



CHROMIX® ML Admixtures for Color-Conditioned® Concrete

Mixed liquid admixtures for integrally coloring horizontal or vertical architectural concrete.

TECH-DATA BULLETIN A-324.03

1. Product Description:

CHROMIX® ML Admixtures for Color-Conditioned® Concrete are formulated for use with the CHROMIX®-IT Color Center to dispense ready-to-use, liquid coloring admixtures for use in concrete. High-quality CHROMIX ML Admixtures are formulated exclusively for use in concrete, and provide improved performance characteristics that are superior to raw pigments.

CHROMIX ML Admixtures are mixed liquid dispersions that provide consistent, permanent, fade-resistant, evenly-dispersed, and streak-free integral color-conditioning for all types of concrete projects, from floors and hardscapes to cast-in-place or precast walls. Concrete colored with CHROMIX Admixtures offers a cost-effective, versatile building material for construction of aesthetically attractive and durable hard landscapes, floors, roadways, walls and features. Color-conditioned floors and walkways can create a warm, inviting atmosphere while offering a beautiful, wear-resistant surface that requires relatively little maintenance. Color-conditioned concrete can achieve the look and feel of more expensive paving materials such as granite through sandblasting or use of a surface retarder to achieve an exposed-aggregate finish. Textures added during finishing can be used to improve the appearance and slip resistance of colored concrete surfaces. Definition can be produced by scoring or saw-cutting.

The addition of CHROMIX ML Admixtures provides endless design possibilities for exterior flatwork or interior floors using the total Scofield engineered system and compatible products for imprinting and staining. Color-matched curing and sealing materials are also available for use with CHROMIX Admixtures to improve color development and reduce efflorescence.

CHROMIX ML Admixtures are available in factory pre-mixed colors or in colors mixed on-site with the easy-to-use CHROMIX-IT Color Center utilizing four standard totes of base colors:

- CHROMIX ML10 Base – Black
- CHROMIX ML20 Base – Light Red
- CHROMIX ML25 Base – Medium Red
- CHROMIX ML30 Base – Yellow

More than 450 formulas are available for use in the CHROMIX-IT Color Center to produce a wide range of colors using CHROMIX ML Admixtures including most colors depicted on Scofield's Color Chart A-312 *CHROMIX Admixtures for Color-Conditioned Concrete* and custom colors. The color dispersions are repeatable batch-to-batch and project-to-project.

2. Limitations:

Due to the base color inherent in concrete mixes, some colors are difficult to produce. Final color and texture must be verified with a cured jobsite sample as described in section 6. *Jobsite Samples*. Variations in slump, cement type and brand, color variations in the cement or aggregates, finished texture, timing of operations, curing or forming methods, and the choice of release agents or surface treatments will each produce distinct, though in most cases slight, variations in apparent color.

The compatibility of CHROMIX ML Admixtures with other admixtures used in the production of concrete must be verified prior to use. Mineral additives and other ingredients may affect color. The use of calcium chloride accelerators is not recommended in color-conditioned concrete.

3. Composition and Materials:

CHROMIX ML Admixtures are formulated with coloring agents that are limeproof and have maximum resistance to the effects of sunlight (UV). CHROMIX ML Admixtures are noncorrosive and will neither initiate nor promote corrosion of reinforcing steel embedded in concrete. No calcium chloride or chloride-based ingredients are used in the manufacture of these products.

4. Applicable Standards:

The pigments in CHROMIX ML Admixtures conform to the Light Resistance (color fastness) requirements of ASTM C 979 *Pigments for Integrally Colored Concrete*.

5. Packaging:

CHROMIX ML Admixtures are available in pails or 3,350-pound returnable totes.

6. Jobsite Samples:

Producing architectural concrete requires skill and practice. For vertical precast or cast-in-place concrete, tilt-up concrete, and for architectural flatwork, representative jobsite samples must be produced and approved at least one month prior to concreting. A separate sample must be cast for each color and mix design. Each sample must be of adequate size to be representative, be made with the job materials, and be produced by the same workers who will install the color-conditioned concrete using the contemplated construction techniques. For accurate color, the quantity of concrete mixed should not be less than one-third of the capacity of the mixing drum (a minimum of 3 cubic yards in a 9 cubic yard drum).

Vertical and tilt-up sample panels should be made using the selected form materials, snap-ties, spacers, inserts, pickup bolts, release agents, and surface treatments. Areas to be patched should be included so that patching techniques may be developed. Horizontal samples should be cured and if specified, finished with the appropriate, color-matched curing and finishing material or clear sealer. All surfaces should be textured as specified.

Portions of the actual cement and aggregates used to cast the jobsite samples should be retained. Cement and aggregates from the same source should be used throughout the job and periodically sampled for comparison of color and gradation with the material used in the approved sample.

7. Storage and Shelf Life:

CHROMIX ML Admixtures should be stored between 40–100° F (4–38° C) with regular mixing or recirculation. Under these conditions, the shelf life of CHROMIX ML Admixtures is at least 1 year from the date of purchase. Inventory must be rotated to maintain product that is within shelf life limits. CHROMIX ML Admixtures must be protected from freezing. Once frozen and thawed, they must not be used.



8. Cautions:

WARNING!

DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. EMERGENCY TELEPHONE NUMBER: CHEMTREC 1-800-424-9300. May cause mild eye or skin irritation. Safety goggles and impervious gloves are recommended.

First Aid: Eyes—Hold eyelids apart while flushing material out thoroughly with large amounts of water. Skin—Wash thoroughly with soap and water. Inhalation—Move to fresh air. If symptoms persist or develop or if ingested, get medical attention.

Wash thoroughly immediately after handling. Close container after each use. Before using or handling, read the *Material Safety Data Sheet and Warranty*.

9. Concrete Mix Design:

Irrespective of strength requirements, minimum cement contents are required to assure adequate fines for finishing and texturing architectural concrete. For flatwork, follow the guidelines recommended by The American Concrete Institute in *ACI 302.1R Recommended Practice for Concrete Floor and Slab Construction*. The dosage rate used in designing the mix must be as specified by Scofield for the particular color of CHROMIX ML Admixture designated.

Supplemental admixtures, such as additional water-reducing admixtures, waterproofing agents, and superplasticizers, or cement substitutes, such as fly ash or slag, should only be used after a test-batch has been done to confirm compatibility and acceptance. The water to cementitious material ratio must be kept constant for color uniformity.

10. Mixing:

The concrete mix should be controlled to provide good batch-to-batch uniformity. Ready-mix trucks should be in good condition, with a clean drum and properly maintained mixing blades. The cement should be weighed accurately. The same brand of cement, source of sand, and water/cement ratio should be maintained for each load of concrete of the same color.

Before batching, the drum must be thoroughly clean and prewet. The quantity of colored concrete mixed should not be less than one-third of the capacity of the mixing drum (a minimum of 3 cubic yards in a 9 cubic yard drum). Approximately 40 gallons (150 L) of the mix water, and preferably, a portion of the aggregates should be batched into the mixer drum. The contents of each pail of CHROMIX ML Admixtures needed to properly color the concrete should be added to the mixer. The remaining ingredients should be added, and the load mixed at the specified mixing speed for a minimum of 130 revolutions before discharging. CHROMIX ML Admixtures should never be added to an empty drum or at the tail end of a load.

11. Concrete Placement and Finishing:

Final color and textures should be preapproved with a cured jobsite sample as described in section 6. *Jobsite Samples*. As with all concrete, slabs on grade shall be placed over a properly compacted and prepared subgrade. The subgrade should be well drained and have adequate and uniform load-bearing characteristics. It must be moist, completely consolidated, and free of frost at the time of concreting. If necessary, the subgrade should be dampened with water in advance of concreting. Concrete should not be placed over freestanding water, muddy and frozen ground, or soft spots.

The concrete should be placed and consolidated so that it completely fills all space inside the forms and provides a suitable surface for finishing. Concrete adjacent to the forms should be spaded. Hard steel troweling should be minimized to avoid trowel burns. For uniformity of appearance, consistent finishing practices should be used when applying the specified texture. All final hand-finishing should be done in the same direction. Do not add additional water to the concrete either by retempering or by adding water to the surface during the finishing process. CHROMIX ML Admixtures are waterborne materials and equipment may be cleaned with soap and water.

When concrete is placed and finished in hot windy weather, precautions must be taken to prevent plastic cracking resulting from excessively rapid drying at the surface as described in *CIP 5 Plastic Shrinkage Cracking* published by the National Ready Mixed Concrete Association.

12. Curing:

Until it is completely cured, the color of concrete is normally less uniform and appears darker than the final color. Use of one of Scofield's color-matched curing materials enhances the depth of color, produces more uniformly colored concrete, reduces the whitening effects of efflorescence, and provides surface protection. Flatwork that is air cured may exhibit some whitening of the surface and be less brilliant in color.

LITHOCHROME® Colorwax™ should be used to cure exterior flatwork that will be allowed to weather naturally or that will only receive occasional maintenance and recoating. Interior floors and exterior flatwork that will receive regular maintenance and resealing should be cured with COLORCURE® Concrete Sealer. If a clear finish is preferred, interior floors and exterior flatwork should be cured and sealed with SCOFIELD® Cureseal-W™ or SCOFIELD® Cureseal-S™. Scofield's curing materials have been specially formulated for use with colored concrete and conform to the moisture retention requirements of *ASTM C 309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete*. The appropriate Scofield Tech-Data Bulletin *A-514 LITHOCHROME Colorwax*, *A-634 COLORCURE Concrete Sealer*, *B-204 SCOFIELD Cureseal-W*, or *B-604 SCOFIELD Cureseal-S* must be read completely before using.

Scofield should be consulted prior to curing by other methods. Curing with water is usually detrimental to color uniformity. Curing with burlap and other wet coverings, plastic sheeting, or other liquid-membrane type curing compounds is not recommended as mottling or staining normally occurs.

All surfaces should be thoroughly inspected to verify and approve installation and safety, including wet and dry slip resistance, before opening the area to traffic.

13. Maintenance:

It is recommended that a routine maintenance schedule be developed and followed after placing color-conditioned concrete in order to maintain its appearance. Colored concrete should be inspected at least once a year. When needed, depending on wear caused by traffic conditions or weather, it should be cleaned and resealed.

For exterior concrete hardscapes cured with LITHOCHROME Colorwax, an occasional maintenance application may be made after the Colorwax coat has weathered or worn from the surface. For exterior or interior concrete hardscapes or floors cured and/or sealed with COLORCURE Concrete Sealer, SCOFIELD Cureseal-W, or SCOFIELD Cureseal-S, a maintenance application should be made periodically to protect the base sealer. Instructions for the maintenance and resealing or recoating of colored concrete surfaces are available in Scofield's Tech-Data Bulletins *A-514 LITHOCHROME Colorwax*, *A-634 COLORCURE Concrete Sealer*, *B-204 SCOFIELD Cureseal-W*, and *B-604 SCOFIELD Cureseal-S*.



Interior concrete floor surfaces color-conditioned with CHROMIX ML Admixtures and cured or sealed with a recommended Scofield product should be protected with a compatible, slip-resistant, emulsion-type, commercial floor finish following the manufacturer's instructions and safety requirements. Recommendations can be obtained 24 hours a day by phoning the JohnsonDiversey hot line at 800-558-2332.

■ **14. Availability:**

Contact your nearest Scofield representative for availability in your area.

Scofield offers a complete line of engineered systems for coloring, texturing, and improving performance in architectural concrete. Scofield Systems address specialized requirements for interior, exterior and vertical uses with compatible systems of complementary products including coloring admixtures, color hardeners, colored cementitious toppings, stains, curing compounds, sealers, coatings, repair products and texturing tools. Visit the Scofield website at www.scofield.com for further information.

■ **15. Limited Warranty:**

Since no control is exercised over product use, L. M. Scofield Company (Scofield) represents and warrants only that its products are of consistent quality within manufacturing tolerances. NO OTHER ORAL OR WRITTEN REPRESENTATION OR STATEMENT OF ANY KIND, EXPRESS OR IMPLIED, NOW OR HEREAFTER MADE IS AUTHORIZED OR WARRANTED BY SCOFIELD, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Liability for breach of contract, negligence, or on any other legal basis is limited to the lesser of refund or replacement of defective materials. SCOFIELD WILL NOT BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING FOR DELAYS OR LOST PROFITS. Communication of this warranty and its limitations to end users is not the responsibility of Scofield, but should be communicated by those in direct contract with the end user. Any claim regarding product defect must be received in writing within one year from the date of manufacture. No claim will be considered without such written notice or after the specified time interval. The end user shall determine the suitability of the products for the intended use and assumes all risks and liability in connection therewith.



1 800 800 9900 or www.scofield.com

SCOFIELD PRODUCTS ARE INTENDED FOR PROFESSIONAL USE ONLY

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