Fastbond™

2000-NF Adhesive and Spray Activator

Product Data Sheet

Updated : August 2000
Supersedes : July 1997

Product Description

Fastbond 2000-NF Adhesive and Activator is a water-dispersed, high solids, activated adhesive which provides immediate bonding capabilities and handling strength without forced drying equipment.

Fastbond 2000 bonds to a wide variety of substrates and its high performance makes it ideal for laminating applications such as kitchen and office counter-tops, doors, partitions and insulation panels.

Features

Immediate bonding without heat.
Immediate handling strength.
Bonds flexible polyurethane and latex foams, plastic laminate, wood, plywood, aluminium, protected metals, particle board, fabrics, fibre, and many plastics.
Post-formable.
Co-sprayed with 2 component, external mix spray systems (no premixing, no limited pot life).
Not recommended for bonding metal surfaces which are not protected from corrosion by water. Primed or painted metal surfaces must be thoroughly tested for corrosion and compatibility with Fastbond 2000 adhesive and activator before use.

Physical Properties
Not for specification purposes

	2000-NF Adhesive	**Activator**
Viscosity Brookfield Viscometer RVF sp.2 at 20 rpm at 26°C.	200-700 cPs	Water thin
Solids (by weight)	47 - 51%	13.5 - 16.5 %
Base	Polychloroprene	Inorganic Salt
Colour	Blue and Neutral	Clear
Net Weight	1.06 - 1.11	1.12 - 1.16
Flash Point	None	
Coverage at 20 g/m² dry weight *	25 m2/l (incl. Activator)	
Application Method	Co-spray	Co-spray
Co-spray Ratio	15 parts	1 part

Physical Properties Cont

Not for specification purposes

	2000-NF Adhesive	Activator
pH	10 - 11	3.7 - 4.6
VOC Content	5%	
Shelf Life	12 months from date of despatch by 3M when stored in the original carton at 21°C (70°F) & 50 % Relative Humidity	
* For HPL applications coverage at 15g/m² dry weight or 30m²/l.		

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.

Overlap Shear Strength (ASTM D1002)

3.2mm birch to 3.2mm birch. Adhesive co-spray applied and bonded immediately with nip roll pressure. Bonds tested after ageing 3 weeks at 23°C and 50% Relative Humidity at a separation rate of 5 mm/min.

Test Temperature	Value (MPa)
-34 °C	7.0
23 °C	2.5
82 °C	0.35
92 °C	0.28
106 °C	0.21

Overlap Shear Rate of Strength Build Up (ASTM D1002)

3.2mm birch to 3.2mm birch. Adhesive co-spray applied and bonded immediately with nip roll pressure. Bonds aged at 25°C,50% RH and 32°C, 90% RH for indicated time and tested at a separation rate of 5 mm/min.

Time	Value (MPa) 25°C, 50% RH Aged	Value (MPa) 32°C, 90% RH Aged
1 minute	0.38	0.38
15 minutes	0.52	0.52
30 minutes	0.91	1.12
60 minutes	1.12	1.26
90 minutes	1.16	1.33
2 hours	1.19	1.33
4 hours	1.61	1.51
8 hours	1.82	1.79
24 hours	2.03	2.21
3 days	2.24	2.39
7 days	2.46	2.46
14 days	2.46	2.46
21 days	2.46	2.46

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Fastbond 2000-NF Adhesive
and Fastbond Spray Activator

Shear Strength on Range of Substrates

Surface Preparation : Alcohol wiped (IPA) + abraded P180 + alcohol wiped. Adhesive brushed on both sides. Bonded when dry with assembly pressure of 3Kg/cm² minimum. 25*25mm overlap shear specimen where prepared and let dry for 7 days at 23ºC and 50% RH.
Specimen pulled at 23ºC at a rate of 10mm/min.

Substrate	Shear (Mpa)
Polyethylene	1.23
Polypropylene	1.58
EPDM Rubber	0.12
PMMA Plastic	1.95
Polycarbonate	2.41
PVC Plastic	1.69
ABS Plastic	2.19
Polystyrene	1.99
Pine	3.12
Oak	2.88
Plywood	2.55
Glass	1.05
Aluminium	2.12
Steel	2.85

Peel Strength

Surface Preparation : Aluminium degreased with MEK, glass and plastics wiped with IPA.
180º peel specimen rigid substrate to cotton duck, 25mm width, let to dry for 7 days at 23ºC, 50% RH.
Testing speed : 150mm/min.

180º Peel (N/25mm)	Control (23ºC, 7 days)	70ºC, 30 days	40ºC, 95% RH, 30 days
Glass	11.0	16.3	15.4
Polypropylene	10.1	11.1	12.3
PVC	12.5	17.0	17.1
Aluminium	18.1	52.3	27.4
Plywood	17.0	30.4	20.6

T-peel (N/25mm)	Control (23ºC, 7 days)
Cotton/cotton	**145.9**

Flatwise Tensile Strength (ASTM C297)

High pressure laminate to particle board. Adhesive co-spray applied and bonded immediately with nip roll pressure. Bonds aged for 3 weeks at 25°C,50% RH and tested at a separation rate of 1.27 mm/min.

Test Temperature	Value (MPa)
23 °C	0.59
82 °C	0.17
92 °C	0.17
106 °C	0.17

Foam to Foam Heat Resistance	A pinch bond (knife edge) of 100 mm thick urethane foam (19.4 kg/m³) was made co-spraying adhesive and bonding immediately with hand pressure. The bond was then immediately placed in a 70°C oven for 3 months.
Test Results	No opening or separation of pinch bond. No degradation or hardening of adhesive bondline.

Wood to Wood Heat Resistance

3.2mm birch to 3.2mm birch.
Adhesive co-spray applied and bonded immediately with nip roll pressure. Bonds tested after ageing 3 weeks at 23ºC and 50% RH at a separation rate of 5mm/min.

Test Temperature	Value (Mpa)
-34ºC	7.0
23ºC	2.5
82ºC	0.35
92ºC	0.28
106ºC	0.21

Service Temperature Range

The recommended service temperature is from -40ºC to +110ºC constant. Exposure to temperatures of up to 130ºC are acceptable for short periods.

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 Atomising Spray Equipment.

When hand spraying, 2 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 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 is NOT possible and makes the adhesive unusable.

For further advice on type of spray equipment, please contact your 3M Sales or Technical Representative.

Handling/Application Information

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

Surface Preparation

All surfaces must be clean, dry and free from dust.

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 a 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. **Hoses:** All fluid hoses should be nylon or polyethylene lined. Hose fitting should be stainless steel or plastic. Note : Do not use fluid lines that have previously been used with solvent whether flammable or not.
Spray Mix Ratio of Activator to Adhesive	It is recommended that Fastbond 2000-NF Adhesive be spray mixed with Activator at a ratio of 15 parts adhesive to 1 part activator (by weight or volume). Immediately after spraying the activated adhesive should be slightly tacky when touched.
Application	Use a plural nozzle external mix spray applicator to mix adhesive with activator to achieve proper mix of Fastbond 2000-NF and Activator. Spray apply a uniform coat of mixed adhesive to both surfaces. Be sure to overlap the spray pattern slightly with each pass of the spray applicator to ensure complete activation of adhesive and a uniform coverage. A uniform dull film indicates sufficient mixture of Fastbond 2000-NF Adhesive and Activator.
Coverage	Approximately 30 m^2/l sufficient to apply 15m^2 of bonded surface on most substrates such as decorative laminate and particle board. Optimum performance is obtained using 15-20 g/m^2 dry adhesive on each surface. NOTE: Coverage will vary depending on the porosity of substrates and strength of adhesive bond desired. Depending on the user's performance requirements, more adhesive is suggested if fabrics, foams, etc. are to be bonded. In all cases, user 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.
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 to adhesive contact and bonding prior to positioning. Slide out the spacers and apply uniform pressure working toward the edges. A 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.

Clean Up

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

Storage and Handling

Best storage temperature is 15-27°C. Higher temperatures reduce normal storage life. Lower temperatures causes increased viscosity of a temporary nature. This water-dispersed adhesive will become unusable with prolonged storage below 5°C. Rotate stock on a "first-in" - "first-out" basis.

Health and Safety Information

Precautions:
Avoid contact with eyes. May cause eye irritation. Avoid prolonged breathing of spray. Mists may cause respiratory irritation. Use only in well ventilated areas.
Protect from freezing.
First Aid:

Eye Contact:
Wash immediately with plenty of water and seek medical advice.

Skin Contact:
Wash with soap and water.
For further health and safety information, please contact the Toxicology Department on Bracknell (01344) 860678.

Specifications

Fastbond™ 2000 has successfully passed fire specifications according to :

- IMO Resolution A653 (16)
- FAR 25.853
- UNE 23-727-90
- NF F a6-101
- B.S. 476 : Part 7 : 1987

Fastbond 2000 is also qualified according to aerospace specification ASNB73711-SP

For complimentary information and certificates, please contact your local technical service representative.

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