained by allowing the adhesive to dry the same amount of time as the previous adhesive (solvent) type.

Assembly

For foam bonding and foam fabrication, pressure may be applied to the bond by manual or mechanical methods. Bond adhesive coated surfaces with sufficient pressure to assure good contact across adhesive bond line. For decorative laminates, spacers such as dowels or strips of laminate may be used to help prevent premature adhesive/adhesive contact and bonding prior to positioning. Slide out the spacers and apply uniform pressure working toward the edges. A 3 inch roller used with maximum body pressure should be used to help ensure adequate contact and bonding especially on the edges. Bonded assemblies may be machined, trimmed, etc. immediately after bonding. The use of a pinch roll is preferred for optimum performance.

Cleanup

Work Surface: If adhesive has not activated, clean surfaces with water or with a small amount of liquid detergent followed with a cleaner such as 3M Citrus Base Cleaner or equivalent. Dried, activated adhesive may be cleaned with a combination of 3M Citrus Base Cleaner and mechanical systems such as wire brushing.

Spray Equipment: Flush adhesive portion of spray equipment with cold water containing a small amount of detergent* followed by a flush with clean water. The activator portion of spray equipment should be flushed with clean water. (no detergent).

***Cleaning Solution:** One pint of detergent such as Pine-Sol® detergent to five gallons of water.

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**Typical Adhesive
Performance
Characteristics**

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Overlap Shear Strength (ASTM D 1002)

1/8 inch birch to 1/8 inch birch. Adhesive co-spray applied and bonded immediately with nip roll pressure. Bonds tested after aging 3 weeks @ 75°F and 50% R.H. at a separation rate of 0.2 in./min.

Test Temp.	Value (psi)
-30°F	1000
75°F	350
180°F	50
200°F	40
225°F	30

Overlap Shear Rate of Strength Build-Up (ASTM D 1002)

1/8 inch birch to 1/8 inch birch. Adhesive co-spray applied and bonded immediately with nip roll pressure. Bonds aged at 77°F/50% R.H. and 90°F/90% R.H. for indicated time and then tested at a separation rate of 0.2 in./min. at 75°F.

Time	Value (psi)	
	77°F/50% R.H. aged	90°F/90% R.H. aged
1 min.	55	55
15 min.	75	75
30 min.	130	160
60 min.	160	180
90 min.	165	190
2 hours	170	190
4 hours	230	215
8 hours	260	255
24 hours	290	315
3 days	320	340
7 days	350	350
14 days	350	350
21 days	350	350

Flatwise Tensile Strength (ASTM C 297)

High pressure laminate to particle board. Adhesive co-sprayed applied and bonded immediately with nip roll pressure. Bonds aged for 3 weeks @ 75°F/50% R.H. and then tested at a separation rate of 0.05 in./min.

Test Temp.	Value (psi)
75°F	84
180°F	25
200°F	25
225°F	25

Foam to Foam Heat Resistance

A pinch bond (knife edge) of 4 inch thick urethane foam (1.2 lb./ft.³) was made co-spraying adhesive and bonding immediately with hand pressure. The bond was then immediately placed in a 160°F oven for 3 months.

- Test Result
- No opening or separation of pinch bond.
 - No degradation or hardening of adhesive bondline.

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Storage and Handling Fastbond 2000-NF Adhesives and Fastbond Spray Activator #1 – **Protect from freezing.**

Storage

Best storage temperature is 60-80°F. 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. Rotate stock on a 'first in, first out' basis.

Shelf Life

When stored at the recommended temperature in the original, unopened container, these products have a shelf life of 15 months from date of shipment.

Precautionary Information Refer to **Product Label and Material Safety Data Sheet for safety and health information before using this product.**

For Additional Information To request additional product information or to arrange for sales assistance, call toll free 1-800-742-5933. Address correspondence to: 3M Industrial Tape and Specialties Division, 3M Center, Building 220-8E-04, St. Paul, MN 55144-1000. Our fax number is 612-736-4776. In Canada, phone: 1-519-451-2500. In Puerto Rico, phone: 1-809-750-3000. In Mexico, phone: 5-728-0400.

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ISO 9002

This Industrial Tape and Specialties Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

For Additional Product Safety and Health Information, See Material Safety Data Sheet, or call:

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Industrial Tape and Specialties Division**

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