

SECTION 03 35 43

Formatted Specification for the ULTRAFLOOR® DIAMATIC® Burnished Concrete System

PART I – GENERAL

1.01 SUMMARY

- A. This is the recommended specification for ULTRAFLOOR® DIAMATIC® Burnished Concrete System.
- B. Complete installation details are provided in the DIAMATIC® Technical Brochures available at www.diamaticusa.com.

1.02 SECTION INCLUDES

- A. Products and procedures for the installation of the ULTRAFLOOR® DIAMATIC® Polished Concrete System using a multi-step dry mechanical process and accessories indicated, specified or required to complete system and achieve specified finish:
 - a. DIAMATIC® Mechanical Diamond Grinding and Polishing Equipment
 - b. ULTRAFLOOR® DIAMATIC® Concrete Treatment Chemicals
- B. ULTRAFLOOR® DIAMATIC® Burnished Concrete System is a finish that is part of the ULTRAFLOOR® DIAMATIC® Polished Concrete System.
- C. Products and procedures for the initial and long term maintenance of the ULTRAFLOOR® DIAMATIC® Burnished Concrete System.
- D. All equipment, diamond products, concrete repair and topping materials, crack and joint treatments and chemicals are specified by DIAMATIC® Management Services.

1.03 SUBMITTALS

- A. Product Data: Submit Manufacturer's technical literature for each product indicated, specified or required. Include manufacturer's technical data, application instructions, recommendations and MSDS.
- B. Installer Qualifications: Data for company, principal personnel, experience, and training. Provide a letter documenting installer's accreditation and certification compliance, as specified under quality assurance.

1.04 QUALITY ASSURANCE / WARRANTY

- A. Manufacturer Qualifications: The ULTRAFLOOR® DIAMATIC® Polished Concrete System consists of a process and products engineered and manufactured by DIAMATIC®. Any substitutions are not permitted and void warranty.

- B. Installer Qualifications:
- a. Installer must be an DIAMATIC® ELITE installer for the ULTRAFLOOR® Polished Concrete System, including the use of DIAMATIC® equipment and diamond abrasives, and DIAMATIC® concrete preparation, joint treatment, and chemical hardening and finishing materials.
 - b. Installer must be experienced in performing specified work similar in design, products and scope of this project, with a documented track record of successful, in-service performance and with sufficient production capabilities, facilities and personnel to produce specified work.
 - c. A factory-trained, competent supervisor must be maintained on site during all times during which specified work is performed.
 - d. Installer must provide written documentation from the manufacturer confirming the Installer's current accreditation and training from DIAMATIC® on installation of the ULTRAFLOOR® DIAMATIC Polished Concrete System and related equipment and processes. Failure to provide current accreditation will void any warranty implied or otherwise associated with the ULTRAFLOOR® System.
 - e. A current list of qualified installers may be obtained through DIAMATIC MANAGEMENT SERVICES, DIAMATIC USA 866-295-5512
- C. Mock-Up: Before performing the work in this section, an adequate on-site mock-up of the ULTRAFLOOR® DIAMATIC® Polished Concrete System representative of specified process, surface, finish, color and joint design/treatments must be installed for review and approval. These mock-ups should be installed using the same Installer personnel who will perform work. Approved mock-ups may become part of completed work, if undisturbed at time of substantial completion.
- D. Static Coefficient of Friction: A reading of not less than 0.5 for level floor surfaces shall be achieved and documented, as determined by certified an NFSI walkway auditor using the NFSI 101-A quality control test.
- E. Test Reports: Comply with the provisions of the following specifications and standards, except as otherwise noted or specified, or as accepted or directed by the Owner and/or Architect. All test data shall be recorded and submitted upon completion of job.
- a. Section 03 30 00, Cast-In-Place Concrete
 - b. ASTM E1155, Standard Test Method for Determining Floor Flatness and Levelness using the F number system
 - c. ASTM E430, Standard Test Method for Measurement of Gloss of High-Gloss Surfaces by Abridged Goniophotometry
 - d. ACI 302 1 R-04 Guide for Concrete Floor and Slab Construction
- F. Pre-Installation Conference: Prior to the installation of the ULTRAFLOOR® DIAMATIC Polished Concrete System, an on-site conference shall be conducted to review specification requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in original containers, bearing manufacturer's labels indicating brand name and directions for storage, factory numbered and sealed until ready for installation.
- B. Maintain records of product container numbers.
- C. Store all materials in a dry, climate-controlled environment at a minimum of 55°F (13°C) and maximum of 85°F (29°C).

1.06 SITE CONDITIONS

- A. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting the floor finish.
- B. Close areas to traffic during and after ULTRAFLOOR® DIAMATIC® Burnished Concrete System application for a time period recommended by the manufacturer.
- C. Inspect the existing substrate and document unsatisfactory conditions in writing. Verify that surfaces and site conditions are ready to receive work. Correct unacceptable conditions prior to installation of System. Commencement of work constitutes acceptance of substrate conditions.
- D. Existing concrete must be cured for a sufficient time period recommended by DIAMATIC® before the application can begin.
- E. Protect existing concrete and the new ULTRAFLOOR® DIAMATIC® Burnished Concrete System from contamination by petroleum, oil, hydraulic fluid, acid and acidic detergents, paint and other liquid dripping from trades and equipment working over these substrates. If construction equipment must be used on these substrates, diaper all components that may drip fluids.
- F. Prohibit vehicle parking and pipe cutting operations over existing concrete and the new ULTRAFLOOR® DIAMATIC® Burnished Concrete System.
- G. Moisture Vapor Testing
 - 1. Test existing concrete for moisture vapor transmission according to methods indicated in ASTM F1869. Acceptable results: not more than 5 pounds per 1,000 square feet in 24 hours.
 - 2. Test existing concrete for relative humidity using in situ probes according to ASTM F2170. Acceptable results: not more than 80%.

PART 2 – PRODUCTS

2.01 SYSTEM INTEGRITY

- A. The ULTRAFLOOR® DIAMATIC® Burnished Concrete System is an engineered and integrated complete installation system requiring strict adherence to all specified installation processes, equipment, diamond abrasives, concrete preparation, joint treatment and chemicals to achieve the intended result. Any substitutions from the specified products and/or processes will void the system warranty.

2.02 MATERIALS

A. DIAMATIC® EQUIPMENT

1. DIAMATIC® BMG-780 or BMG-735: Planetary Grinder and Polisher, Large Platform: 32" planetary floor polisher. Head pressure of 600 lbs.
2. DIAMATIC® Micro Polisher MPS-1727 - Burnisher: Specific weight and RPM are required to reach temperature of 100°F for application of FLOR-FINISH application.
3. DIAMATIC® 5" Low Speed Grinder: Hand Held Polishing Tool: 5" hand floor polisher for edges with variable speed control range of 500 – 2200 RPM.
4. Vacuums: Dust Collection must be designed for filtering of concrete dust. Minimum air speed of 300 CFM for Large and Medium Platform equipment.
5. DIAMATIC® BDC1324, BDC-1330BDP, BDC3140P.
6. Power generator capable of supplying a minimum output of 45kw and up, and 480 Volt three phase power.
7. DIAMATIC® Diamond Abrasives and Blades
 - a. Hybrid Flex-res Resin Bonded Diamonds – 50, 100, 200, 400 Grit.
 - b. FLOR-GRIT Diamond Impregnated Pads – 200, 400, 800 Grit.

B. ULTRAFLOOR® DIAMATIC® CONCRETE TREATMENT CHEMICALS

1. DIAMATIC® FLOR-SIL™ Lithium Densifier for standard concrete and terrazzo surfaces
2. DIAMATIC® FLOR-COLOR™ Micronized Water Borne High Performance Dye
3. DIAMATIC® FLOR-FINISH Stain and Wear Protection Treatment (high-gloss) Powered by Dow Corning.
4. DIAMATIC® FLOR-FINISH-L Stain and Wear Protection Treatment (low-gloss) Powered by Dow Corning
5. DIAMATIC® FLOR Maintainer™ Gloss, Stain and Wear Protection Routine Maintenance Treatment

C. DIAMATIC® PROTECTION MATERIALS

1. To prevent minor damage from light trade traffic during build out of site, DIAMATIC® ECONO-COVER Protective Floor Covering for the ULTRAFLOOR® DIAMATIC® Burnished Concrete System shall be installed.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Inspect all concrete substrates and conditions under which the ULTRAFLOOR® DIAMATIC® Burnished Concrete System to be installed.
- B. Verify that all surfaces and site conditions are ready to receive work; document and correct conditions detrimental to timely and proper installation of work. Beginning work constitutes acceptance of substrate condition.
- C. Verify that existing concrete has cured a minimum of 28 days and meets finish and surface profile requirements in Division 03 Section “Cast-In-Place Concrete,” before installing the ULTRAFLOOR® DIAMATIC® Burnished Concrete System.
- D. Conduct pre-installation conference, per Section 1.3 F.

3.02 PREPARATION

A. CONCRETE REPAIR

B. Joint Fill (Indoor)

- 1. All joint fill materials shall be installed in accordance with the written recommendations provided in the Approved Manufacturer’s Technical Brochures.
- 2. For the best results all joints should be filled after the first pass of resin bonded diamonds, but before any further polishing continues.
- 3. Prior to filling joints, repair badly spawled joint edges per ACI 302.1R-04.
 - a. Grind the outside edges of all spalls to eliminate any feathered edges and make sure that the minimum depth of the spall is ½”. Mechanically prepare the joint area, and chip out any concrete less than ½” in depth.

3.02 GLOSS ATTAINMENT (ASTM E430)

- A. Gloss readings are not to be obtained through the use of any microfilming products, sealers, coatings, enhancers or as the result of resin transfer from resin bond abrasives.
- B. Readings shall be taken not less than 10’ (3 m) on center in field areas and within 1’ (0.3 m) of floor area perimeters. In no case shall a reading be below 2% of specified minimum sheen:
 - 1. Level A Sheen – Low Gloss reading of 30 to 40. 400 grit diamond finish.
 - 2. Level B Sheen – Medium Gloss reading of 41 to 55. 800 grit diamond finish.
 - 3. Level C Sheen – High Gloss reading of 56 or higher. 1500 grit or higher.
- C. For instructions on achieving gloss levels, refer to the appropriate sub-section of section 3.04 below.

3.04 POLISHING

Use the grinding and polishing steps outlined below to install the burnished concrete finish. Depending on the condition of the floor the first pass may be the 100 grit Flex-Res resin bonded abrasive, but in most cases the 50 Grit abrasive is required. The DIAMATIC burnished concrete finish should produce a Level 1 cut or cream finish, with light exposure of the fine aggregates.

A. LEVEL B Medium Gloss / BURNISHED CONCRETE FINISH (NEW CONSTRUCTION)

1. GRIND/POLISH #1: 50 grit Hybrid Flex-Res Resin bonded diamond abrasive.
2. Broom and vacuum the floor to remove all residual dust.
3. If required, apply APPROVED GROUT to fill areas in need of minor repair.
 - a. Approved manufacturers application details
4. GRIND/POLISH #2: 100 grit Hybrid Flex-Res Resin bonded diamond abrasive.
5. Broom and vacuum floor to remove dust.
6. Apply FLOR-SIL™, per application instructions at a rate of 400 square feet per gallon.
7. Allow FLOR-SIL™ to dry for 1 hour before continuing onto the next step.
8. GRIND/HONING #3: 200 grit Resin Bonded Diamond.
9. Broom and vacuum floor to remove dust.
10. MICROPOLISH/BURNISH #1: FLOR-GRIT® 400 Grit Diamond Impregnated Pad.
11. Apply FLOR-FINISH™ (High gloss) per application instructions at a rate of 2,500 square feet per gallon.
12. Allow to dry a minimum of 15-30 minutes.
13. MICROPOLISH/BURNISH #2: FLOR-GRIT® 800 Grit Diamond Impregnated Pad.
14. Dry mop the floor clean to remove all debris.
15. Apply FLOR-FINISH™ (High gloss) per application instructions at a rate of 3,000 square feet per gallon at 90 degrees to the first coat.
16. Allow to dry a minimum of 15-30 minutes.
17. MICROPOLISH/BURNISH #3: FLOR-GRIT® 800 Grit Diamond Impregnated Pad.

3.05 EDGES

- A. Where desired, polished edge work of all areas shall be done with a 5" or 7" DIAMATIC® Hand Held or Walk Behind polishing tool. The edge polishing process will match the corresponding steps outlined above for the desired gloss level, and each edge polishing step shall be done immediately after the matching main polishing step.

- B. NOTE: All grinding and polishing completed with grinder/polisher equipment connected to a dust collector.

3.06 ACCEPTANCE

- A. Remove all installation materials and any foreign materials resulting from the installation, from the site.
- B. Clean adjacent surfaces and materials.
- C. Perform post job walk to ensure that the ULTRAFLOOR® Concrete System has been completed per the process spec.
- D. Take pictures of final product for documentation and submittal, if requested or required.

3.07 PROTECTION

- A. Prevent any spills or stains from coming into contact with the floor. Clean any spills that may occur as quickly as possible.
- B. **Avoid moisture for 72 hours after installation.** Don't permit standing water for this period or place any protective plastic sheeting, rubber matting, rugs or furniture that can prevent proper drying, thereby trapping moisture, which can result in a cloudy effect on the floor. Refer to product technical data sheet for complete details and requirements.
- C. Protect the finished ULTRAFLOOR® DIAMATIC® Burnished Concrete System from continuing construction and build out as needed by installing the DIAMATIC® ECONO-COVER Protective Floor Covering or AN APPROVED EQUAL Protective Floor Covering.
 - 1. The installation of the DIAMATIC® Protective Covering must be approved by the Installer and General Contractor of the ULTRAFLOOR® installation.
 - 2. If the DIAMATIC® Protective Cover is damaged during use, then that section must be cut out and replaced to maintain the integrity of the protective covering.
 - 3. The DIAMATIC® Protective Cover can be removed after build out is complete.

3.08 ONGOING MAINTENANCE

- A. Restrict using water on the surface for 72 hours after initial installation. The surface should not be cleaned using a string mop for 60 days to avoid streaking of the FLOR-FINISH. Avoid using mats or treated coverings for a minimum of 14 days to allow the finish to fully cure.
- B. DO NOT USE cleaners that are acidic or have citrus (de-limonene) or butyl compounds. Although the ULTRAFLOOR® DIAMATIC® Polished Concrete System is chemical and stain resistant, the application of these high acid cleaners may etch the surface and cause a residual stain. Regular maintenance and cleaning will help prolong surface shine.

Daily Maintenance

- A. Once the system is fully cured out (min. 72 hours), routinely sweep, dry mop, use of a high quality micro-fiber dust mop is the best method. A neutral pH cleaner only may be used when soils or stains must be removed. Any standing water should be removed immediately after cleaning.
- B. An auto-scrubber may be used if equipped with a vacuum system to remove any standing water. The equipment tank should be filled with clean water only, NO CHEMICALS. The scrubber should be equipped with a soft pad only, DO NOT USE A BRUSH attachment.

Weekly Maintenance

- A. An auto-scrubber may be used if equipped with a vacuum system to remove any standing water. The equipment tank should be filled with clean water only, NO CHEMICALS. The scrubber should be equipped with a soft pad only, DO NOT USE A BRUSH attachment.
- B. Use of a BURNISHER equipped with a FLOR-GRIT pad may be used as needed to restore gloss to specified levels. An 800 or 1500 grit pad is recommended.

Extended Maintenance

- A. After thorough cleaning a coat of the DIAMATIC® FLOR-MAINTAINER may be applied to restore original gloss and increase the stain resistance on the surface. Follow all technical data instructions for proper application or consult the original floor installer for assistance.
- B. Use of a BURNISHER equipped with a FLOR-GRIT pad may be used after the application of the FLOR-MAINTAINER to restore gloss to specified levels. An 800 or 1500 grit pad is recommended.

END OF SECTION

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