

GREENFORCE™

ADVANCED TRI-LINKING™ ADHESIVE AND MOISTURE CONTROL MEMBRANE

11 September 2017

YOUR SMART ADVANTAGES

- 2 in 1: adhesive and moisture control
- Extremely low moisture vapour permeability
- Superior bond strength
- Anti-fracture performance; can bridge cracks up to 3mm
- Zero VOC content (as calculated per SCAQMD Rule 1168)
- No restriction on board length or width
- Blockade® Anti-microbial protection
- Isocyanate free formula

USES

- Suitable substrates include: concrete, terrazzo, ceramic tiles, well bonded vinyl sheets, timber, plywood and cement backer board
- Adheres parquet, cork, solid strip softwood, hardwood flooring, engineered flooring and bamboo flooring

SUPERIOR MOISTURE PROTECTION

Bostik GreenForce has extremely low moisture vapour permeability and is not adversely affected by moisture. As a result, costly and time-consuming concrete moisture testing is not required when the slab is properly prepared, fully cured and dry to touch.

BLOCKADE®

GreenForce includes Bostik's Blockade® antimicrobial protection, which inhibits the growth of bacteria, mould or mildew on the surface of the cured membrane. The cured membrane resists stains and deterioration caused by moulds.

ANTI-FRACTURE PERFORMANCE

The elastomeric properties can bridge cracks up to 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.

CHEMICAL & PHYSICAL PROPERTIES

Use Environments	Residential	Yes
	Offices/Light Commercial	Yes
	Heavy Commercial	Yes
	Hospital	Yes
	Exterior	No
	Wet Areas	No
Substrates	Concrete	Yes
	Plywood	Yes
	OSB	Yes
	Well-Bonded Vinyl	Yes
	Terrazzo	Yes
	Ceramic Tile	Yes
	Cement Sheet	Yes
	Gypsum Underlayments ¹	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 Time³	
	Light foot traffic	8-12 hours
	Normal foot traffic	12-24 hours
	Water Vapour Permeability ⁴	<0.4
	Concrete moisture vapour limits for subfloor moisture vapour protection:	
	ASTM 1869 – CC Method	None, Dry to touch
	ASTM 2170 – RH Test	None, Dry to touch
Elongation	>100%	
Service Temperature	-40°C to 66°C	
Application Properties	Application Temperature	10°C to 38°C
	Ease of Troweling	Excellent
	Odour	Mild
	Open/Working Time ⁵	60 minutes
	Colour	Beige
	Density	1.42kg/L
	Percentage of Water ⁶	0%
Chemical Properties	Chemistry Type	1-Part AXIOS™ Tri-Linking™ Polymer
	Adhesive Type	Moisture Cure
	VOC Compliant (calculated per SCAQMD Rule 1168)	Yes (0 g/L)
	Flash Point	>93°C

¹ 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 in 6-8 hours, normal traffic after 12-16 hours.

⁴ Refer to open time chart

⁵ In accordance to ASTM E-96 Standard Test Method for Water Vapour Transmission of materials.

⁶ In accordance to 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%

BOSTIK GREENFORCE™

ULTIMATE VERSATILITY

The high performance formulation may be used to adhere all engineered, solid, bamboo, cork and parquet. **GreenForce™** has no restrictions on board width or length. It may be used over all properly prepared substrates common to hardwood flooring installations including: concrete, plywood, bonded vinyl, ceramic tile, cement backer board, gypsum underlayment (dry, above grade), cement patch/underlayments, radiant-heat flooring and properly prepared terrazzo. This adhesive can also be used to install plywood as described, as well as ceramic tile, marble and stone inlays for light commercial or residential applications.

SUSTAINABILITY

This Zero VOC formulation (as calculated per SCAQMD Rule 1168) may contribute toward Green Star.

APPLICATION INSTRUCTIONS

Direction for use

- Read and understand this Technical Data Sheet and associated Material Safety Data Sheet. Latest version can be downloaded from www.bostik.com.au
- Follow industry standard and flooring manufacturer's recommendation for acclimation, design, layout and application of wood flooring material.
- If using the product for moisture and sound control, apply as directed. Use the appropriate notched trowel.
- Upon opening the container, a translucent milky liquid may be present on the surface. This is from normal settling during shipment. Using a gauging trowel, mix the product until a homogenous consistency is achieved.
- Use protective clothing (gloves and eye protection) when working with the product.

Substrate and Surface Preparation

- Ensure the substrate has been correctly installed according to relevant standards and manufacturer recommendations.
- Ensure the substrate is clean and free from oil, grease, sealers, curing compounds, paints, polymer coatings, dust or other foreign (bond breaking) matter. All weak or friable material must be removed.
- Excess bitumen, adhesive or laitance should be removed by light scabbling or mechanical captive shot blasting or grinding, followed by vacuuming to remove debris and dust.
- Large cracks or holes may be filled using **Bostik UL Rapidset** in accordance with the Technical Data Sheet.
- The subfloor should be flat to 3mm over 3m. That is no gap more than 3mm beneath the straight edge when placed on the slab. If exceeding this, level the area with **Bostik UL 200** in accordance with the Technical Data Sheet.
- All surfaces must be structurally sound before application. Concrete slabs should be built in accordance with AS 2870 (Residential Footings and Slabs)

- Contact **Bostik** before commencing application if there is any doubt about required or suitable preparation.

Important Note: Concrete substrate should NOT be smooth and reflective; it must have a broomed finish. 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. Within 1 minute, the droplets of water should show signs of penetrating the substrate. This is evidenced by a water stain on the concrete without a "domed" droplet. If no signs of water penetration are shown within 1 minute and "domed" droplets remain, the substrate will need to be mechanically textured.

Application

- Apply full trowel method. Refer to trowel selection chart for guidance.
- 80 - 95% contact coverage when used as an adhesive only; 100% contact coverage when used as adhesive and moisture control.
- Evenly spread the adhesive and begin to install the flooring immediately with enough pressure to ensure full adhesive contact.
- Periodically lift boards immediately after installation to ensure proper slab coverage and transfer to the back of the flooring is achieved.
- For solid strip flooring, the preferred method to maintain pressure is to weight the floor. As per ATFA guidelines, the floor can also be temporary or permanently nailed.
- If a thin skin forms on the adhesive prior to installation, re-trowel 90° to the ridges until no sign of the original trowel mark remains. Adhesives that has cured too much prior to installation of the flooring must be removed and re-apply fresh adhesive.
- When nailing boards over plywood, ensure nail does not pierce membrane between ply and concrete, or else moisture warranty will be void.

CLEAN UP

- It is recommended to use clean non-abrasive towel as you work prior to cure.
- While **GreenForce™** bonds tenaciously to concrete and flooring, it is designed not to bond with most finishes on pre-finished flooring making it relatively easy to remove even after cure. May be removed using a plastic scraper and dry non-abrasive towel. Be careful not to damage the finish.
- Tools must be cleaned immediately after use.

COVERAGE

Coverage will vary depending on substrate conditions and trowel size used. Below are estimated coverage per 15.1L pail of **GreenForce™**

COVERAGE

ADHESIVE ONLY		ADHESIVE & MOISTURE CONTROL	
Application	Coverage	Application	Coverage
Engineered hardwood flooring ≤ 12.7mm thickness (4.7 x 11.9mm V-Notch trowel)	18 – 19m ²	Solid, engineered or bamboo up to 15.8mm thickness (6.35 x 6.35mm V-Notch trowel)	11 – 13m ²
≤ 12.7mm thickness parquet or cork underlayment (3 x 3mm Square Notch trowel)	29 – 30m ²	Solid, engineered or bamboo up to 15.8mm thickness (6.35 x 6.35mm Square Notch trowel)	11 – 13m ²
Engineered hardwood flooring >15.8mm thickness (6.35 x 6.35 x 3mm Square Notch trowel)	14 – 15m ²	Solid, engineered or bamboo >15.8mm thickness (12.7 x 11.9mm V-Notch trowel)	7 – 7.5m ²
Solid wood or bamboo flooring >12.7mm thickness (6.35 x 6.35mm Square Notch trowel)	12 – 13m ²	Solid, engineered or bamboo >15.8mm thickness (6.35 x 9.5 x 6.35mm Square Notch trowel)	7 – 7.5m ²




TROWEL SELECTION

In order to form a membrane that functions properly for moisture vapour protection and/or sound reduction, 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 channelling in the flooring, and other factors affect the amount of adhesive that must be applied to achieve proper coverage and transfer. Always lift 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.)

Solid, engineered or bamboo wood flooring >16mm thick. Coverage: 0.5m ² per Litre	Solid, engineered or bamboo wood flooring up to 16mm thick. Coverage: 0.74m ² per Litre	Engineered wood flooring up to 10mm thick. Coverage: 0.86m ² per Litre
		
12.7mm x 11.9mm V-Notch	6.35mm x 6.35mm V-Notch	6.35mm x 4.7mm V-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 ≤13mm thick. Coverage: 1.23m ² per Litre	Engineered hardwood flooring >13mm thick, Solid wood or bamboo flooring ≤13mm thick, and parquet ≤19mm thick. Coverage: 0.98m ² per Litre	Solid wood or bamboo flooring >13mm thick, or plywood. Coverage: 0.86m ² per Litre
		
4.7mm x 3.9mm V-Notch	6.35mm x 6.35mm x 3.17mm Square Notch	6.35mm x 6.35mm x 6.35mm Square Notch

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

IMPORTANT NOTES

- 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.
- On or below grade substrates must have appropriate vapour barrier properly installed below slab.
- Do not install solid wood flooring over VCT / vinyl.
- Bamboo installations should follow solid hardwood flooring installation recommendations.
- Recommended slab temperature is 10 – 35°C.
- Requires atmospheric moisture to cure properly. It should not be used in totally confined or air free spaces.
- Do not use on wet, dusty, contaminated, glassy smooth or friable substrates.
- Do not use over substrates treated with sealers or curing compounds.
- Do not use to areas subjected to negative hydrostatic head.
- Completely remove all adhesive residue and other surface contaminants from the slab by diamond grinding, shot blasting or scarifying.
- Do not use over perimeter bonded flooring material.
- Timber flooring may need to be acclimatised to the relevant environment to prevent excessive expansion / shrinkage causing failure of the floor system. Additional expansion allowance may also need to be provided. Refer to timber manufacturer or ATFA installation procedures.
- If uncertain about the quality or moisture condition of the slab, verification of its moisture content using moisture meter is needed. Use of **Bostik Ultra Seal** may be required for excessive moisture.
- This product does not eliminate all possible moisture related or installation related issues (e.g. puddles, water leaks, wet mopping, hydrostatic head, etc.)
- **GreenForce™** is designed to prevent excessive variance of moisture between top, middle and bottom of flooring that originates from the substrate.
- The product should not be exposed to water and alcohol based cleaners before it has completely cured.
- **GreenForce™** must be fully cured prior to sanding. Allow a minimum of 24 hours. Note that industry recommendations indicate that it can be beneficial for a floor to be left for a period of 3 to 14 days prior to sanding.
- Variation in temperature and humidity will affect the curing rates.
- For optimum performance, use the appropriate trowel recommended by Bostik.

STORAGE & SHELF LIFE

12 months when stored off the ground in a cool, dry weatherproof environment.

- **Re-Seal Partially Used Container:** Clean all adhesive residues off the lip of the pail and the groove around the perimeter of the lid. Plastic (e.g. PE bag) may be placed into the pail to cover wet adhesive, especially in high humidity environments, but do not allow the plastic to extend outside of the pail and interfere with the seal of the pail. Use rubber mallet to fully seal the lid. Do not turn the pail over.
- **Re-open Partially Used Container:** Remove the lid. Peel away cured material and discard. Any uncured material may be used.

AVAILABLE SIZES

Available in 26kg pails (30 pails/pallet)

BOSTIK CO-OPERATIVE TEST PROGRAM

Bostik offer a service in which a program has been established to eliminate potential field problems by pretesting Bostik adhesives with samples of building materials to which the adhesive will be applied. This service is available on large projects where pre-application testing will aid in determining the proper surface preparation method to achieve optimum adhesion. Consult a Bostik representative for further information.

LIMITED WARRANTY

The Limited Warranty for this product is available at <http://www.bostik.com/australia/customer-support/warranty-information/> or by calling the Bostik Hotline (1800 898 551).

Bostik manufactured products are warranted to meet the performance requirements set down in their Technical Data Sheet, for a period of 10 years from the date of manufacture. This is provided the products are stored and used within the guidelines set down in the Technical Data Sheet. All workmanship during use and installation must be carried out in accordance with any relevant Australian Standards, and applicable Building Codes. This warranty excludes failure from damage by third parties, defective coverings and substrates, construction failure, and distortion or settling of the sub-strata. Bostik's sole responsibility and liability under this Guarantee and otherwise with respect to the product is to supply replacement product. Bostik Australia reserves the right to inspect any alleged failure. No responsibility will be accepted unless a representative of Bostik Australia is afforded the opportunity to inspect any alleged failure. All other conditions or warranties whether express or implied by any other representation, statement or correspondence on the part of the Company are hereby excluded.

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.

This datasheet is for the general help of users. It is provided in good faith. The data is current and accurate to the best of our knowledge. Differing materials, substrates, environments, site conditions, and product storage, handling and application may affect results. Users should carry out tests to decide the product's suitability for purpose. This data sheet and the properties of the product may change without notice. Users, suppliers and retailers should check that the data sheets they have are the latest. To the maximum extent permitted by law, Bostik disclaims all warranties in relation to manufacture and use of the product. Bostik is not liable for representations made by users, suppliers or retailers about the product. Bostik is not liable for any loss or damage resulting from incorrect, careless, or negligent use or storage of the product, including use of out of date product. Any liability arising from use of the product is limited to the replacement or purchase price of the product. Bostik does not exclude rights and remedies that cannot be excluded by legislation, for example under the Australian Consumer Law (ACL). Sale of the product by Bostik is subject to the Bostik Australia Proprietary Limited Conditions and Terms of Sale. For more information on Bostik, products, and conditions of use and sale visit www.bostik.com/au

SAFETY PRECAUTIONS

SEE THE SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.

EMERGENCY INFORMATION: 1800 933 111 (ALL HOURS).

SDS can be downloaded from www.bostik.com.au

