



## GUIDE SPECIFICATION FOR SEALTIGHT LIQUI-HARD: CONCRETE DENSIFIER AND CHEMICAL HARDENER COMPOUND

SECTION 03 35 00

CONCRETE FLOOR FINISHES

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) Master Format'04. 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: LIQUI-HARD Concrete Densifier and Chemical Hardener Compound is a ready-to-use, colorless liquid, formulated with chemically reactive raw materials to harden and dustproof concrete. When properly applied, LIQUI-HARD will offer substantial improvement in abrasion and chemical resistance and will significantly improve the durability of the concrete surface when compared to untreated concrete. As LIQUI-HARD is applied and penetrates into the concrete surface, a chemical reaction takes place, producing a byproduct that fills the pores of the concrete. This process produces a substantially denser concrete surface with enhanced durability. In addition to the densifying and hardening action, LIQUI-HARD also solidifies the concrete, eliminating dusting and pitting. LIQUI-HARD meets maximum VOC content limits of 400 g/L for Concrete Protective Coatings as required by the U.S. EPA Architectural Coatings Rule. Concrete properly treated with LIQUI-HARD is USDA-accepted.

LIQUI-HARD is recommended for use wherever hardening, dust-proofing and improved chemical and abrasion resistant surfaces are required. Ideal applications include floors in industrial plants and warehouses, storage silos, sewage plants, chemical processing facilities, refineries and heavy pedestrian floor traffic areas, such as civic centers, sports arenas, stadiums, hospitals, airports and museums. LIQUI-HARD can successfully be used in conjunction with shake-on hardeners, as well as liquid colors or stains.

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of clear, colorless, liquid concrete hardener and densifier.
- C. Application of water based concrete enhancer.

#### 1.02 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.

- A. Section 03 00 00 - Cast-in-Place Concrete.

#### 1.03 REFERENCES

- A. ASTM C779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
- B. ASTM F609 - Standard Test Method for Using a Horizontal Pull Slip meter (HPS).

#### 1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.



## 1.05 DELIVERY, STORAGE, AND HANDLING

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

## 1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply concrete densifier and chemical hardener when concrete temperature is below 35°F (2°C) or above 135°F (57°C).
- B. Do not apply to frozen concrete.
- C. Do not use on highly dense or non-porous surfaces.

## PART 2 PRODUCTS

### 2.01 MANUFACTURER

- A. ROSSCO INC.

### 2.02 MATERIALS

- A. Performance Based Specification:
  - 1. Concrete Densifier and Chemical Hardener Compound shall be a ready to use, water-base colorless liquid formulated with chemically reactive raw materials that meets the maximum VOC content limits of 400 g/L for Concrete Protective Coatings as required by the U.S. EPA Architectural Coatings Rule.
  - 2. Concrete Enhancer shall be a ready to use water-based, synthetic polymer concrete floor enhancer containing a proprietary stain blocking additive that meets the maximum VOC content limits of 100 g/L for sealers as required by California Air Pollution Control Districts as well as the 400 g/L VOC maximum required by the U.S. EPA Architectural Coatings Rule.
- B. Proprietary Based Specification:
  - 1. Concrete Densifier and Chemical Hardener Compound shall be LIQUI-HARD
  - 2. Concrete Enhancer shall be ULTRIX .

### 2.03 RELATED MATERIALS

- A. Water: Potable water.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Examine surfaces to receive concrete densifier and chemical hardener. Notify architect if surfaces are not acceptable. Do not begin application until unacceptable conditions have been corrected.

### 3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive treatment.
- B. 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 removed prior to application.



### 3.03 APPLICATION

- A. Apply concrete densifier and chemical hardener in accordance with manufacturer's instructions.
- B. Ensure application equipment is clean and free of previously used materials.
- C. Do not dilute concrete densifier and chemical hardener.
- D. Fresh Concrete
  - 1. Apply concrete densifier and chemical hardener as soon as concrete is firm enough to work on after final troweling.
  - 2. Apply undiluted concrete densifier and chemical hardener at approximately 300 sq. ft./gal. (4.91 sq. m./L), using a low-pressure sprayer or by spreading evenly with a soft-bristled broom.
  - 3. Do not allow material to puddle on the surface.
- E. Existing Concrete
  - 1. Saturate the surface with undiluted concrete densifier and chemical hardener by sprayer, squeegee or broom.
  - 2. Keep the surface wet with concrete densifier and chemical hardener for a minimum of 30 minutes. (A range of 30-60 minutes may be required depending on temperature and conditions.).
  - 3. Ensure areas are kept wet at all times with concrete densifier and chemical hardener.
  - 4. Once the surface begins to gel and become slippery, immediately spray the surface with a light water mist.
  - 5. Scrub the surface with a broom or mechanical scrubber to increase the penetration of the concrete densifier and chemical hardener.
  - 6. Continue to work the concrete densifier and chemical hardener into the surface for another 5-10 minutes or until it becomes gelled and slippery for a second time.
  - 7. Thoroughly flush the surface with water and agitate the surface with a broom to aid in removal of the excess concrete densifier and chemical hardener.
  - 8. Remove all excess material with a mop or squeegee.
  - 9. Thoroughly squeegee the surface dry.
  - 10. If there are slippery patches, this is an indication that there is still excess concrete densifier and chemical hardener present. These areas should be re-flushed and squeegeed again until the entire surface is dry.

### 3.04 CONCRETE ENHANCER

- A. Allow 24 hours before proceeding with concrete enhancer application.
- B. Spray concrete enhancer full strength from container using an industrial sprayer delivering 1/10<sup>th</sup> of a gallon per minute.
- C. Pre-wet micro-fiber applicator with concrete enhancer prior to use.
- D. Uniformly spread concrete enhancer with a micro-fiber applicator, ensuring that the product is not allowed to dry before spreading is complete. Special caution should be taken to not over apply. A monolithic, thin, even film is desired.
- E. For optimum performance, apply a second coat at a 90° (right) angle to the first coat, after the first coat is thoroughly dry.
- F. Allow 24 hours for concrete enhancer to dry.

### 3.05 PROTECTION

- A. Keep surface dry for a minimum of 48 hours after application.

END OF SECTION



## GUIDE SPECIFICATION FOR LIQUI-HARD® ULTRA: MOLECULAR CONCRETE DENSIFIER AND CHEMICAL HARDENER

SECTION 03 35 00

CONCRETE FINISHING

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) Master Format '04. 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: LIQUI-HARD ULTRA concrete densifier and chemical hardener is a ready to use, colorless liquid, which hardens and dustproofs concrete at a molecular level. After proper application, the finished surface offers substantial improvement in abrasion and chemical resistance and will significantly improve the durability of the surface when compared to untreated concrete. As LIQUI-HARD ULTRA is applied and penetrates into the concrete surface, a chemical reaction takes place, producing a byproduct that fills in the pores of the concrete one molecule at a time. LIQUI-HARD ULTRA solidifies the concrete, eliminating dusting and pitting.

LIQUI-HARD ULTRA is chemically engineered to provide timely, quick, sustainable performance. The product is simply sprayed on, and then left moist on the surface for 20 minutes. In this short period of time, the colorless liquid quickly penetrates into the surface. Unlike traditional densifiers, LIQUI-HARD ULTRA does not require brushing into the surface or rinsing. After application, the resulting surface features enhanced protection and sheen, coupled with superior abrasion resistance. This environmentally safe, water-based product features a zero VOC content and provides an attractive option in green building applications.

LIQUI-HARD ULTRA is recommended for use wherever hardened, dustproofed, and improved chemical and abrasion resistant surfaces are required. Ideal applications include floors in industrial plants and warehouses, storage silos, sewage plants, chemical processing facilities, refineries, and heavy pedestrian floor traffic areas, such as civic centers, sports arenas, stadiums, hospitals, airports, and museums. LIQUI-HARD ULTRA can successfully be used in conjunction with shake-on hardeners.

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of clear, colorless, liquid concrete hardener and densifier.
- C. Application of water-based concrete enhancer.

#### 1.02 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.

- A. Section 03 00 00 - Cast-in-Place Concrete.

#### 1.03 REFERENCES

- A. ASTM C779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
- B. ASTM F609 - Standard Test Method for Using a Horizontal Pull Slip Meter (HPS).

#### 1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.



- B. Submit manufacturer's product data and application instructions.

## 1.05 DELIVERY, STORAGE, AND HANDLING

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

## 1.06 ENVIRONMENTAL REQUIREMENTS

- F. Do not apply concrete densifier and chemical hardener when concrete temperature is below 40° F (4° C) or above 135° F (57° C).
- G. Do not apply to frozen concrete.

## PART 2 PRODUCTS

### 2.01 MANUFACTURER

- A. ROSSCO INC.

### 2.02 MATERIALS

#### A. Performance-Based Specification:

1. Concrete densifier and chemical hardener compound shall be a ready-to-use, water-based, colorless liquid formulated with chemically reactive raw materials that meets the maximum VOC content limits of 100 g/L for sealers as required by the South Coast Air Quality Management District requirements, as well as the 400 g/L VOC maximum required by the U.S. EPA Architectural Coatings Rule.
2. Concrete enhancer shall be a ready-to-use, water-based, synthetic polymer concrete floor enhancer containing a proprietary stain-blocking additive that meets the maximum VOC content limits of 100 g/L for sealers as required by the South Coast Air Quality Management District requirements, as well as the 400 g/L VOC maximum required by the U.S. EPA Architectural Coatings Rule.

#### B. Proprietary-Based Specification:

1. Concrete densifier and chemical hardener compound: LIQUI-HARD ULTRA
2. Concrete enhancer: ULTRIX.

### 2.03 RELATED MATERIALS

- A. Water: Potable water.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Examine surfaces to receive concrete densifier and chemical hardener. Notify architect if surfaces are not acceptable. Do not begin application until unacceptable conditions have been corrected.
- B. Ensure material can penetrate the concrete surface.

### 3.02 SURFACE PREPARATION



- A. Protect adjacent surfaces not designated to receive treatment.
- B. Clean and prepare surfaces to receive treatment in accordance with manufacturer's instructions, ensuring that all stains, oil, grease, form release agents, curing compounds, dust, and dirt are removed prior to application.
- C. Fill and repair all holes, cracks, and deteriorated areas that have been removed to sound concrete.

### 3.04 APPLICATION

- A. Apply concrete densifier and chemical hardener in accordance with manufacturer's instructions.
- B. Ensure application equipment is clean and free of previously used materials.
- C. Do not dilute concrete densifier and chemical hardener.

Specifier Notes: Select D or E based on project requirements. For optimum performance of the concrete densifier, a minimum of 28 days following the concrete placement is preferable.

- D. Fresh Concrete
  - 1. Apply undiluted concrete densifier and chemical hardener as soon as concrete is firm enough to work on after final troweling.
  - 2. Apply undiluted concrete densifier and chemical hardener at approximately 650 - 800 ft.<sup>2</sup>/gal. (15.95 – 19.63 m<sup>2</sup>/L) using a low-pressure sprayer.
  - 3. Do not allow material to puddle on the surface.

- E. Existing Concrete
  - 1. Apply undiluted concrete densifier and chemical hardener using a low pressure sprayer.
  - 2. Keep the surface wet with concrete densifier and chemical hardener for a minimum 20-minute period.
  - 3. Do not allow material to puddle on the surface.
  - 4. Let the surface dry for 2-4 hours.
  - 5. Restrict foot traffic for at least 4 hours; 12 hours is preferable.

### 3.04 CONCRETE ENHANCER

- A. Allow 24 hours before proceeding with concrete enhancer application.
- B. Spray concrete enhancer full strength from container using an industrial sprayer delivering 1/10<sup>th</sup> of a gallon per minute.
- C. Pre-wet micro-fiber applicator with concrete enhancer prior to use.
- D. Uniformly spread concrete enhancer with a micro-fiber applicator, ensuring that the product is not allowed to dry before spreading is complete. Special caution should be taken to not over apply. A monolithic, thin, even film is desired.
- E. For optimum performance, apply a second coat at a 90° (right) angle to the first coat, after the first coat is thoroughly dry.
- F. Allow 24 hours for concrete enhancer to dry.

### 3.05 PROTECTION

- A. Keep surface dry for a minimum of 48 hours after application (preferably 72 hours).

END OF SECTION