

# **ChemMasters**

## **Installation Guidelines**

**Chemisil Plus is a chemically reactive solution of inorganic siliceous materials and proprietary components. It changes the chemical composition of treated surfaces filling the pores and capillaries of the concrete matrix with a hard dense gel.**

### 1.0 General

#### 1.1 Scope

This specification covers the performance characteristics and application procedures for providing a chemically reactive solution of inorganic siliceous materials and proprietary components that changes the chemical composition of treated surfaces filling the pores and capillaries of the concrete matrix with a hard dense gel.

#### 1.2 Material Description

The water based chemically reactive solution of inorganic siliceous materials should increase surface density and durability, reduce surface absorption of liquids, allow moisture vapor transmission, resist black tire marks, oil and grease, be V.O.C. compliant, neutralize surface alkali eliminating efflorescence, and dry quickly for minimal downtime.

#### 1.3 Typical Applications

- A. Interior or exterior, horizontal or vertical concrete or masonry surfaces
- B. Freshly poured or older, cured concrete
- C. Industrial, commercial or warehouse floor slabs
- D. Food preparation, storage and distribution centers
- E. Convention centers, sports facilities
- F. Freezers, cold rooms, walk-in chillers
- G. Schools, hospitals, retail outlets

#### 1.4 Limitations

- A. Colored concrete must be a minimum of 60 days old prior to application
- B. Do not apply when surface temperature is below 40° F./4° C. or above 100° F./38° C.
- C. Protect glass, aluminum and polished metal from accidental contact with liquid Chemisil Plus. Wash immediately with detergent and warm water if splash or spill occurs
- D. Do not use on glazed surfaces such as tile or brick.

#### 1.5 Quality Assurance

The repair contractor shall have experience and proficiency specific to the repair type and shall be approved by the engineer and the material supplier. The material supplier shall provide job service as required to assure proper handling and installation of materials. The field representative shall instruct as needed to assure that handling, mixing, placing and finishing of materials are in accordance with specifications.

#### 1.6 Delivery, Storage and Handling

The product shall be delivered in the original, unopened containers. It shall be labeled with the manufacturer's name, product name and lot number. Materials should be stored at the job site under dry conditions and at a temperature of 40°F (4°C) to 90°F (32°C).

#### 1.7 Environmental Requirements

All materials used for the repair work shall be VOC compliant. The manufacturer shall supply the appropriate material safety data sheets upon request.

#### 1.8 Site Conditions

Coverage is dependent upon surface texture and porosity.

### 2.0 Materials

#### 2.1 Approved Materials and Manufacturers

##### 2.1.1 Product Standard

Chemisil Plus, as manufactured by ChemMasters, 300 Edwards Street, Madison, Ohio, 44057-3112, 1-800-486-7866, is considered to conform to the requirements of this specification and shall be the sealer used. Chemisil Plus is a chemically reactive solution of inorganic siliceous materials and proprietary components that changes the chemical composition of treated surfaces filling the pores and capillaries of the concrete matrix with a hard dense gel.

##### 2.1.2 Substitutions

No submittals for substitutions will be accepted after the bid date. All submittals must be made in writing to the engineer with supporting technical data sheets and test data showing complete equivalent performance.

#### 2.2 Packaging/Coverage/Estimating

##### 2.2.1 Packaging

Chemisil Plus is available in 5 U.S.gallon/18.9 L pails, shipped 36 per pallet shrink wrapped and 55 U.S.gallon/208 L drums.

### 2.2.2 Coverage/Estimating:

Surface texture, porosity and general condition of the concrete affect coverage rates. First coat 200 Ft./gal. 5 M/L

### 2.2.3 Storage:

Store closed containers at 40°-80° F./4°-27° C. Chemisil Plus is a water-based product, do not allow to freeze. Shelf life is one year from date of manufacture.

## 2.3 Engineering Properties

The following engineering properties shall be typical of material performance when tested under laboratory conditions at 72°F (22.2°C).

### 2.3.1 Plastic Properties

2.3.1.1 Freeze Thaw Scaling (ASTM C 672): 0.0%

2.3.1.2 Water Vapor Transmission Rate (ASTM E 96):

- A. Grains/Hour/Ft.<sup>2</sup>: 5.35
- B. Permeance: 7.46 perms
- C. Skid Resistance: Good
- D. Yellowing: None

2.3.1.3 Water Absorption (ASTM C 642):

- A. % Reduction: 81
- B. Chemical Resistance, Immersion
  - 1. Oil, Grease, Solvent: Excellent
  - 2. Salt, 10%: Excellent
  - 3. Animal Fats and Fluids: Excellent
  - 4. Organic Acids, 10%: Excellent
  - 5. Alkalies, 10%: Excellent
  - 6. Fermenting foods: Excellent

2.4 Accessory Materials as manufactured by ChemMasters, 300 Edwards Street, Madison, Ohio, 44057-3112, 1-800-486-7866, is considered to conform to the requirements of this specification.

## 3.0 Execution

### 3.1 References

- A. Meets Federal Environmental Protection Agency Regulation 40 CFR Part 59, National Volatile Organic Compound Emission Standards for Architectural Coatings, V.O.C. Content: 0 gm/L
- B. Meets U.S.D.A. requirements for federally inspected meat and poultry processing plants

## C. Refer to ChemMasters MSDS and Technical Data Sheets

### 3.2 Surface Preparation

A. CURING NEW CONCRETE: Surfaces scheduled to receive Chemisil Plus may be cured using any of the four following options:

1. CHEMISIL: a sodium silicate compound, applied immediately after final finishing operations and when the surface has hardened sufficiently that application will not mar the surface. Application rate is 200 Ft./gallon, 5 M/L. Most Economical
2. EZ STRIP CURE: A water-based, curing compound, easily removed with water and detergent following normal curing cycle. Application rate is 200 Ft./gallon, 5 M/L. Highest Curing Efficiency
3. CHEMISIL PLUS: Initial curing coat applied at rate of 200 Ft./gallon, 5 M/L. Eliminates need for additional products on site.
4. WATER: Water curing is permissible following the guidelines in ACI 308, Standard Practice for Curing Concrete.

B. SURFACE PREPARATION CURED CONCRETE:

1. Mask any glass, aluminum or polished metal surfaces in the application area. Should Chemisil Plus come in contact with these materials, rinse immediately with warm water to prevent pitting or discoloration.
2. Contraction or control joints that have not been filled should be masked to prevent possible adhesion problems. Any floor paints, markings or safety stripes scheduled for surfaces to be treated with Chemisil Plus should be applied and allowed to cure prior to application.
3. All surfaces to be treated with Chemisil Plus must be dry, clean and free of all dust, dirt, debris, oil, grease, sealers or curing compounds.

C. CURING APPLICATION:

1. No special surface preparation is required when using Chemisil Plus as curing agent.
2. Apply Chemisil Plus to freshly poured concrete immediately following final finishing operations and when surface has stiffened sufficiently to support applicator. Spray Chemisil Plus onto surface at an even rate to form a continuous film.
3. Do not allow material to puddle. Use squeegees to redistribute material from low to high spots.
4. Keep surface consistently wet with Chemisil Plus for a minimum of 30 minutes and no longer than 60 minutes. Squeegee, vacuum and/or rinse surface with water to remove any unreacted material.
5. Final sealing coat of Chemisil Plus may be applied to a dry surface after a minimum of three days.

D. CURED CONCRETE APPLICATION:

1. Mechanical scrubbers, equipped with brushes, are the preferred method of application. Alternately, stiff bristle push brooms may be used. The scrubbing

action breaks the surface tension and promotes deep penetration of the Chemisil Plus into the pores of the concrete or masonry.

2. Pour Chemisil Plus directly from the container onto the surface to be treated maintaining an application rate of 200 Ft.<sup>2</sup>/gallon, 5 M<sup>2</sup>/L. Scrub the Chemisil Plus into the surface for 15-20 minutes, working all areas evenly. Use caution, working surfaces are slippery.

3. After 20 minutes, lightly mist the section being worked with clean, potable water and continue scrubbing action for another 15-20 minutes.

4. At the end of the scrubbing period, use a squeegee or vacuum to remove any excess material. When doing large projects, this excess may be squeegeed to the next strip to be treated to limit waste and minimize clean up time.

Fresh Chemisil Plus must be added to the excess at the recommended rate.

5. Very porous or soft, dusting surfaces may require a second application to obtain optimum results. Always apply second coat before surface dries.

It is important to rinse all treated surfaces thoroughly upon completion. If allowed to dry, Chemisil Plus will leave a white residue on the surface which may be removed with warm water and brushes.

#### E. VERTICAL SURFACES:

1. Use sprayers or rollers to apply the Chemisil Plus and work into surface with stiff scrub brushes for the allotted time.

2. Chemisil Plus dries in 2 to 4 hours at @ 70° F./21° C. with adequate air circulation. Lower temperatures or high humidity extend drying times.

3. Treated areas may be opened to light foot traffic immediately, heavy traffic in 6-8 hours.

F. POLISHING: The characteristic satin sheen of treated surfaces develops with traffic and minor abrasion. If an immediate sheen is desired, scrub surfaces when dry with a mechanical scrubber equipped with heavy duty, coarse nylon scrubbing pads, i.e. 3M black pads or 3M black/white badger pads on light colored concrete.

### 3.3 Clean-up

Clean equipment with warm, soapy water. Residue or excess material is nontoxic and does not require special disposal procedures.