



**VEXCON**  
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## StarSeal<sup>®</sup> PS Ultra Stain Diamond Polish Instructions

### Products:

- StarSeal PS Ultra Stain
- Star Seal PS Clear or Clear HB
- StarSeal Fusion
- StarSeal Fixative
- StarSeal PS Finish Coat Ultra/StarSeal PS Finish Coat CE (non-film forming)
- StarSeal PS Ultra SPE (film forming)

### I. PLANNING

- A. An existing surface condition must be taken into consideration prior to estimating and planning the installation. Some items to consider are; (note, this is not intended to be absolute, other variables and unknowns may develop during the planning and installation stages.)**

1. Determine if there are any coatings on the surface and what will be required to remove.
2. Check surface flatness for high and low spots.
3. Inspect the surface for cracks and other defects. Consider repairs required. For cracks, pop-outs, holes see Section II, B Grind and Hone.
4. Test the surface hardness. Generally, softer concrete consumes more diamonds than harder concrete. Also, consider how the surface was finished. Hard troweled surfaces usually require more surface preparation.
5. Verify equipment and electrical requirements.
6. Verify client's desired appearance. Stain(s), decorative saw cuts, exposed aggregate, shine, etc.

### II. FLOOR PREPARATION

- A. Clean (StarSeal EF Stripper, StarSeal EF Degreaser & Cleaner)**

1. Thoroughly clean the concrete surface, removing all coatings, dirt, oil and laitance with **StarSeal EF Stripper**. For less dirty concrete surfaces use **StarSeal EF Degreaser & Cleaner**. Treat oil spots with **StarSeal EF Stripper** oil emulsifier and oils absorber materials.
2. Scrub with proper dilution of **StarSeal EF Degreaser & Cleaner** or a high pH detergent with an automatic scrubber capable of a minimum of 80 to 120 pounds of head pressure, quipped with medium to soft nylon/polypropylene brushes.
3. Scrub floor once without squeegee or vacuum. On second pass, drop the squeegee and remove all traces of soap residue and water solution.
4. Rinse and remove.
5. Allow to dry and inspect the surface before starting to grind.

## **B. Grind and Hone (Metal and Resin Bond Diamonds)**

1. Grind the floor within 1-5 inches of walls with 40's to 70's grit metal bond diamonds in a cross-hatching pattern (two passes at 90° to each other), usually planetary or counter-rotating head machines or suitable polishing equipment with an over lapping capability. Depending on aggregate exposure requirements.
2. Examine the floor to evaluate hairline cracks, air voids, pop-outs. Apply StarSeal Fusion if required (see Product Data Sheet CT127)

**NOTE: If grinding is performed dry, the equipment should be fitted with a dust collection system.**

3. Vacuum the floor thoroughly with squeegee attachment and inspect the surface for flatness, smoothness and test for absorbency, after each grit.
4. Continue grinding within 1-5 inches of walls, in a cross-hatching pattern (two passed at 90° to each other\_ until there is a uniform scratch pattern, Use 100-200 grit metal bond, followed by a 100 grit resin diamond.
5. For edge grinding, alternate grinding the edges and the floor using a variable speed edge grinder fitted with a dust collector, or use a wet grinding process. You may need to use some or all of these grits depending upon the concrete: 40, 70 and 150 Metal and 100, 200, 400, 800, 1500, and 3000 Resin. Make sure to remove all of the scratches from the previous grit. Clean the edges after each diamond grit: inspect for scratches.

**NOTE: Small areas such as countertops follow all procedures using a hand grinder. Inspect the surface for flatness, smoothness, and color uniformity.**

**NOTE: It is important to grind the floor flat. If the floor is not flat, the high spots on the surface stained concrete can be cut away by the polishing diamonds. When a high spot is cut, the color will be removed and the floor will look uneven in its coloration, reflectivity and appearance.**

## **C. Cleaning Concrete Pores (Certi-Vex Etch & Efflorescence Remover and StarSeal EF Neutralizing Rinse & Cleaner)**

1. Try a small area with 50% **Certi-Vex Etch & Efflorescence Remover** and 50% water. Determine absorbance using test in Section 4. Test with increased and decreased acid-to-water ratios to determine proper dilution.
2. Apply the **Certi-Vex Etch & Efflorescence Remover** (in tested ratio) with a plastic pump-up sprayer in a uniform continuous pattern, leaving no fresh concrete uncovered. Apply at the typical rate of 150sq.ft./gallon. This product, when applied at the correct strength, will appear whitish in color with bubbles while it is working.
3. When the whitish reaction has dissipated scrub evenly and thoroughly with an electric buffer (swing machine) equipped with medium to soft nylon/polypropylene brush.
4. Neutralize using the **StarSeal EF Neutralizing Rinse & Cleaner**, mixed at one pound per 5 gallons of warm water.
5. Apply with a pump-up sprayer or pour out of the pail and scrub with the same electric buffer and brush making sure to scrub the entire area.
6. Rinse with water and vacuum the area dry. This can be done with a walk-behind scrubber or wet vac.
7. Repeat the neutralizing procedure until the floor no longer reacts.
8. Perform pH test using distilled water and pH strips. This **must be** performed prior to apply the **StarSeal PS** products.
9. Test the more vulnerable coarse or exposed areas, including cracks, spalls, corners, columns. Perform one test per 1000 sq.ft. or as needed.

#### D. Surface Absorbency Test

1. Perform surface absorbency test:
  - a) Drop dime-size droplets of water onto the concrete. The concrete should darken/wet out, spread, and absorb completely.
  - b) If the floor fails the absorbency test, repeat the procedure if Section II C (Cleaning Concrete Pores (**Certi-Vex Etch & Efflorescence Remover and StarSeal EF Neutralizing Rinse & Cleaner**)). Repeated etching may be required to obtain proper absorbency.
  - c) If floor does not pass absorbency test, contact Vexcon Chemicals for instruction.

#### E. pH Test Procedures

1. Use only unopened distilled water for the pH test; container seal must not be broken prior to the test.
2. Dampen sections of the floor with approximately ¼ cup of water and let stand for 5 minutes.
3. Apply pH paper strip to the floor surface in the wetted area.
4. Evaluate color of pH strip against color gauge and record results.
5. pH values must be between 9 and 11 for normal concrete (medium green on the test paper).

**NOTE: If values are below these numbers, (light green to yellow or reddish), repeat neutralization until satisfactory results are achieved.**

### III. INSTALLATION

#### A. StarSeal PS Ultra Stain

1. **StarSeal PS Ultra Stain** must be mixed thoroughly until uniform and there are no accumulated solids at bottom of can or pail. Continue to mix frequently during application.
2. Apply **StarSeal PS Ultra Stain** with pump-up sprayer and an **EvenFlow Applicator** or microfiber pad at 400-600 sq.ft./gal. Apply undiluted on porous floors, or for dense concrete, diluted with 1 part clean water to 4 parts **StarSeal PS Ultra Stain**.
3. The **StarSeal PS Ultra Stain** should penetrate into the concrete as is applied. Do not allow the material to puddle.

**NOTE: StarSeal PS Ultra Stain is applied in two very thin and even coats. StarSeal PS Ultra Stain should not look like a painted surface. The concrete should be visible through the color.**

4. When the installer is required to walk on the floor to complete the installation, use spiked shoes or shoe covers.
5. Once the concrete is treated with **StarSeal PS Ultra Stain**, foot traffic should be avoided until all installation instructions have been completed.
6. After **StarSeal PS Ultra Stain** has dried completely there can be some surface dry powder residue. This is easily brushed off; remove excess powder that has not penetrated with either a fine dust broom, floor scrubber and a dry white or hogshair pad or a high speed burnisher. This allows for easier penetration of the **StarSeal PS Clear**.

#### B. StarSeal PS Clear (hardener & densifier)

1. Apply **StarSeal PS Clear** at 200-300 sq.ft./gal with a pump-up sprayer 2 coats at 400-600 sq.ft./gallon, per coat or to rejection at 200 grit, hone.
  - a) For dense floors dilute: add one part water to 4 parts **StarSeal PS Clear**.
  - b) For porous floors apply undiluted.

2. Do not allow the materials to puddle. Using an **EvenFlow Applicator** or microfiber pad, spread out to an even coat as it absorbs into the concrete. Do not over work an area.

**NOTE: Each coat MUST be completely dry prior to applying the next coat of StarSeal PS Clear**

3. Keep applying thin even coats of **StarSeal PS Clear** for a minimum of 60 minutes or until the floor will no longer absorb, material should penetrate in and dry without leaving a film.
4. After **StarSeal PS Clear** application, wait until dry, 12 hours or overnight before high speed propane burnishing with a black pad.
5. The surface must be burnished with a high speed propane burnisher equipped with a black pad, if no more diamonds polishing is to be performed, also burnish with the hogshair and white pads or diamond impregnated pads until desired gloss is achieved.

**NOTE: Walk slowly during burnishing to develop friction and heat, the floor temperature should reach 90-100°F/ 32-38°C, or a minimum of 20°F/ -6°C above the surrounding floor temperature.**

### C. StarSeal PS Fixative

1. Apply **StarSeal PS Fixative** to the previously densified and burnished floor (12 to 24 hours afterwards).
  - a) Use a plastic pump-up sprayer, **EvenFlow Applicator** or microfiber pad at 500-700 sq.ft./gal.
  - b) Rinse off immediately after application.

**NOTE: There must be a person or two with either a wet mop and clean water or a walk behind floor scrubber immediately behind the person applying the StarSeal PS Fixative.**

**NOTE: Do NOT allow the StarSeal PS Fixative to dry. If material dries, the floor will turn white. If this occurs rinse immediately with water and burnish with a black stripping pad. Rinse again with clean water and vacuum up water.**

### D. Dry Polishing the StarSeal PS Ultra Stain

1. After the application of **StarSeal PS Fixative** is completed: Diamond polish the floor with resin bond diamonds, utilizing the same techniques from the GRIND section II, B.
  - a) For a Silver Level shine Use 400 grit resin bond.
  - b) For a Gold Level shine use 400, 800 and depending on the shine level desired 1500 may be necessary.
  - c) For a Platinum Level shine use 400, 800, 1500 & 3000 for the Platinum shine level.
  - d) See Section II.B.2 for procedures regarding edges.

**NOTE: Skip a grit level when beginning to Dry Polish. For example if the last grit used was a 100 resin bond, the skip to the 200's and start with a 400 grit resin bond.**

### E. StarSeal PS Finish Coat Ultra/StarSeal PS Finish Coat CE (non-film forming stain protection)

1. Apply **StarSeal PS Finish Coat Ultra** or **StarSeal Finish Coat CE** to clean concrete. Do not dilute. Apply with low-pressure (40psi) pump-up or airless sprayer followed by spreading with **EvenFlow Applicator** or a microfiber pad.
  - a) Sprayer should be fitted with solvent resistant hoses and gaskets such as Chapin 1967 Extreme.
  - b) Care should be taken to ensure that the solution is applied and pulled out to an even, tight, thin coat.
  - c) **StarSeal PS Finish Coat Ultra** or **StarSeal Finish Coat CE** should be applied in multiple, thin coats that dry quickly, See Coverage Section.
  - d) Surface residues, pools and piffles should be spread out thoroughly until they completely penetrate into the surface.
  - e) Additional light coats may be required until the material no longer absorbs into the concrete.

**NOTE: Dry time is dependent on temperature, air flow and relative humidity.**

- f) After through drying, there should be a very thin film on the surface.

- g) The floor must be burnished with a high speed propane burnisher equipped with a black pad to remove excess **StarSeal PS Finish Coat Ultra** from the surface.

**NOTE: If the StarSeal PS Finish Coat Ultra is not burnished the excess will black mark.**

- h) For additional gloss, burnishing with the Hogshair and White pads. When burnishing is complete, there will be no surface film.

**NOTE: Walk slowly during burnishing to develop friction and heat. The floor temperature should reach 90-100°F/ 32-38°C, or a minimum of 20°F/-6°C above the surrounding floor temperature.**

#### **F. StarSeal PS Ultra Guard SPE (film forming stain protection)**

1. **StarSeal PS Ultra Guard SPE** should not be diluted or altered. Apply with low-pressure (20-50psi) airless spray equipment. Sprayer should be fitted with solvent resistant hoses and gaskets. If using brushed, rollers or microfiber pads care should be taken to ensure that enough solution is applied.
  - a) **StarSeal PS Ultra Guard SPE** should be applied in 2 coats @600sq.ft./gal with sufficient material applied so that the surface remains wet for a few minutes before leaving a film on the surface of the concrete.
  - b) Additional light coats may be required until the material no longer absorbs into the concrete. Do not over apply.

**NOTE: After thorough drying the floor MUST be burnished with a high speed burnishing machine and burnishing pads. If not burnished the excess StarSeal PS Ultra Guard SPE will black mark.**

- G. **The Installation of StarSeal PS Ultra Stain floor is complete. The floor can be used as soon as it is totally dry.**

### **IV. EQUIPMENT**

#### **A. Professional quality equipment should be used at all times:**

1. Quality diamonds.
2. Sprayer: Industrial high-solids pump-up sprayer; Chapin or Hudson.
3. EvenFlow Applicator system by Vexcon.
4. Ultra-Trak by Fas-Trak or Microfiber pads.

### **V. MAINTENANCE**

For more details see, **Technical Note TN215 StarSeal PS Cleaning Instructions**. Floors prepared with the **StarSeal PS** system require little maintenance. General housekeeping is recommended to keep floors clean and looking new. Spills should be cleaned when they occur. Dirt may be rinsed hosed off with water. Heavily soiled areas should be cleaned by mop or by scrubbing with a floor machine equipped with a scrubbing brush and **StarSeal EF Degreaser & Cleaner** cleaning detergent. Rinse and allow the floor to dry. Every 2-3 years a light coat of **StarSeal PS Finish Coat Ultra WB** can be applied and burnished.

### **VI. COVERAGE**

Coverage rates vary based on texture and porosity of surfaces. Please see individual product data sheets for coverage information and specific product application instruction. Always perform a test area prior to installation.