



SECTION 09 93 00
HARDWOOD FLOOR ADHESIVES, FINISHING AND MAINTENANCE

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GENERAL

1.1 SECTION INCLUDES

- A. Hardwood floor adhesives, finishing and maintenance of the following types:
 - 1. Stains.
 - 2. Waterborne finishes

1.2 RELATED SECTIONS

- A. Section 09 64 00 - Wood Flooring.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
 - 2. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine.
 - 3. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - 4. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Trained in application of the manufacturer's floor products.

- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Bona US, which is located at: 24 Inverness Place E. Suite 100; Englewood, CO 80112; Toll Free Tel: 800-872-5515; Tel: 303-371-1411; Fax: 303-307-5029; Email: [request info \(usadmin@bona.com\)](mailto:request info (usadmin@bona.com)); Web: <https://www.bona.com>
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 STAINS

- A. Fast Drying Stain:
 - 1. Product: Bona DriFast Stain as manufactured by Bona US.
 - a. Solids: 35 to 47 percent.
 - b. US Regulatory VOC: 550 g/L.
 - c. Odor: Mild solvent.
 - d. Stability: 2-year shelf life in unopened container.
 - e. Flashpoint: 116.6 degrees F (47 degrees C).
 - f. Clarity: Semi-transparent (dry).

2.3 WATERBORNE FINISHES

- A. Commercial and Residential Hardwood Floor Finish:
 - 1. Product: Bona Mega as manufactured by Bona US.
 - a. Ingredients: Water, polymeric resins, propylene-based glycol ethers, silica derivate, and surfactants.
 - b. Color: Milky white (wet).
 - c. Clarity: Clear when dry.
 - d. pH: 7.9.
 - e. Solids: 32.5 percent.
 - f. Density: 8.75 lbs per gal (1.05 s.g.).
 - g. US Regulatory VOC: 200 g/L.
 - h. Gloss Level (60 degrees): Refer to drawings and finish schedule.
 - 1) Gloss: Greater than 90 percent.
 - 2) Semi-Gloss: 45 to 50 percent.
 - 3) Satin: 25 to 30 percent.

- 4) Extra Matte: 8 to 10 percent.
- i. Odor: Non-offending.
- j. Stability: 1-year shelf life in unopened container.
- k. Cure Time: 100 percent after 7 days.
- l. Certification: GREENGUARD Certified for indoor air quality.
- m. LEED: Complies with USGBC LEED low-VOC requirements.

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. Building climate control system shall be functioning with a temperature of 65 to 80 degrees F (18.3 to 26.7 degrees C) and maximum relative humidity of 70 percent for 72 hours before flooring is installed, during installation, and for 72 hours after installation. Acclimate flooring according to manufacturer's instructions.

3.2 PREPARATION

- A. Protection: Protect adjacent finish surface to prevent damage during sanding and finish system application.
- B. Substrate: Must be clean, smooth, dry, free of loose material and structurally sound, with the surface slightly textured for best adhesion (similar to a light broom finished concrete).
 - 1. Remove adhesive residue, paint, concrete curing compounds or other contaminants that may affect adhesive bond. Abrasive blasting, shot blasting or scarifying may be necessary to completely remove some of these residues.
 - 2. Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities must be filled or smoothed with a Portland Cement-based patching and/or leveling compound.
 - 3. Levelness: To 3/16 inch (5 mm) in a 10 ft (3048 mm) span. If the concrete slab is to be leveled, primer/sealer shall be applied to the slab prior to application of the leveling compound.
 - 4. Slab Temperature: 55 to 95 degree F (12.8 to 35 degrees C).
- C. Other suitable substrates include wood and radiant heat flooring (refer to manufacturer's recommended installation instructions).

3.3 MOISTURE TESTING

- A. Concrete Floors:
 - 1. Concrete Slabs: Conduct moisture testing per ASTM F1869 and/or ASTM F2170.
 - 2. Primer/Sealer: Two coats prior to installation of hardwood flooring with an adhesive when MVER using ASTM F1869 (Calcium Chloride test) exceeds 12 lbs per 24 hrs per 1000 sq ft (5.86 kg per 24 hrs per 100 sq m) or when using ASTM F2170 (RH probe test) exceeds 85 percent relative humidity.
 - 3. Moisture Content: Should not exceed 18 lbs per 24 hrs per 1000 sq ft (8.79 kg per 24 hrs per 100 sq m) or 95 percent relative humidity.
 - 4. When using a Tramex measuring device to identify moisture levels in cementitious based substrates, use the Tramex measuring device to find the highest reading in the area to be installed and then run the concrete moisture testing method at the location of the recorded highest reading.
 - 5. As a general guideline for floors with no in-floor heating system, if the Tramex is below

4 percent, primer/sealer will not be necessary; if between 4 and 6 percent, primer/sealer is required.

- B. Wood Subfloor:
 - 1. For moisture content and quality of substrates, the guidelines of the wood floor manufacturer shall be followed.
 - 2. Wood Subfloor Moisture Content: 20 percent maximum.

3.4 SANDING AND PREPARATION OF NEW FLOORS:

- A. Sand and prepare floor using accepted industry association methods.
- B. Vacuum thoroughly.
- C. Stained Floors: Make final cut with 80 to 100 grit paper. Then multidisc with 80 to 120 grit paper.
- D. Unstained Floors: Make final cut with 80 to 120 grit paper. Then multidisc with 120 to 150 grit paper. This burnishing will reduce the amount of grain raise.
- E. Use a Tampico Brush on a buffer and vacuum thoroughly.
- F. Tack with a dry Bona Microfiber Tacking Pad or cloth to remove dust.
- G. Apply finish system.

3.5 FINISH APPLICATIONS, GENERAL

- A. Comply with instructions and recommendations of floor finish system manufacturer.
- B. Finish System: As scheduled or indicated on the drawings.

3.6 STAIN APPLICATIONS

- A. Shake or stir well before applying. Do not thin.
- B. After Surface Preparation: Apply Bona DriFast Stain with brush, cut-in pad, cloth or carpet disc driven by a buffer in the direction of the grain.
 - 1. Coverage Rate: 800 to 1000 sq ft per gal (19.6 to 24.5 sq m per L).
 - 2. Penetration Time: Allow 1 to 3 minutes.
 - 3. Remove excess by hand wiping or buffing with an absorbent, non-abrasive material.
 - 4. Allow Stain to Dry Thoroughly:
 - a. Wood Tones: 2 hours minimum.
 - b. White: 6 hours minimum
 - c. Ebony, Spice Brown, Bark and Cocoa: 12 to 18 hours
 - 5. Ideal Drying Conditions: 60 to 80 degrees F(16 to 27 degrees C) with 35 to 75 percent relative humidity.
 - a. High humidity and/or low temperature conditions extend dry time.
 - b. Increased ventilation and airflow reduces dry time.
 - 6. Sealer or Finish Application: Within 48 hours after stain application. Apply any Bona finish system over thoroughly dried stain.
- C. Immediately after each use, place rags, steel wool, or waste in a sealed, water-filled metal container. Rags, steel, wool or waste soaked with Bona Drifast stain may spontaneously catch fire if improperly discarded.

3.7 WATERBORNE FINISH APPLICATIONS

- A. Mixing: Shake or still well before applying. Do not thin.
 - 1. Shake Bona Traffic HD finish (Part A) well for 30 seconds.
 - 2. Add Bona Traffic HD Hardener (Part B) to finish (Part A).
 - a. A 10.38 oz (294.3 grams) bottle of hardener activates 1 gallon (3.78 L) of finish.
 - b. To mix finish amounts of less than one gallon, use a 1:11.33 ratio.
 - 3. Immediately shake mixture vigorously for 30 to 45 seconds.
 - 4. Insert supplied filter into bottle.
 - 5. Let sit for 5 to 10 minutes before applying. BONA Traffic HD. Cannot be re-hardened.
- B. Application:
 - 1. Apply finish going with grain of wood.
 - 2. Feather out each stroke to avoid applicator marks.
 - 3. Use manufacturer's recommended coverage rate of sq ft per gallon (sq m per L).
 - 4. Allow each coat to dry thoroughly. Recommended conditions of 65 to 80 degrees F (18 degrees C to 27 degrees C), and 40 to 60 percent relative humidity.
 - a. Waterborne Finishes: 2 to 3 hours.
 - b. High humidity and/or low temperature conditions extend dry time.
 - c. Increased ventilation and airflow reduces dry time.
 - 5. For Smoothest Results: See "Intercoat Abrasion" subparagraph. At a minimum between coats, vacuum and tack thoroughly with a Bona Microfiber Tacking Pad (dry or slightly dampened with water).
 - 6. Pot Life: The finish/hardener mixture must be used within 4 hours after it is mixed. Product properties are diminished after 4 hours.
 - a. The finish and hardener can be mixed only one time.
 - b. Caution: To avoid pressure build-up, do not tightly recap finish/hardener mixture.
 - 7. Intercoat Abrasion: It is not necessary to abrade between Bona waterborne sealer and finish coats unless more than 48 hours has passed since the previous coat was applied.
 - a. For Smoothest Results: Abrade between coats as necessary. Use multidisc Bona Diamond 180 to 240 grit abrasives with Bona Intermediate Pads.
 - b. Thoroughly clean abraded floor using Bona PowerScrubber or vacuum and tack with Bona Microfiber Tacking Pads (dry or slightly dampened with water).
 - c. When using solvent-based sealers, always, vacuum and tack before finish coats.
 - 8. Curing: Process varies depending on product. Floors may be walked on after 24 hours but remains susceptible to scuffing or marring until completely cured. Do not replace area rugs until the floor has fully cured.

3.8 PROTECTION

- A. After application, protect floor finish from damage during subsequent work.
- B. Do not allow foot traffic until floor is sufficiently dried and cured.