

## GUIDE SPECIFICATION FOR INDUROSHINE®: POLISHED CONCRETE FLOOR FINISH

### SECTION 03 35 43

#### POLISHED CONCRETE FINISHING

Specifier Notes: This guide specification is written according to the Construction Specifications Canada (CSC) format. The section must be carefully reviewed and edited by the architect or engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: INDUROSHINE is a process utilizing a ready-to-use, colourless liquid, LIQUI-HARD®, consisting of active chemicals that deeply penetrate the surface of concrete. INDUROSHINE is specifically designed to produce hardened, dust-proofed and improved chemically resistant surfaces wherever it is applied. Through various grinding and polishing techniques, various floor finishes can be obtained. Through a chemical reaction process, LIQUI-HARD penetrates progressively through the concrete and chemically solidifies all the component parts into a homogenous concrete mass. Besides its densifying and hardening action, LIQUI-HARD solidifies the concrete, eliminating dusting, rotting and pitting. To provide optimum stain resistance, application of BELLATRIX is then recommended. BELLATRIX is a water-based hybrid system, composed of unique polymers, specifically formulated to provide the dual actions of penetrating and topical protection for concrete that has been previously densified. When used in conjunction with the INDUROSHINE polished concrete system from W. R. MEADOWS®, BELLATRIX® produces a clear, high gloss barrier, offering optimum protection for concrete.

- 1 General
- 1.1 SECTION INCLUDES
  - .1 Surface preparation.
  - .2 Application of clear, colourless, liquid concrete hardener and densifier.
  - .3 Grind and polish of floor to desired finish.
  - .4 Application of water-based concrete enhancer.
- 1.2 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- .1 Section 03 30 00 - Cast-in-Place Concrete.
- 1.3 REFERENCES
  - .1 ASTM C779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
  - .2 ASTM F609 - Standard Test Method for Using a Horizontal Pull Slipmeter (HPS).
- 1.4 SUBMITTALS
  - .1 Comply with Section 01 33 00 - Submittal Procedures.

- .2 Submit manufacturer's product data and application instructions.
- .3 Provide documentation showing finisher is certified by the polishing and densifier manufacturer.
- .4 Contact manufacturer or supplier for a list of certified applicators.

#### 1.5 QUALITY ASSURANCE

- .1 Installer Qualifications
  - .1 Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the floor treatment.
  - .2 The applicator shall either:
    - .1 An INDUROSHINE approved applicator as certified by W. R. MEADOWS, having a minimum of 10 projects performed within three years of similar type, size and complexity as this contract.
    - .2 Be a Level 2 INDUROSHINE approved applicator by W. R. MEADOWS.
- .2 Mock-Ups
  - 1. Apply mock-up of required finish to demonstrate surface finish, color variations and to determine a level of workmanship.
  - 2. Build mock-up in the location and dimensions as directed by the architect or owner's representative.
  - 3. Prior to proceeding, ensure that mock-up meets all requirements of the architect or owner's representative.
  - 4. Maintain mock-up during construction in an undisturbed condition as a standard for judging the work.
- .3 Provide name of technically qualified concrete polishing field representative.
- .4 Provide name of technically qualified densifier manufacturer's field representative.
- .5 Ensure that correct amount of densifier is onsite.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- .2 Store materials in a clean dry area in accordance with manufacturer's instructions.
- .3 Keep products from freezing.
- .4 Avoid direct contact with this product as it may cause mild to moderate irritation of the eyes and/or skin.
- .5 Protect materials during handling and application to prevent damage or contamination.

#### 1.7 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply product when air, surface, or material temperatures are expected to fall below 4° C (40° F) within four hours of expected application.
- .2 Do not apply to frozen concrete.
- .3 Do not use on highly dense or non-porous surfaces.

- .4 Limit and control damage from excessive dust caused by grinding/polishing procedure.
- .5 Properly dispose of collected dry dust from polishing.
- 2 Products
- 2.1 MANUFACTURER
  - .1 W. R. MEADOWS OF CANADA, 70 Hannant Court, Milton, Ontario, Canada L9T 5C1. (800) 563-3618. Fax (905) 878-4125. Web Site [www.wrmeadows.com](http://www.wrmeadows.com).
  - .2 W. R. MEADOWS OF WESTERN CANADA, 38 Rayborn Crescent, St. Albert, Alberta, Canada T8N 5B4. (800) 661-6971. Fax (780) 458-1173. Web Site [www.wrmeadows.com](http://www.wrmeadows.com)
- 2.2 MATERIALS
  - .1 Equipment to be used for grinding/polishing shall be:
    - .1 Three-head counter rotating variable speed floor grinding machine.
    - .2 Dust extraction system and pre-separator.
    - .3 75kw MQ power generator or equivalent.
  - .2 Equipment to be used for grinding/polishing shall possess at least 775 lb. of head pressure.
  - .3 Equipment to be used for edge grinding/polishing shall be a hand grinder with dust extraction equipment
  - .4 Diamond grinding segments shall be:
    - .1 Metal bonds: 40, 60, 80 and 150 grit.
  - .5 Diamond polishing pads shall be:
    - .1 Resin bonds: 100, 200, 400, 800, 1500, and 3000 grit.
  - .6 Grinding pads for edges shall be:
    - .1 Resin bonds: 40, 60, 80, 100, 200, 400, 800, 1500, and 3000 grit.
  - .7 Equipment to be used for densifying and cleaning the floor after grinding/polishing procedure has been performed:
    - .1 Tennant ride-on auto-scrubber or equivalent with a head pressure of 150 lb.
    - .2 Follow auto-scrubber's manual for cleaning instructions after densifying and conditioning the floor.
    - .3 Do not allow densifier to remain inside the auto-scrubber after densifying.
  - .8 Concrete densifier:
    - .1 Liquid hardener/densifier shall be LIQUI-HARD as manufactured by W. R. MEADOWS.
  - .9 Concrete Enhancer:
    - .1 Water-based, synthetic polymer concrete floor enhancer shall be BELLATRIX as manufactured by W.R. MEADOWS.
- 2.3 RELATED MATERIALS
  - .1 Water: Potable water.

3 EXECUTION

3.1 EXAMINATION

- .1 Examine surfaces to receive treatment. Notify architect if surfaces are not acceptable. Do not begin application until unacceptable conditions have been corrected.
- .2 Final sheen shall be equivalent to that as accepted on the mock-up.

3.2 GENERAL POLISHING REQUIREMENTS

- .1 Coordinate polishing operations with other associated work and trades.
- .2 Do not use stain or scuff removing agents.
- .3 Begin and complete polishing within two weeks prior to possession date.
- .4 Utilize machines to the maximum extent practical to achieve optimum efficiency.

3.3 SURFACE PREPARATION

- .1 Protect adjacent surfaces not designated to receive treatment.
- .2 Clean and prepare surfaces to receive treatment in accordance with manufacturer's instructions, ensuring that all stains, oil, grease, form release agents, dust and dirt are removed prior to application.
- .3 Ensure concrete is a minimum of 28 days old.

3.4 APPLICATION

Specifier Notes: Select 1, 2, or 3 based on floor finish for project requirements.

A. INDUROSHINE PDS-1: SATIN FINISH THAT WILL REFLECT IMAGES FROM SIDE LIGHTING.

B. INDUROSHINE PDS-2: SEMI-GLOSS FINISH THAT WILL REFLECT OVERHEAD AND SIDE IMAGES FROM 35-45 FEET WITH INCREASED LIGHT REFLECTIVITY.

C. INDUROSHINE PDS-3: HIGH-GLOSS FINISH THAT WILL LOOK WET AND SHOW MIRROR-LIKE REFLECTIONS OF SIDE AND OVERHEAD IMAGES.

- .1 To obtain satin finish that will reflect images from side lighting (INDUROSHINE PDS-1), ensure applicator follows the applicable procedures incorporating grinding plates in the following order.
  - .1 Verify that the floor is clean and dry prior to polishing procedure.
  - .2 Inspect and verify that the floor does not have curled joints, large cracks, spalling or lippage. If lippage or curled joints are present, refer to Section 03 01 00 – Maintenance of Concrete for corrective procedures.
  - .3 Using the 80-grit metal bond grinding segment, grind the floor surface at a rate of 500 ft.<sup>2</sup>/hr. Vacuum the surface to remove loose particulates.
  - .4 Using the 150-grit metal bond grinding segment, grind the floor surface at a rate of 600 ft.<sup>2</sup>/hr. Vacuum the surface to remove loose particulates.
  - .5 Flood surface with concrete densifier and scrub into floor for 45 minutes, ensuring that no puddling of densifier occurs.
  - .6 Squeegee off excess material.
  - .7 Wait 24 hours.

- .8 Verify that the floor is dry and clear of debris prior to continuation of polishing procedure.
  - .9 Using the 100-grit resin bond polishing segment, grind the floor surface at a rate of 600 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .10 Using the 200-grit resin bond polishing segment, grind the floor surface at a rate of 700 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .11 Using the 400-grit resin bond polishing segment, grind the floor surface at a rate of 700 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .12 Using the 800-grit resin bond polishing segment, grind the floor surface at a rate of 1000 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .13 Using the auto-scrubber, clean the floor thoroughly as per manufacturer's instructions with a white non-woven pad. Pads should be replaced approximately every 30,000 ft<sup>2</sup>.
- .1 To obtain semi-gloss finish that will reflect overhead and side images from 35-45' with increased light reflectivity (INDUROSHINE PDS-2), ensure applicator follows the applicable procedures incorporating grinding plates in the following order.
- .1 Verify that the floor is clean and dry prior to polishing procedure.
  - .2 Inspect and verify that the floor does not have curled joints, large cracks, spalling or lippage. If lippage or curled joints are present, refer to Section 03 01 00 – Maintenance of Concrete for corrective procedures.
  - .3 Using the 80-grit metal bond grinding segment, grind the floor surface at a rate of 500 ft.<sup>2</sup>/hr. Vacuum the surface to remove loose particulates.
  - .4 Using the 150-grit metal bond grinding segment, grind the floor surface at a rate of 600 ft.<sup>2</sup>/hr. Vacuum the surface to remove loose particulates.
  - .5 Flood surface with concrete densifier and scrub into floor for 45 minutes, ensuring that no puddling of densifier occurs.
  - .6 Squeegee off excess material.
  - .7 Wait 24 hours.
  - .8 Verify that the floor is dry and clear of debris prior to continuation of polishing procedure.
  - .9 Using the 100-grit resin bond polishing segment, grind the floor surface at a rate of 600 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .10 Using the 200-grit resin bond polishing segment, grind the floor surface at a rate of 700 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .11 Using the 400-grit resin bond polishing segment, grind the floor surface at a rate of 700 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .12 Using the 800-grit resin bond polishing segment, grind the floor surface at a rate of 1000 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .13 Using the 1500-grit resin bond polishing segment, grind the floor surface at a rate of 1500 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.

- .14 Using the auto-scrubber, clean the floor thoroughly as per manufacturer's instructions with a white non-woven pad. Pads should be replaced approximately every 30,000 ft.<sup>2</sup>.
- .3 To obtain high-gloss finish that will look wet and show mirror-like reflections of side and overhead images (INDUROSHINE PDS-3), ensure applicator follows the applicable procedures incorporating grinding plates in the following order.
  - .1 Verify that the floor is clean and dry prior to polishing procedure.
  - .2 Inspect and verify that the floor does not have curled joints, large cracks, spalling or lippage. If lippage or curled joints are present, refer to Section 03 01 00 – Maintenance of Concrete for corrective procedures.
  - .3 Using the 80-grit metal bond grinding segment, grind the floor surface at a rate of 500 ft.<sup>2</sup>/hr. Vacuum the surface to remove loose particulates.
  - .4 Using the 150-grit metal bond grinding segment, grind the floor surface at a rate of 600 ft.<sup>2</sup>/hr. Vacuum the surface to remove loose particulates.
  - .5 Flood surface with concrete densifier and scrub into floor for 45 minutes, ensuring that no puddling of densifier occurs.
  - .6 Squeegee off excess material.
  - .7 Wait 24 hours.
  - .8 Verify that the floor is dry and clear of debris prior to continuation of polishing procedure.
  - .9 Using the 100-grit resin bond polishing segment, grind the floor surface at a rate of 600 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .10 Using the 200-grit resin bond polishing segment, grind the floor surface at a rate of 700 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .11 Using the 400-grit resin bond polishing segment, grind the floor surface at a rate of 700 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .12 Using the 800-grit resin bond polishing segment, grind the floor surface at a rate of 1000 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .13 Using the 1500-grit resin bond polishing segment, grind the floor surface at a rate of 1500 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .14 Using the 3000-grit resin bond polishing segment, grind the floor surface at a rate of 2000 ft.<sup>2</sup>/hr. If scratches from the previous grit are still apparent, decrease the rate of grinding by 100 ft.<sup>2</sup> until scratches are removed. Vacuum the surface to remove loose particulates.
  - .15 Using the auto-scrubber, clean the floor thoroughly as per the manufacturer's instructions with a white non-woven pad. Pads should be replaced approximately every 30,000 ft.<sup>2</sup>.

### 3.5 CONCRETE ENHANCER

- .1 Allow 24 hours before proceeding with concrete enhancer application.
- .2 Apply concrete enhancer, undiluted, according to manufacturer's instructions.
- .3 Spray concrete enhancer using industrial sprayer delivering 1/10<sup>th</sup> of a gallon per minute.
- .4 Pre-wet micro-fiber applicator with concrete enhancer prior to use.

- .5 Uniformly spread concrete enhancer with a micro-fiber applicator, ensuring that the product is not allowed to dry before spreading is complete.
- .6 Allow concrete enhancer to set up for two hours, then burnish with a 3000-grit diamond pad at 2000 RPM.
- .7 For optimum performance, apply a second coat at a 90° (right) angle to the first coat, after the first coat is thoroughly dry.

3.6 PROTECTION

- .1 Keep surface dry for a minimum of 48 hours after application.
- .2 Allow 72 hours before heavy traffic.

END OF SECTION