**Related Bulletins:**
Data Sheet
Installation Bulletin

# MASTERCRON®

***Mineral aggregate dry shake surface hardener***

**NOTE TO SPECIFIERS**

The purpose of this suggested specification is to assist the Specifier while developing a specification for the use of Master Builders MASTERCRON® surface hardener. This specification has been prepared to be part of a complete project specification. It has not been prepared to be a "stand alone" item. This document is not intended to be copied directly into project specifications.

## PART 1 - GENERAL

### 1.01 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.

B. Provisions of Section 03300, Cast-In-Place Concrete, apply to this Section.

### 1.02 Summary

A. This Section specifies a pre-mixed, ready-to-use mineral aggregate surface hardener that is proportioned, mixed, and packaged at the manufacturer's owned and operated factory.

B This product is composed of processed mineral aggregates, cement binders, plasticizers, water-reducing admixtures, and other proprietary ingredients.

### 1.03 References

| | |
|---|---|
| ACI 211.1-91 | Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete |
| ACI 301-89 | Specification for Structural Concrete Buildings |
| ACI 302.1R-96 | Guide for Concrete Floor and Slab Construction |
| ACI 304.1R-89 | Guide for Measuring, Mixing, Transporting and Placing Concrete. |
| ACI 305 R-91 | Hot Weather Concreting |
| ACI 306 R-89 | Cold Weather Concreting |
| ACI 308 | Standard Practice for Curing Concrete |
| ASTM A 185 | Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement |
| ASTM A 497 | Standard Specification for Deformed Steel Welded Wire Fabric |
| ASTM C 39 | Test Method for Compressive Strength of Cylindrical Concrete Specimens |
| ASTM C 94 | Specification for Ready-Mixed Concrete |
| ASTM C 309 | Specification for Liquid Membrane-Forming Compounds for Curing Concrete |
| ASTM C 494 | Specification for Chemical Admixtures for Concrete |
| ASTM C 779 | Standard Test Method for Abrasion Resistance of Horizontal Concrete |

### 1.04 Quality Assurance

A. Job Mock-Up: In a location designated by the Architect/Engineer, place a minimum 100 $ft^2$ (10 $m^2$) floor mock-up using actual jobsite materials and installation procedures proposed for use in the project. Revise materials and procedures as directed by the Architect/Engineer to obtain acceptable finish surface. Do not destroy the approved mock-up panel until the floor has been accepted.

1. Maintain the same controls and procedures used in the acceptable mock-up throughout the project.

B. Field Support: During job mock-up and initial period of installation, the manufacturer of the surface hardener will provide, at no cost, a trained, full-time employee to aid in instructing the proper use of the product.

1. Notify surface hardener manufacturer at least one week prior to initial use of the product.

C. Installer Qualifications: Engage an experienced installer who has specialized in the application of floor finishes similar to that required for this project.

## Part 2 - PRODUCTS

### 2.01 Materials

A. Concrete: Provide concrete materials complying with requirements of Section 03300.

B. Surface Hardener: MASTERCRON® surface hardener manufactured by Master Builders, at a rate 1.0 to 2.0 $lb/ft^2$ (4.9 to 9.8 $kg/m^2$).

C. Monomolecular Film: CONFILM evaporation reducer can be used under severe drying conditions, due to high concrete and/or ambient temperatures, low humidity, high winds, etc. including work in heated interiors during cold weather, to aid in the maintaining of concrete moisture, during the early placement stages of plastic concrete. (Please Note: Misuse of this material may compromise color of dry shake.)

D. Curing Compound: MASTERKURE® or MASTERKURE 200W curing compounds, or other approved products manufactured by Master Builders, as per manufacturer's recommendation.

E. Joint Filler: MASTERFILL® 300 joint filler or other approved materials, manufactured by Master Builders, installed as per manufacturer's recommendation.

## PART 3 - Execution

### 3.01 Concrete Placement

A. Section 03300, Cast-In-Place Concrete, specifies basis concrete materials and placement requirements.

B. For wear resistant concrete floors, provide concrete with the following additional requirements:

1. Maximum slump of 5 in. (127 mm) for slabs on grade.

2. Do not install over concrete containing more than 3% air content per ASTM C138, ASTM C173, or ASTM C231.

3. Do not use calcium chloride or set-accelerating admixtures containing calcium chloride.

4. Do not use admixtures that substantially increase/decrease the rate of bleeding. Consult Master Builders for specific jobsite recommendations.

5. Consult the dry shake material supplier for approved mix designs and additives.

**3.02 Application of Surface Hardener**

A. Pump, place or otherwise convey the base concrete at a slump that is not in excess of 5 in. (127 mm) for a slab on grade. After the concrete has been placed, immediately "screed", then "bullfloat/highway straightedge" the surface. Allow bleed water to rise to surface.

B. Early moisture loss and rapid setting around the perimeter of the slab are typical, and should be monitored closely for proper timing of the floating operation. (If excessive bleed water is present, remove standing water by dragging a hose across the surface, use a squeegee or other approved method, and/or wait until the surface has lost its sheen.)

C. After the water sheen has disappeared, just prior to initial set (a finisher with knee boards will leave approximately 1/8 to 1/4 in. impression), float the surface of the slab "open" with a mechanical float fitted with float shoes.

D. Completely read and follow dry shake manufacturer's installation instructions. Place and integrate dry shake with a minimum two-pass process. Two-thirds to one-half of the total amount is applied and floated on the first application, and the remaining amount(s) on the succeeding applications. **Do not apply the dry shake into the bleed water.**

1. Apply the first application of the dry shake so that a uniform distribution of the surface hardener is obtained. (The most efficient, economical, and precise method of applying a dry shake is through the use of an automatic spreader. When the application of the surface hardener will be conducted by hand or square-tip shovel, apply each pass perpendicular to the previous application to better ensure complete coverage.)

2. Once the shake has absorbed sufficient moisture (the surface will somewhat darken), float (incorporate the dry shake into) the surface with a floating machine equipped with flat shoes, or with a wooden bullfloat. (A heavy wood float is preferable as it tends to open the slab rather than closing it off and possibly trapping bleed water under the dry shake layer.) Hand float edges with wood floats and/or darbys.

3. As the floating of the first application of the dry shake proceeds, follow immediately behind this floating operation with the subsequent shake application.

4. Once the shake has absorbed sufficient moisture (the surface will somewhat darken), float the surface with a floating machine equipped with float shoes, or a wooden float. Hand float edges with wood floats and/or darbys.

5. If applicable, as the floating of the dry shake proceeds, follow immediately with subsequent shake application.

   PLEASE NOTE: When more than 1.0 lb/ft$^2$ (4.9 kg/m$^2$) will be applied or in hot and windy conditions, more than two shake applications may be necessary. UNDER NO CIRCUMSTANCE should water, evaporation retarders or finishing agents be applied to help "wet up" the dry shake. Early moisture loss and rapid setting around the perimeter of the slab are typical, and should be monitored closely for proper timing of the floating operation.

E. When appropriate, conduct 2 to 3 mechanical trowellings.

1. Leave the prepared slab untouched until the surface has lost its sheen and can support the weight of a finisher and finishing machine. At this point, conduct the first trowelling of the surface. On the first application, keep trowel blades as flat as possible without digging into the surface.

2. As the surface “tightens” further, the trowel blades maybe gradually raised to produce the desired surface.

3. As surface further stiffins, indicated by loss of sheen, hand or mechanically trowel with blades set relatively flat. Remove all marks and pinholes in the final raised trowel application.

   PLEASE NOTE: All moisture used to incorporate dry shake material must come from within the slab. Under no circumstances should water be applied to aid in the incorporation of the dry shake. Under severe or rapid drying conditions, the use of an approved evaporation reducer may be mist-sprayed onto the dry shake according to current installation instructions to prevent rapid moisture loss. (PLEASE NOTE: Misuse of these materials can compromise color and performance of dry shake.)

### 3.03 Curing and Protection

A. At the completion of final trowelling and when the surface will not be marred, apply an approved membrane curing compound according to directions.

B. After drying, protect hardened surface by covering with scuff-proof, non-staining building paper or polyethylene.

C. Keep floors covered and free of traffic and loads for a minimum of 10 days after completion.

D. Maintain ambient temperature of 50 ° F (10 ° C) or above during the curing period.

PLEASE NOTE: Colored floors require extra care during construction. Furthermore, the newly constructed floor must be protected from staining and damage until the structure goes into surface. Many factors, including jobsite conditions and applicator experience, can affect the final shade, color and appearance of a colored concrete floor.

### 3.04 Joint Filling

A. After a minimum of 90 days, apply a semi-rigid epoxy joint filler, or other joint filler material approved by surface hardener manufacturer, in all control and saw cut construction joints. Place joint filler in a method complying with manufacturer’s instructions.

**Master Builders, Inc.**

**United States**
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5554
(800) MBT-9990
Fax (216) 831-6910

**Canada**
3637 Weston Road
Toronto, Ontario M9L 1W1
(800) 387-5862
Fax (416) 741-7925

**Mexico**
Blvd. M. Avila Camacho 80, 3er Piso
53390 Naucalpán, México
011-525-557-5544
Fax 011-525-395-7903



Printed in U.S.A. 398
crons398 #114867