Bostik
smart adhesives

EFA+™

WOOD FLOORING ADHESIVE AND MOISTURE VAPOR RETARDER

KEY FEATURES

- Easy spread
- Great ridge retention
- Low VOC

DESCRIPTION

Bostik's EFA+™ is an easy-to-trowel urethane adhesive and moisture control membrane. It provides a tough, flexible, tenacious bond to a variety of surfaces. Bostik's EFA+™ elastomeric characteristics allow the adhesive to move with the wood as it expands and contracts over the life of the floor. Bostik's EFA+™ exhibits a long open time making installation easier and faster. This adhesive has low VOC's and does **NOT** contain any water.

MOISTURE PROTECTION

Bostik's EFA+™ has low moisture vapor permeability and is not adversely affected by moisture. As a result, it will reduce moderate amounts of moisture vapor transmission through the concrete. When applied as directed as a moisture vapor membrane, it will prevent damages caused by subfloor moisture beneath dimensionally stable, engineered wood flooring only. Bostik's EFA+™ may be used for concrete slabs with elevated moisture levels up to 6 lbs. per 1,000 square feet per 24 hours (using an anhydrous calcium chloride test kit according to ASTM F-1869 test method), and up to 80% RH (tested in accordance with ASTM F-2170). For substrates that have an MVER of greater than 6 lbs or 80% RH, use Bostik's MVP4™ prior to the application of Bostik's EFA+™ for unlimited moisture vapor protection, or use Bostik Ultra-Set® SingleStep2™ or GreenForce™.

ANTI-FRACTURE PERFORMANCE

Bostik's EFA+'s elastomeric characteristics establish an anti-fracture membrane that can bridge cracks up to 1/8" (3mm) which can occur in the substrate prior to or after installation. This superior elasticity allows the adhesive to move with the wood as it expands and contracts with changes in humidity and temperature over the life of the floor.

ULTIMATE VERSATILITY

Bostik's EFA+™ may be used to adhere all engineered, solid (adhesive only), bamboo (adhesive only), cork, and parquet hardwood flooring (adhesive only). This adhesive can also be used to install plywood as described, as well as ceramic tile, marble, and stone inlays for light commercial and/or residential applications. Bostik's EFA+™ may be used over all properly prepared substrates common to hardwood flooring installations including: concrete, plywood, OSB, well bonded vinyl/VCT and ceramic tile, cement backer board, gypsum underlayments (dry, above-grade), cement patch/underlayments, radiant-heat flooring, and properly prepared terrazzo.

LEED® CONTRIBUTION

Bostik's EFA+'s low-VOC formulation (as measured per EPA Method 24) may contribute toward LEED® credits under section EQ 4.1: Low-Emitting Materials – Adhesives & Sealants.

DIRECTIONS FOR USE

Read and understand data sheet completely before beginning installation. Follow industry standards and flooring manufacturer's recommendations for acclimation, design, layout, and application of wood flooring material. If jobsite conditions are outside of flooring manufacturer's recommendations, take necessary corrective actions. Whether the moisture content of substrate exceeds or is within the flooring manufacturer's recommendations, to address current or possible future subfloor moisture, and cracks (up to 1/8"), apply Bostik's EFA+™ as directed.

This supersedes and replaces in its entirety all previously published versions of this document.
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SURFACE PREPARATION

All surfaces must be absorptive, clean, and free from loose materials, oil, grease, sealers, curing compounds, waxes, silicates, laitance, and all other surface contaminants that may inhibit proper bond. Completely remove cutback adhesive residue or other surface contaminants by diamond grinding to open the pores of the concrete. All surfaces to be treated must have a concrete surface profile (CSP) of 1-3 (similar to a broomed finish), as defined by ICRI (International Concrete Repair Institute, Guideline No. 03732). Maximum acceptable floor variation is 3/16" in 10 feet. Areas requiring patching or leveling must be done using a Portland cement-based material (e.g., Bostik Webcrete® 95, Webcrete® 98, SL-100™, SL-150™, SL-175™, SL-200™ or UltraFinish™ Pro). For cracks in concrete that are larger than 1/8", use a quality urethane sealant, such as Bostik's 915FS™ or 955-SL™.

PLEASE NOTE: Concrete substrate should **NOT** be smooth and reflective; it must have a concrete surface profile of CSP 1-3 (similar to a broomed finish), as define by ICRI (International Concrete Repair Institute, Guideline No. 03732). It is advisable to test for adequate substrate absorption and texture in several areas throughout the jobsite by sprinkling droplets of water onto the slab. The drops of water should show signs of penetrating the substrate within one minute. This is evidenced by a water stain on the concrete without a "domed" droplet. If no signs of water penetration are shown within one minute and "domed" droplets remain (similar to drops on a car hood) the substrate must be scarified, shot blasted, or mechanically textured until it is absorptive.

INSTALLATION

The installation begins with a starter row secured to the subfloor; the starter row provides a stationary point to push against so flooring doesn't move during installation. Once the starter row is secured, apply adhesive/membrane to substrate using the appropriate trowel. See the chart on last page for proper trowel selection. Flooring may be installed using a "Wet-Lay" method of installation. For "Wet-Lay" installations, spread the adhesive and begin to install the flooring immediately. Periodically lift boards immediately after installation to ensure proper slab coverage and transfer to the back of the flooring. As you work, immediately clean any adhesive from prefinished flooring with Bostik's Ultimate™ Adhesive Remover or mineral spirits (be careful not to harm finish), then dry buff with a non-abrasive towel. After a few rows have been installed, and as you move across the room, tape the boards together using removable 3M #2080 Blue tape to prevent boards from sliding and to secure close-fitting joints. Rolling is recommended for all installations. Flooring that is not flat should be tacked, weighted, or rolled to ensure proper contact between the flooring and substrate.

PLYWOOD OVER CONCRETE: Score 4' x 4' or 2' x 8' sheets of 3/4" exterior-grade plywood on the backside every 8" to 10" by using a circular saw and cutting one-half the thickness of the plywood; "scoring or kerfing" takes the tension out of the plywood and helps to prevent possible warping or curling. Apply adhesive/membrane to substrate and then set plywood into the wet adhesive/membrane. Allow the adhesive to fully cure before nailing or using Bostik's EFA+™ adhesive to install flooring. If nailing to the plywood, nails must not protrude through to the adhesive.

CLEAN UP

As you work, immediately clean any adhesive from prefinished flooring with Bostik's Ultimate™ Adhesive Remover or mineral spirits **(be careful not to harm finish)**, then dry buff with a non-abrasive towel. Immediately clean all tools and equipment with Bostik's Ultimate™ Adhesive Remover or mineral spirits before material cures.

TROWEL CLEAN-UP TIP: Before use, over areas of the trowel that are not used to spread the adhesive with blue tape. After use, simply tear off tape before material cures, and clean the remainder of the trowel with adhesive remover.

STORAGE/SHELF LIFE

Store at temperatures between 50°F and 100°F (10°C and 38°C). Shelf life is one year from date of manufacturing in closed, original packaging.

Re-Seal Partially Used Container: With pail upright place a sheet of plastic (e.g., trash bag) over the top of the pail. Secure lid tightly over the plastic on top of pail. Carefully turn pail upside down. Plastic will help prevent the material from bonding the lid closed.

Re-Open Partially Used Container: Carefully turn pail right side up. Remove lid. Carefully cut and discard cured material and plastic from top of pail. Any uncured material may be used.

LIMITATIONS

- Periodically check coverage of adhesive during installation; 100% substrate coverage and adhesive transfer is required to protect against damages from subfloor moisture.
- Due to limitations with solid and bamboo wood flooring (e.g., lack of dimensional stability), "below-grade" installations are limited to engineered hardwood flooring.
- For substrates with any history of moisture problems, or for concrete slabs exceeding 6 lb MVER or 80% RH, use a high performance moisture vapor reduction product such as Bostik's MVP4™ prior to the application of Bostik's EFA+™, or use Bostik's Ultra-Set® SingleStep2™ or GreenForce™.
- On- or below-grade substrates must have appropriate vapor barrier (6 mil poly or better) properly installed below slab.
- Do not install solid wood flooring over VCT/vinyl.
- Bamboo installations should follow solid hardwood flooring installation recommendations.
- Slab temperature should be between 50°F and 95°F (10°C and 35°C) during installation.
- Do not use on wet, dusty, contaminated, glassy smooth or friable substrates; do not use over substrates/slabs treated with sealers or curing compounds.
- Completely remove all adhesive residue and other surface contaminants by diamond grinding, shot blasting, or scarifying.
- Do not use over perimeter bonded flooring material.
- Use over gypsum-based/underlayments is limited to dry, "above-grade" installations where the gypsum has dried hard (not dusty/powdery), with a minimum compressive strength > 2,000 psi for engineered hardwood installations, or minimum compressive strength > 2,500 psi for solid hardwood installations.
- Please refer to flooring manufacturer's recommendations and NWFA's specifications for proper acclimation, verification of moisture content of flooring with a moisture meter, and expansion relief around perimeter throughout installation.

- Do not use with vinyl-backed cork flooring or foamed-backed parquet.
- Do not use in areas subject to hydrostatic head.
- Do not use Bostik's EFA+™ as a moisture vapor membrane beneath solid or bamboo flooring.
- This membrane is designed to reduce moisture vapor emissions that originate/emanate from below the membrane only.
- This membrane does **NOT** reduce/affect issues originating from the sides, ends, or top of flooring (ie. puddles, water, leaks, hydrostatic-head, etc.).
- This membrane does **NOT** eliminate all possible moisture related or install related issues (i.e. improper acclimation of flooring, jobsite temperature/relative humidity, etc.).
- This membrane is designed to prevent excessive variance of moisture between the top, middle, and bottom of flooring that originates from the substrate.

PACKAGING

Available in 5 gallon pails (36 pails/pallet), and 28 oz cartridges (12 cartridges/case, 60 cases/pallet).

WARNING

COMBUSTIBLE. IRRITANT. MAY CAUSE ALLERGIC SKIN OR LUNG REACTION. MAY IRRITATE EYES, SKIN AND LUNGS. Contains a potential skin and lung sensitizer. May cause allergic respiratory tract or skin reaction. Avoid breathing mists or vapors. Avoid contact with skin and eyes. Use in a well-ventilated area or wear a mask. Keep away from flames or sparks. Wash thoroughly after handling. Store in a cool, dry area away from heat, ignition sources and direct sunlight. Do not reuse container.

KEEP OUT OF REACH OF CHILDREN

FIRST AID TREATMENT

Contains Petroleum Distillates, Phthalates and Methylene Diphenyl Isocyanate (MDI). If in eyes or on skin, rinse with water for at least 15 minutes. If on clothes, remove clothes. If breathed in, move person to fresh air. If swallowed, call a Poison Control Center or doctor immediately. Do not induce vomiting.

SEE SAFETY DATA SHEET

CHEMICAL EMERGENCY: 800-424-9300 (USA), 703-527-3887 (International)
MEDICAL EMERGENCY: 866-767-5089

OPEN TIME CHART

Temperature		Humidity		
		40%	60%	80%
60˚F (16˚C)	Tack	2 Hours	1.6 Hours	1.3 Hours
	Open	3.8 Hours	3.5 Hours	3.2 Hours
70˚F (21˚C)	Tack	1.6 Hours	1.3 Hours	1 Hour
	Open	2.8 Hours	2.5 Hours	2.2 Hours
80˚F (27˚C)	Tack	1.3 Hours	1 Hour	0.6 Hour
	Open	2.3 Hours	2 Hours	1.7 Hours

NOTE: This chart is for reference only; actual jobsite times may vary.

CHEMICAL & PHYSICAL PROPERTIES

Use Environments	Residential	Yes	
	Offices/Light Commercial	Yes	
	Heavy Commercial	Yes	
	Hospital	No	
	Exterior	No	
	Wet Areas	No	
Substrates	Concrete	Yes	
	Plywood	Yes	
	OSB	Yes	
	Well-Bonded Vinyl	Yes	
	Terrazzo	Yes	
	Ceramic Tile	Yes	
	Cement Backer Board	Yes	
	Gypsum Underlayments*	Yes	
	Cement Patch/Underlayment	Yes	
Flooring Types	Solid Hardwood	Yes	
	Engineered Hardwood	Yes	
	Bamboo	Yes	
	Cork	Yes	
	Parquet	Yes	
	Plywood	Yes	
	Ceramic Tile, Marble, Stone Inlays*2	Yes	
Cured Physical Properties	Cure Time*3		
	Light foot traffic	6 to 8 hours	
	Normal foot traffic	8 to 12 hours	
	Water Vapor Permeability*4	< 0.9	
	Concrete Moisture Vapor Limits for subfloor moisture vapor protection:		
	ASTM 1869 Calcium Chloride Method	≤ 6 lbs/ 1000 sq ft /24 hrs	
	ASTM 2170 Relative Humidity Test	≤ 80% RH	
	Elongation	>180%	
	Service Temperature	-40°F to 150°F (-40°C to 66°C)	
Uncured Physical Properties	Ease of Troweling	Easy	
	Odor	Mild	
	Open/Working Time*5	180 minutes	
	Color	White	
	Density (lbs/gallon)	13.7	
	Percentage of Water*6	0%	
	Percentage of Adhesive Coverage Required:	For Moisture Protection	For Bond
	Engineered	100%	>80%
	Solid	100%	>95%
	Application Temperature	50°F to 100°F (10°C to 38°C)	
Chemical Properties	Chemistry Type	1-Part Urethane	
	Adhesive Type	Moisture Cure	
	VOC Compliant (measured per EPA Method 24)	Yes (25 g/L)	
	Flash Point, closed cup	145°F (63°C)	

* Dry, above grade
*2 Residential or light commercial only
*3 Humidity affects cure to a greater degree than temperature; the higher the humidity, the faster the cure. Under normal conditions, light foot traffic is acceptable after 6 to 8 hours; normal traffic after 12-16 hours.
*4 Per ASTM E-96 Standard Test Methods for Water Vapor Transmission of materials. Ratings are g/m2-24 hour-mmHG.
*5 Please refer to the Open/Working Time Chart.
*6 Per ASTM E203-01 Standard Test Method for water using Volumetric Karl Fischer Titration Method. Results rounded to the nearest tenth. Test Method has error range of +/_ 0.2%.

TROWEL SELECTION

In order to form a membrane that functions properly for moisture vapor protection, the right trowel needs to be selected to achieve both 100% coverage of the substrate and 100% transfer to the back of the flooring. Jobsite conditions, profile of the substrate, depth of back channeling in the flooring, and other factors affect the amount of adhesive that must be applied to achieve proper coverage and transfer. Always pull a board at the beginning of and during the installation process to confirm adequate coverage and transfer. Trowel size may need to be changed to achieve the required coverage and transfer. See trowel suggestions below.

ADHESIVE & MOISTURE MEMBRANE INSTALLATION METHOD

Suggested Trowel (For use as an adhesive only, refer to adhesive only installation method.)

Engineered wood flooring up to 5/8" thick. Coverage: 30-35 sq.ft. per gallon		Engineered wood flooring >5/8" thick, or plywood. Coverage: 20 sq.ft. per gallon	
			
1/4" x 1/4" V-Notch	1/4" x 1/4" x 1/4" Square Notch	1/2" x 15/32" V-Notch	1/4" x 3/8" x 1/4" Square Notch

Trowel size is suggested to maximize coverage of adhesive. Periodically lift a board to ensure the following conditions are being met: 100% coverage of concrete substrate and 100% transfer to the back of the flooring product. Uneven subflooring may require the use of either a leveling/patching material, or a larger V-notched trowel for proper coverage of adhesive.

ADHESIVE ONLY INSTALLATION METHOD

Suggested Notched Trowel (For use as an adhesive and moisture control membrane, refer to chart above.)

Engineered hardwood flooring ≤1/2" thick. Coverage: 50 sq.ft./gallon	≤1/2" Parquet, or cork underlayment. Coverage: 80 sq.ft./Gallon	Engineered hardwood flooring >1/2" thick, Solid wood or bamboo flooring ≤1/2" thick, and parquet ≤3/4" thick. Coverage: 40 sq.ft./gallon	Solid wood or bamboo flooring >1/2" thick, or plywood. Coverage: 35 sq.ft./gallon
			
3/16" x 5/32" V-Notch	1/8" x 1/8" x 1/8" Square Notch	1/4" x 1/4" x 1/8" Square Notch	1/4" x 1/4" x 1/4" Square Notch

Trowel size is suggested to maximize coverage of adhesive. Periodically check coverage of adhesive during installation: >80% coverage and transfer to the back of the flooring is required for all engineered wood flooring; >95% coverage and transfer is required for all solid wood flooring or bamboo flooring products.

LIMITED WARRANTY

Limited Warranty found at www.bostik.com/us or call 800.726.7845. TO THE MAXIMUM EXTENT ALLOWED BY LAW, BOSTIK DISCLAIMS ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. UNLESS OTHERWISE STATED IN THE LIMITED WARRANTY, THE SOLE REMEDY FOR BREACH OF WARRANTY IS REPLACEMENT OF THE PRODUCT OR REFUND OF THE BUYER'S PURCHASE PRICE. BOSTIK DISCLAIMS ANY LIABILITY FOR DIRECT, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES TO THE MAXIMUM EXTENT ALLOWED BY LAW. DISCLAIMERS OF IMPLIED WARRANTIES MAY NOT BE APPLICABLE TO CERTAIN CLASSES OF BUYERS AND SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. It is the buyer's obligation to test the suitability of the product for an intended use prior to using it. The Limited Warranty extends only to the original purchaser and is not transferable or assignable. Any claim for a defective product must be filed within 30 days of discovery of a problem, and must be submitted with written proof of purchase.

BOSTIK HOTLINE

Smart help
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