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 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: LIQUI-HARD ULTRA concrete densifier and chemical hardener is a ready to use, colourless 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 colourless 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 centres, sports arenas, stadiums, hospitals, airports, and museums. LIQUI-HARD ULTRA can successfully be used in conjunction with shake-on hardeners.

1 General

1.1 SECTION INCLUDES

.1 Surface preparation.

.2 Application of clear, colourless, liquid concrete hardener and densifier.

.3 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 00 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 Slip Meter (HPS).

1.4 SUBMITTALS

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

.2 Submit manufacturer's product data and application instructions.

1.5 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.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Do not apply concrete densifier and chemical hardener when concrete temperature is below 4º C (40º F) or above 57º C (135º F).

.2 Do not apply to frozen concrete.

.3 Do not use on highly dense or non-porous surfaces.

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.

.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.

2.2 MATERIALS

.1 Performance-Based Specification:

.1 Concrete densifier and chemical hardener compound shall be a ready-to-use, water-based, colourless 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.

.2 Proprietary-Based Specification:
.1 Concrete densifier and chemical hardener compound: LIQUI-HARD ULTRA manufactured by W. R. MEADOWS.
.2 Concrete enhancer: BELLATRIX® manufactured by W. R. MEADOWS.

2.3 RELATED MATERIALS

.1 Water: Potable water.

3 Execution

3.1 EXAMINATION

.1 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.

.2 Ensure material can penetrate the concrete surface.

3.2 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, curing compounds, dust, and dirt removed prior to application.

.3 Fill and repair all holes, cracks, and deteriorated areas that have been removed to sound concrete.

3.3 APPLICATION

.1 Apply concrete densifier and chemical hardener in accordance with manufacturer's instructions.

.2 Ensure application equipment is clean and free of previously used materials.

.3 Do not dilute concrete densifier and chemical hardener.

.4 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 $ft.^2$/gal. (15.95 – 19.63 m^2/L) using a low-pressure sprayer.
.3 Do not allow material to puddle on the surface.

.5 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 20 minutes.
.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. Twelve hours is preferable.

3.4 BURNISHING

.1 Burnish concrete densifier and hardener treated floor in accordance with the following:
- .1 Verify that floor surface is minimum 28 days old.
- .2 Verify that the floor surface is dry prior to burnishing procedure.
- .3 Burnish with propane burnisher having a recommended rpm level of 2000 rpm (but not exceeding 2200 rpm) weighing approximately 300 lb.
- .4 Using a “black” stripping pad, make multiple passes in a linear direction.
- .5 Keep machine moving until desired level of polish is achieved.
- .6 Using a “red” stripping pad for a higher level of polish, proceed through the same process as described above for the “black” pad, perpendicular to the first pass.

3.5 CONCRETE ENHANCER

.1 Allow 24 hours before proceeding with concrete enhancer application.

.2 Spray concrete enhancer full strength from container using an industrial sprayer delivering $1/10^{th}$ of a gallon per minute.

.3 Pre-wet micro-fiber applicator with concrete enhancer prior to use.

.4 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.

.5 For optimum performance, apply a second coat at a 90° (right) angle to the first coat, after the first coat is thoroughly dry.

.6 Allow 24 hours for concrete enhancer to dry.

.7 Burnish with a hogs hair pad at 2000 rpm, or substitute a diamond pad if necessary.

3.0 PROTECTION

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

END OF SECTION