



SECTION 09930
HARDWOOD FLOOR ADHESIVES, FINISHING AND MAINTENANCE

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Hardwood floor adhesives, finishing and maintenance of the following types:
 - 1. Adhesives.

1.2 RELATED SECTIONS

- A. Section 09640 - 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 01300.
- 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 01600.

2.2 ADHESIVES

- A. Wood Flooring Adhesives:
 1. Product: Bona R859 as manufactured by Bona US.
 - a. Ingredients: Calcium carbonate, silane modified prepolymer, plasticizers, amorphous silica.
 - b. Base: Silane modified-prepolymer.
 - c. Color: Cream.
 - d. Viscosity: 86 Pa.s at a shear rate of 10 1/sec (cone-plate rheometer).
 - e. Density: 12.6 lbs per gal (1510 grams per Liter).
 - f. VOC Content: Zero.
 - g. Max Shear Strength: 335 psi (2.31 MPa) at final cure; lap shear test, 1 mm gap.
 - h. Max Elongation: 250 percent.
 - i. Odor: Non-offending.
 - j. Flash Point: Greater than 212 degrees F (100 degrees C); Pensky-Martens.
 - k. Moisture protection up to 18 lbs (8.16 kg) or 95 percent relative humidity, 6 percent Tramex or 5 percent CM.
 - l. Sound Reduction Rating: 70 dB per ASTM E492 IIC; 6 inch (152 mm) concrete slab with ceiling.
 - m. Certification: GREENGUARD Certified for indoor air quality.
 - n. 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.
 - 1. Acclimate Bona R540 Moisture Barrier Sealer and Bona R851 or R859 Adhesive to the room temperature of installation; usually overnight.

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 ADHESIVE APPLICATIONS

- A. Full Spread Application: Spread adhesive on substrate while holding Bona trowel at 90 degree angle.
 - 1. Use a smooth semicircular motion.
 - 2. Do not leave any puddles of adhesive.
 - 3. Set flooring into adhesive while adhesive is still wet.
 - 4. Open Time Before Setting Flooring into the Adhesive:
 - a. Bona R859 at 50 percent RH and 70 degrees F (21.1 degrees C): 40 minutes.
 - 5. Higher humidity can decrease open time.
 - 6. Do not set flooring into adhesive that has skinned over. Remove adhesive and reapply.
 - 7. Spreading Rate: Per manufacturer's recommendation.

3.7 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.