



SECTION 09 64 00

WOOD FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flooring Vapor Retarders

1.2 RELATED SECTIONS

- A. Section 07 26 00 – Vapor Retarders
 - 1. Section 07 26 13 – Above-Grade Vapor Retarders
 - 2. Section 07 26 16 – Below-Grade Vapor Retarders
- B. Section 03 30 00 – Cast-in-Place Concrete
- C. Section 03 35 00 – Concrete Finishing
- D. Section 03 54 00 – Cast Underlayment
- E. Section 07 20 00 – Thermal Protection
- F. Section 09 28 00 – Backing Boards and Underlayments

1.3 REFERENCES

- A. ASTM E203-01 – Standard Test Method for water using Volumetric Karl Fischer Titration
- B. ASTM E-96 – Standard Test Methods for Water Vapor Transmission of Materials
- C. ASTM E 2179 – Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors

- D. ASTM E492-04 – Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
- E. SCAQMD Rule 1168 – Adhesive and Sealant Applications
- F. ASTM 1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- G. ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- H. ASTM D-93 - Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: **[Delete products that do not apply]**
 - 1. Bostik Inc.'s Ultra-Set[®] SingleStep2[™] Advanced Tri-Linking[™] Adhesive, Moisture Control and Sound Reduction Membrane
 - a. Integral Thickness Control[™] Spacer Technology ensuring proper membrane thickness.
 - b. Percentage of Water = 0.0% per ASTM E203-01
 - c. Water Vapor Permeability $\leq 0.4 \text{ g/m}^2\text{-24hour-mmHG}$ per ASTM E-96
 - d. Elongation $\geq 100\%$
 - e. Open/Working Time ≥ 60 minutes
 - f. Application Temperature 50°F to 95°F (10°C to 35°C)
 - g. Service Temperature -40°F to 150°F (-40°C to 66°C)
 - h. Increased Impact Insulation $\Delta\text{IIC} \geq 21 \text{ dB}$ per ASTM E 2179
 - i. Impact Insulation Class of 70 dB (6" concrete slab with 1 layer 5/8" gypsum board ceiling) or 50 dB (6" concrete slab with no ceiling) or more per ASTM E492-04

- j. Sound Transmission Coefficient of 67 dB (6" concrete slab with 1 layer 5/8" gypsum board ceiling) or 51 dB (6" concrete slab with no ceiling) or more per ASTM 90-09
 - j. Flash Point $\geq 200^{\circ}\text{F}$ (93°C), closed cup per ASTM D-93
 - k. VOC Compliant = Yes, = 0 g/L per SCAQMD Rule 1168
 - l. Cure Time = 24 hours
 - n. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection = No Limit (Dry-to-the-Touch) per ASTM 1869 or ASTM F2170
 - o. Concrete Moisture Vapor Limits for bond = No Limit (Dry-to-the-Touch) per ASTM 1869 or ASTM F2170
2. Bostik Inc.'s Ultra-Set® SingleStep™ Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane
- a. Integral Thickness Control Spacers ensuring proper membrane thickness.
 - b. Percentage of Water = 0.0% per ASTM E203-01
 - c. Water Vapor Permeability ≤ 0.4 g/m²-24hour-mmHG per ASTM E-96
 - d. Elongation $\geq 180\%$
 - e. Open/Working Time ≥ 90 minutes
 - f. Application Temperature 50°F to 100°F
 - g. Service Temperature -40°F to 150°F
 - h. Increased Impact Insulation $\Delta\text{IIC} \geq 23$ dB per ASTM E 2179
 - i. Sound Reduction of 52 dB (6" concrete slab with no ceiling) or 71 dB (6" concrete slab with 1 layer 5/8" gypsum board ceiling) per ASTM E492-04
 - j. Flash Point $\geq 200^{\circ}\text{F}$, closed cup per ASTM D-93
 - k. VOC Compliant = Yes, 0 g/L per SCAQMD Rule 1168
 - l. Cure Time for Light Foot Traffic = 6 to 8 hours
 - m. Cure Time for Normal Foot Traffic = 12 to 16 hours

- n. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection = No Limit per ASTM 1869 or ASTM F2170
 - o. Concrete Moisture Vapor Limits for bond = No Limit / Dry-to-the-Touch
3. Bostik Inc.'s Vapor-Lock™ Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane
- a. Integral Thickness Control Spacers ensuring proper membrane thickness.
 - b. Percentage of Water = 0.0% per ASTM E203-01 Standard Test Method for water using Volumetric Karl Fischer Titration
 - c. Water Vapor Permeability ≤ 0.6 g/m²-24 hour-mmHG per ASTM E96.
 - d. Elongation >180%
 - e. Open/Working Time ≥ 90 minutes
 - f. Application Temperature 50°F to 100°F
 - g. Service Temperature -40°F to 150°F
 - h. Increased Impact Insulation Δ IIC ≥ 21 dB per ASTM E 2179
 - i. Sound Reduction of 50 dB (6" concrete slab with no ceiling) or 69 dB (6" concrete slab with 1 layer 5/8" gypsum board ceiling) per ASTM E492-04
 - j. Flash Point $\geq 200^\circ\text{F}$, closed cup per ASTM D-93
 - k. VOC Compliant = Yes, 0 g/L per SCAQMD Rule 1168
 - l. Cure Time for Light Foot Traffic = 6 to 8 hours
 - m. Cure Time for Normal Foot Traffic = 12 to 16 hours
 - n. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection ≤ 15 lbs/1000 ft²/24 hrs per ASTM 1869 or $\leq 85\%$ RH per ASTM F2170
 - o. Concrete Moisture Vapor Limits for bond = No Limit / Dry-to-the-Touch
4. Bostik Inc.'s MVP⁴® Moisture Vapor Retarder, Anti-Fracture and Noise Reduction Membrane

- a. Percentage of Water = 0.0% per ASTM E203-01 Standard Test Method for water using Volumetric Karl Fischer Titration
 - b. Water Vapor Permeability ≤ 0.5 g/m²-24hour-mmHG per ASTM E96
 - c. Elongation $\geq 180\%$
 - d. Open/Working Time ≥ 90 minutes
 - e. Application Temperature 50°F to 100°F
 - f. Service Temperature -40°F to 150°F
 - g. Sound Reduction of 49 dB (6" concrete slab with no ceiling) or 62 dB (6" concrete slab with 1 layer 5/8" gypsum board ceiling) per ASTM E492-04
 - h. Flash Point $\geq 155^\circ\text{F}$, closed cup per ASTM D-93
 - i. VOC Compliant = Yes, 68 g/L per SCAQMD Rule 1168
 - j. Cure Time = 12 to 16 hours
 - k. Concrete Moisture Vapor Limits for bond = No Limit / Dry-to-the-Touch
5. Bostik Inc.'s Bostik's Best[®] Wood Flooring Adhesive and Moisture Vapor Retarder
- a. Percentage of Water = 0.0% per ASTM E203-01 Standard Test Method for water using Volumetric Karl Fischer Titration
 - b. Water Vapor Permeability ≤ 0.75 g/m²-24 hour-mmHG per ASTM E-96 Standard Test Methods for Water Vapor Transmission of materials.
 - c. Elongation $\geq 180\%$
 - d. Open/Working Time ≥ 180 minutes
 - e. Application Temperature 50°F to 100°F
 - f. Service Temperature -40°F to 150°F
 - g. Flash Point $\geq 142^\circ\text{F}$, closed cup per ASTM D-93
 - h. VOC Compliant = Yes, ≤ 86 g/L per SCAQMD Rule 1168

- i. Cure Time = 8 to 12 hours
 - j. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection ≤ 12 lbs/1000 ft²/24 hrs per ASTM 1869 or $\leq 82\%$ RH per ASTM F2170
 - k. Concrete Moisture Vapor Limits for bond = No Limit / Dry-to-the-Touch
6. Bostik Inc.'s EFA+™ Elastomeric Flooring Urethane Adhesive and Moisture Vapor Retarder
- a. Percentage of Water = 0.0% per ASTM E203-01
 - b. Water Vapor Permeability ≤ 0.9 g/m²-24 hour-mmHG per ASTM E96
 - c. Elongation $\geq 180\%$
 - d. Open/Working Time ≥ 180 minutes
 - e. Application Temperature 50°F to 100°F
 - f. Service Temperature -40°F to 150°F
 - g. Flash Point $\geq 142^\circ\text{F}$, closed cup per ASTM D-93
 - h. VOC Compliant = Yes, ≤ 85 g/L per SCAQMD Rule 1168
 - i. Cure Time = 8 to 12 hours
 - j. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection ≤ 6 lbs/1000 ft²/24 hrs per ASTM 1869 or $\leq 80\%$ RH per ASTM F2170
 - k. Concrete Moisture Vapor Limits for bond = No Limit / Dry-to-the-Touch
7. Bostik Inc.'s TKO® Wood Flooring Adhesive and Moisture Vapor Retarder
- a. Percentage of Water = 0.0% per ASTM E203-01 Standard Test Method for water using Volumetric Karl Fischer Titration
 - b. Water Vapor Permeability ≤ 0.9 g/m²-24hour-mmHG per ASTM E96
 - c. Elongation $\geq 250\%$

- d. Open/Working Time \geq 90 minutes
 - e. Application Temperature 50°F to 100°F
 - f. Service Temperature -40°F to 150°F
 - g. Flash Point \geq 500°F, closed cup per ASTM D-93
 - h. VOC Compliant = Yes, 0 g/L per SCAQMD Rule 1168
 - i. Cure Time = 8 to 12 hours
 - j. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection \leq 6 lbs/1000 ft²/24 hrs per ASTM 1869 or \leq 80% RH per ASTM F2170
 - k. Concrete Moisture Vapor Limits for bond = No Limit / Dry-to-the-Touch
8. Bostik Inc.'s D-250™ Moisture Vapor Barrier Coating
- a. Pot Life @ 72°F (22°C) \geq 60 minutes
 - b. Application Temperature 40°F to 90°F (4°C to 32°C)
 - c. Flash Point \geq 200°F, closed cup per ASTM D-93
 - d. VOC Compliant = Yes, 67 g/L per SCAQMD Rule 1168
 - e. Cure Time = 6 hours
 - f. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection \leq 14 lbs/1000 ft²/24 hrs per ASTM 1869 or \leq 92% RH per ASTM F2170
9. Bostik Inc.'s D-261™ Extreme Moisture Vapor Barrier Coating
- a. Pot Life @ 72°F (22°C) \geq 30 minutes
 - b. Application Temperature 40°F to 90°F (4°C to 32°C)
 - c. Flash Point \geq 200°F, closed cup per ASTM D-93
 - d. VOC Compliant = Yes, 59 g/L per SCAQMD Rule 1168
 - e. Cure Time = 6 hours

- f. Concrete Moisture Vapor Limits for Subfloor Moisture Vapor Protection ≤ 25 lbs/1000 ft²/24 hrs per ASTM 1869 or $\leq 100\%$ RH per ASTM F2170

D. Certifications:

- 1. Submit written certification of suitability of wood flooring for glue-down application
- 2. Submit written documentation indicating contribution to USGBC LEED Credits
 - a. EQ 4.1 for low-emitting materials for each product
 - b. MR 4.1 & 4.2 for Recycled Content [for Ultra-Set[®] SingleStep2[™], Ultra-Set[®] SingleStep2[™], and/or Vapor-Lock[™] only]
 - c. MR 5 for material manufactured within 500 miles of [Conyers, GA] [Temecula, CA] [if applicable]
- 3. Obtain written documentation indicating proven anti-microbial protection.

E. Shop Drawings:

- 1. Indicate wood floor layout, patterns, color, perimeter conditions, junctions with dissimilar materials, thresholds, and underlayment details.
- 2. Locate and detail expansion and control joints

F. Submit Manufacturer's and installer's qualification data.

G. Closeout Submittals:

- 1. Submit under provisions of Section 01 78 00
- 2. Maintenance Data: Include wood flooring manufacturer's maintenance and environmental control data.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

- 1. Adhesive Materials: Minimum 20 years experience in manufacture of wood and bamboo floor adhesive materials specified.

B. Installer Qualifications: Specializing in wood floor installation having minimum of 5 years successful documented experience with work comparable to that required for this Project.

C. Product Requirements:

1. [for Ultra-Set[®] SingleStep2[™], Ultra-Set[®] SingleStep[™], and/or Vapor-Lock[™] only] Provide products containing integral thickness control spacer technology to ensure proper membrane thickness for proper function as moisture and/or sound control.
2. [for Ultra-Set[®] SingleStep2[™], Ultra-Set[®] SingleStep[™], and/or Vapor-Lock[™] only] Provide products contributing to LEED credits MR 4.1 & 4.2 for post consumer recycled content.
3. Provide products containing proven antimicrobial protection.

D. Regulatory Requirements: Conform to South Coast Air Quality Management's Rule 1168 requirement for no VOC's.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store packaged materials in controlled environments between 50°F and 100°F (10°C and 37°C) in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.
- B. Deliver and store materials in a temperature-controlled area on site at least 24 hours before commencement of work.
- C. Provide temperature-controlled and dry storage facilities on site.
- D. Acclimate all wood and bamboo flooring per flooring manufacturer's recommendations.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Do not begin installation until building is completely enclosed and HVAC system is operating and maintaining temperature and humidity conditions consistent with "after occupancy" conditions for a minimum of 2 weeks.
- C. Maintain temperatures at not less than 50°F (10°C) and not more than 100°F (37°C) during installation and for 7 days after completion, unless tighter temperature ranges are required by referenced installation standards or manufacturer's written instructions.
- D. Ventilate spaces receiving wood flooring in accordance with material manufacturers' instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Preferred Manufacturer: Bostik Inc, located at 11320 W. Watertown Plank Rd., Wauwatosa, WI 53226; Toll Free Tel: 800-726-7845; Tel: (414) 774-2250; Fax: 978-750-7212; Email: request info (contactus@bostik-us.com); Web: www.bostik-us.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.2 SUBFLOOR MOISTURE VAPOR BARRIERS

- A. Wood Flooring Subfloor Moisture Vapor Barrier:
 - 1. Ultra-Set[®] SingleStep2[™] Advanced Tri-Linking[™] Adhesive, Moisture Control and Sound Reduction Membrane as manufactured by Bostik.
 - 2. MVP4[®] Moisture Vapor Protection, Anti-Fracture and Noise Reduction Membrane as manufactured by Bostik.
 - 3. Ultra-Set[®] SingleStep[™] Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane as manufactured by Bostik.
 - 4. Vapor-Lock[™] Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane as manufactured by Bostik.
 - 5. Bostik's Best[®] Wood Flooring Adhesive and Moisture Vapor Retarder as manufactured by Bostik.
 - 6. EFA+[™] Elastomeric Flooring Urethane Adhesive and Moisture Vapor Retarder as manufactured by Bostik.
 - 7. TKO[®] Wood Flooring Adhesive and Moisture Vapor Retarder as manufactured by Bostik.

2.3 ADHESIVES

- A. Wood Flooring Adhesives:
 - 1. Ultra-Set[®] SingleStep2[™] Advanced Tri-Linking[™] Adhesive, Moisture Control and Sound Reduction Membrane as manufactured by Bostik.
 - 2. Ultra-Set SingleStep[®] Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane as manufactured by Bostik.
 - 3. Vapor-Lock[™] Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane as manufactured by Bostik.

4. Bostik's Best[®] Wood Flooring Adhesive and Moisture Vapor Retarder as manufactured by Bostik.
5. EFA+[™] Elastomeric Flooring Urethane Adhesive and Moisture Vapor Retarder as manufactured by Bostik.
6. TKO[®] Wood Flooring Adhesive and Moisture Vapor Retarder as manufactured by Bostik.

2.4 NOISE REDUCTION MEMBRANE

A. Wood Flooring Noise Reduction Membrane:

1. Ultra-Set[®] SingleStep2[™] Advanced Tri-Linking[™] Adhesive, Moisture Control and Sound Reduction Membrane as manufactured by Bostik.
2. MVP4[®] Moisture Vapor Protection, Anti-Fracture and Noise Reduction Membrane as manufactured by Bostik.
3. Ultra-Set[®] SingleStep Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane as manufactured by Bostik.
4. Vapor-Lock[™] Hardwood Adhesive, Moisture Vapor Retarder & Sound Reduction Membrane as manufactured by Bostik.

2.5 UNDERLAYMENT

A. Self-Leveling Cement Underlayment,

1. SL-150[™] Self-Leveling Underlayment as manufactured by Bostik.
 - a. Bag Size: 50 pounds (22.7 kg), approximately 0.5 cu.ft.
 - b. Compressive Strength: 5500 psi at 28 days.
 - c. Heal/Wet Edge Time: 20 minutes.
 - d. Final Set: 2 hours.
 - e. 0 VOC content

B. Portland Cement Patch

1. Webcrete 95 Fast-Setting, High Strength Floor Patch as manufactured by Bostik.
 - a. Bag Size: 25 pounds (11.3 kg), approximately 0.25 cu.ft.
 - b. Compressive Strength: 5670 psi at 28 days.

- c. Pot Life: 10-15 minutes.
 - d. Final Set: 25-35 minutes.
 - e. 0 VOC content
2. UltraFinish Premium Portland Cement Patch as manufactured by Bostik.
- a. Bag Size: 10 pounds (4.5 kg)
 - b. Compressive Strength: 5670 psi at 28 days.
 - c. Pot Life: 15-20 minutes.
 - d. Final Set: 15-20 minutes.
 - e. 0 VOC content
 - f. Antimicrobial protection
- C. Surface Primer
1. Universal Primer™ for Use with Underlayments as manufactured by Bostik.
- a. Package Size: Pack of four 1 gallon (3.8 L) bottles or one 5 gallon (18.9 L) pail, approximate coverage 400-600 square feet (37-56 square meters).
 - b. Use over concrete, approved wood substrates, cement backerboard, ceramic tile, marble, granite, terrazzo, and cut back adhesive residue

2.6 SEALANT & GRAB ADHESIVES

- A. Bostik HDCA (Heavy Duty Construction Adhesive) for subfloor and floor joist assemblies as manufactured by Bostik.
- B. Bostik 1100FS, Fast-Setting Urethane Adhesive & Sealant in White, Gray or Black, as manufactured by Bostik.
- C. Bostik 900 Architectural Grade Sealant in White, Antique White, Stone, Limestone, Tan, Bronze, Medium Bronze, or Black as manufactured by Bostik.
- D. Bostik 955-SL, Self-Leveling Sealant in Limestone or Black, as manufactured by Bostik.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify all areas to receive wood or bamboo are flat within 3/16 inch in 10 feet (5 mm in 3048 mm).
- D. Condition of Surfaces: Must be clean, dry to the touch, flat, free of voids, projections, loose materials, oil, grease, sealers, and all other surface contaminants. Completely remove any adhesive residue or surface contamination by diamond grinding, shot blasting, or scarifying. Concrete must have a CSP of 2 to 3, similar to a light broom finish, and must absorb water droplets within 1 minute.
- E. Air Temperature and Surfaces in Rooms to Receive Flooring: Between 50°F to 90°F (10°C to 32°C) unless otherwise recommended by manufacturers of materials being installed.

3.2 PREPARATION

- A. Prepare substrate in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Underlayment:
 - 1. Apply where required to reduce subfloor variation to an acceptable tolerance of 3/16 inch (5 mm) in 10 feet (3048 mm).
 - 2. Prime substrate with Bostik Universal Primer in accordance with manufacturer's instructions.
 - 3. Apply SL-150 Underlayment with 5.5 quarts water per 50 pounds and in accordance with manufacturer's instructions.
- C. Adhesives and/or Moisture Barrier and/or Noise Reduction Membrane: Trowel Applied.
 - 1. Prepare substrate and apply in accordance with manufacturer's instructions.
 - a. Concrete: Verify surface has a CSP of 1 to 3 similar to a light broom finish texture.

- b. Plywood: Verify subfloor grade.
2. Apply when temperature of surfaces to receive flooring is 50°F (10°C) minimum.
3. Spread compound with V notched trowel.
 - a. Minimum thickness: per manufacturer instructions.
 - b. Maximum thickness: per manufacturer instructions.
4. Fill pinholes, voids, and air bubbles per manufacturer instructions.
5. Install wood flooring and allow to cure per manufacturer instructions.
6. Cracks greater than 1/8 inch (3 mm) width:
 - a. Install backer rod or bond breaker tape in opening.
 - b. Fill crack with waterproofing and Bostik 900 or Bostik 955-SL sealant.
 - c. Apply layer of underlayment 12 inches (305 mm) wide.
 - d. Embed 2 inches (51 mm) wide fiberglass mesh tape in fresh underlayment.

3.4 PROTECTION

- A. Touch-up, repair or replace damaged products before substantial completion.
- B. Protect installed products until completion of project.

END OF SECTION