

EMERCHROME® FLOOR HARDENER



L. M. SCOFIELD COMPANY

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TECH-DATA BULLETIN A-204.09

A heavy-duty, ready-to-use, nonrusting, dry-shake, colored or uncolored hardener for freshly placed concrete flatwork.

1. Description and Uses: EMERCHROME® Floor Hardener is a heavy-duty hardener that produces dense, hard surfaces on horizontal concrete and improves slip resistance in pedestrian and vehicular traffic areas. Time-tested and proven, it is available in a wide range of permanent, uniform, streak-free colors or uncolored, for all types of flatwork subject to greater-than-normal use, from architectural hardscapes to commercial floors.

On exterior concrete, EMERCHROME Floor Hardener is abrasion and wear resistant, producing attractive, hard-working concrete surfaces in areas subject to heavy vehicular-traffic loads such as streets, parking structures, loading docks, shipping areas, and transportation facilities. Long-lasting and durable, EMERCHROME Floor Hardener provides superior resistance, over that of plain concrete, to the damage caused by freeze/thaw cycles and deicing salts, making it ideal for exterior use in colder climates.

In areas of high pedestrian traffic, such as amusement parks and shopping centers, EMERCHROME Floor Hardener can be used in vibrant or subtle colors to create designs and complement themes for walkways and plazas that are welcoming and easy to keep clean. Its abrasive qualities improve, and greater slip resistance is obtained, as the concrete wears and the angular aggregate is exposed.

EMERCHROME Floor Hardener produces impact-resistant, interior floors and reduces damage from daily wear while providing improved traction in warehouses and many types of institutional, industrial, and commercial installations. Unlike metallic hardeners, EMERCHROME Floor Hardener will not oxidize, rust, or polish (become slippery) with use. Resisting dusting and spalling, its high-density surface is more resistant than plain concrete to penetration by water or other liquids. More cost-effective and maintenance-free than many floor coverings and coatings, its permanent colors produce an attractive appearance, allow color-coding for safety or convenience, and promote a more inviting work environment.

To provide color continuity throughout a project while allowing individual performance requirements to be met, EMERCHROME Floor Hardener is color matched to, and may be used in

combination with, LITHOCHROME® Color Hardener, a dry-shake color hardener for areas where normal wear is expected and a heavy-duty hardener or improved slip resistance is not required. Additional information about coloring concrete flatwork in areas that are less heavily trafficked is available in the Scofield Tech-Data Bulletin A-104 LITHOCHROME Color Hardener.

Concrete surfaces hardened with colored EMERCHROME Floor Hardener can be imprinted and antiqued, allowing the use of patterned architectural concrete in heavily trafficked areas. Used with a variety of imprinting tools, such as LITHOTEX® Pavecrafters®, the rich finishing paste of EMERCHROME Floor Hardener allows the production of sharp, finely detailed patterns with superior wear resistance. When used in combination with LITHOCHROME® Antiquing Release, long-lasting surfaces with a variegated, timeworn appearance can be created. Additional information about texturing and antiquing imprinted concrete is available in the Scofield Tech-Data Bulletins T-404 LITHOTEX Pavecrafters and A-854 LITHOCHROME Antiquing Release.

To match or blend with EMERCHROME color-hardened hardscapes or floors, small areas of freshly placed, vertical concrete, such as curbs and risers, may be plastered with a mixture of EMERCHROME Floor Hardener and water. For most vertical-concrete applications, such as cast-in-place walls and precast or tilt-up panels, or when an integral color is preferred for concrete flatwork, CHROMIX® Admixtures for Color-Conditioned™ Concrete should be used. Information on integrally coloring concrete is available in Scofield's Tech-Data Bulletin A-304 CHROMIX Admixtures for Color-Conditioned Concrete.

LITHOCHROME® Chemstain™ Classic creates uneven, variegated color effects on cured-concrete hardscapes and floors, much like the shadings of natural stone. EMERCHROME Floor Hardener may be used as a base for chemically stained concrete to produce rich color and a wider color range. Additional information about chemically staining concrete is available in Scofield's Tech-Data Bulletin A-414 LITHOCHROME Chemstain Classic.

To allow the concrete to reach its full performance and color potential, Scofield has developed a complete system of color-matched and clear curing, sealing, and coating materials, as well as joint

sealants. Additional information is available in Scofield's Tech-Data Bulletins A-634 COLORCURE® Concrete Sealer, A-514 LITHOCHROME® Colorwax™, A-764 CEMENTONE® Clear Sealer, B-204 SCOFIELD® Cureseal-W™, B-604 SCOFIELD® Cureseal-S™, and S-404-3G LITHOSEAL™ Trafficalk-3G™.

Before using, check with your Scofield Customer Service Representative to ensure that you have the most recent Scofield Tech-Data Bulletins.

2. Limitations: Application must be at the coverage rates given in 8. Coverage. If insufficient material is applied, the slip and abrasion resistance of the cured surface will be reduced, and the concrete substrate may be revealed during texturing. For maximum slip resistance, the aggregates in EMERCHROME Floor Hardener should be exposed by a light sandblast or acid wash.

EMERCHROME Floor Hardener should not be installed without specific prior testing in areas subject to harsh chemicals, extreme abrasion, or unusually high impact.

Though EMERCHROME Floor Hardener may be mixed with water and plastered on the vertical faces of freshly placed concrete incidental to color-hardened flatwork, it is not intended for extensive use on vertical concrete surfaces.

All fine and coarse aggregates in the concrete substrate must be nonreactive. Fluosilicate-type chemical hardeners should not be used, since they leave a nonuniform, whitish residue.

3. Composition and Materials: EMERCHROME Floor Hardener is a streak-free, powdered, cementitious material containing special aggregates and produced by a proprietary manufacturing and intergrinding process. Formulated as a high-opacity hardening material for the top surface of freshly placed concrete substrates, it is limeproof and has maximum resistance to the effects of sunlight (UV). For optimum performance, it contains aggregates selected for hardness, angularity, and purity that are carefully graded through a wide particle-size range to produce a dense, slip- and wear-resistant concrete surface.

4. Applicable Standards: The coloring materials in EMERCHROME Floor Hardener conform to ASTM C 979 for color stability.

Professional concreting standards and practices, including those published by the American Concrete Institute (ACI)

and the Portland Cement Association (PCA), should be followed. Referring to ACI 302.1R *Guide for Concrete Floor and Slab Construction* is recommended.

5. Colors: All colors are manufactured to order in minimum quantities of 1200 pounds (550 kg). EMERCHROME Floor Hardener is available in standard, designer, and custom colors, including all colors shown on Scofield's Color Chart A-312 *CHROMIX Admixtures for Color-Conditioned Concrete*, and in Caution Yellow, A-11 Concrete Gray (uncolored), Black, and White. Scofield's color-matched curing materials are also available to match all colors of EMERCHROME Floor Hardener.

Standard and designer colors shown on Scofield's Color Chart A-112 *LITHO-CHROME Color Hardener and EMERCHROME Floor Hardener* approximate the colors obtained when the color-hardened surface is cured with LITHO-CHROME Colorwax or COLORCURE Concrete Sealer in the matching color. Use of other curing methods will alter the color of the surface, as will some texturing methods.

Dark-colored aggregates will show on the color-hardened surface as it is exposed to wear. This is more noticeable when light colors of EMERCHROME Floor Hardener are used, and normally dark colors are chosen. For architectural concrete flatwork, attractive color effects are produced and wear paths are masked by lightly sandblasting the surface to reveal the aggregates. Scofield will supply samples upon request.

6. Textures and Slip Resistance: Only uniformly slip-resistant concrete finishes, such as broomed, swirl, lightly sandblasted, or slip-resistant imprinted textures should be applied when the floor hardener is installed. When a flat interior floor is required, extra precautions should be taken to insure that the surface is uniformly troweled so that it will not be slippery. A slip-resistant, flat-troweled finish is suggested.

The abrasive qualities of EMERCHROME Floor Hardener improve, and greater slip resistance is obtained, as the concrete wears and the angular aggregate is exposed. For maximum slip resistance the aggregate should be exposed by lightly sandblasting or acid washing the surface.

For safety considerations, representative jobsite samples as described in 11. *Jobsite Samples* should be produced prior to installation, and the entire surface inspected to verify and approve the adequacy of wet and dry slip resistance.

7. Sizes: EMERCHROME Floor Hardener is available in 60-pound (27 kg) bags. All colors are manufactured in minimum quantities of 1200 pounds (550 kg).

8. Coverage: Coverage requirements vary according to intended use and color. EMERCHROME Floor Hardener should never be applied at a coverage rate of less than 60 pounds (1 bag) per 100 square feet (3.0 kg/m²), and for

commercial applications or when a lightly sandblasted finish is required, a minimum of 90 pounds (1.5 bags) per 100 square feet (4.5 kg/m²) is recommended. For heavy-duty applications, up to 120 pounds (2 bags) per 100 square feet (6.0 kg/m²) may be used.

Regardless of use, light colors and whites require minimum coverage rates of 90–120 pounds (1.5–2.0 bags) per 100 square feet (4.5–6.0 kg/m²). The minimum coverage for each standard and designer color is shown on Scofield's *Color Chart A-112* and the current *Manufactured Products Price List*. Scofield should be consulted for the minimum coverage rates of specific custom colors.

Because of the difference in their relative densities, the above coverage rates result in approximately 75% greater thicknesses than if a metallic hardener were used at the same coverage rate.

EMERCHROME Floor Hardener may be plastered onto freshly placed vertical surfaces at the rate of approximately 80 pounds per 100 square feet (4.0 kg/m²).

9. Storage and Shelf Life: Under normal conditions and when kept dry and moisture free, the shelf life of EMERCHROME Floor Hardener is at least 6 months from the date of purchase. Storage should be under roof and off the floor. Inventory should be rotated.

10. Cautions: WARNING! HARMFUL IF INHALED. IRRITATING TO EYES AND SKIN. MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. CONTAINS CEMENT AND SILICA (QUARTZ). Cancer hazard. Contains Silica (Quartz) which can cause cancer. (Risk of cancer depends on duration and level of exposure.) Use only with adequate ventilation. Do not breathe dust. Wet cement may cause alkali burns. Avoid contact with eyes, skin, and clothing. Wear dust (particulate) respirator (NIOSH TC-84A approved), safety goggles, and gloves. Follow respirator manufacturer's directions for respirator use.

First Aid: Eyes—DO NOT RUB EYES. Immediately flush thoroughly with large amounts of water. Skin—Wash thoroughly with soap and water. Remove soiled clothing and wash before reuse. Inhalation—If inhaled, or if difficulty in breathing is experienced, move to fresh air. If symptoms persist or develop, or if ingested, get medical attention.

Wash thoroughly immediately after handling. Store in a cool, dry, well-ventilated area, in unopened original packaging or in tightly closed, labeled containers. Avoid generating dust during recovery or disposal. Disposal of all residual or recovered product must be in accordance with applicable federal, state, and local regulations. Before using or handling, read the Material Safety Data Sheet and Warranty. FOR PROFESSIONAL USE ONLY.

11. Jobsite Samples: Producing hardened-concrete flatwork requires skill and

practice. Timing, application and texturing techniques, experience in use of the material, antiquing, curing, finish coating, and other factors will each affect the performance and final appearance of hardened floors and hardscapes. Representative jobsite samples must be produced and approved prior to installation.

Samples must be produced for each color and texture and be of adequate size to be representative. The samples should be produced by the same workers who will install the hardened flatwork using the contemplated job materials, construction tools, and techniques. All samples should be finished, textured or imprinted, cured, and if applicable antiqued, sealed, or finish-coated as specified.

12. Subgrade Preparation: The subgrade should be well drained and have adequate and uniform load-bearing characteristics. To reduce cracking, it should be graded so that the thickness of the concrete will be uniform. At the time of concreting, it must be moist, completely consolidated, and free of frost. 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.

13. Concrete Mix Design: The concrete should contain a minimum of 5½ sacks (517 lb) of cement per cubic yard (300 kg/m³) of concrete. All fine and coarse aggregates must be non-reactive (free of deleterious particles). The water content should be the minimum amount practical, and the slump should not exceed 4 inches (100 mm).

A normal or retarded-set, water-reducing admixture may be used. An air-entraining admixture complying with ASTM C 260 should be used when specified or required by the engineer for freeze/thaw durability, and finishing procedures should be adjusted or delayed to minimize formation of blisters. The concrete mix must not contain any admixture or additive that contains calcium chloride. During cold-weather concreting, a nonchloride accelerator may be used. No high-range water reducing admixtures (superplasticizers) should be added. Mixes containing high levels of flyash as a cement replacement may be more difficult to incorporate the hardener into and to finish properly.

14. Equipment: When using equipment and materials during preparation and installation, suitable protective gear should be worn and government regulations, manufacturer's instructions, and all applicable safety requirements should be followed.

EMERCHROME Floor Hardener is installed by broadcasting the powdered hardener over the surface of freshly placed, leveled, and floated concrete, then working each application (shake) into the surface by floating. After floating the final application, the surface is finished by troweling. Spreading, floating, and troweling may be done by hand, or

for labor efficiency in larger areas, by use of a mechanical spreader and a power troweling machine, both available in various sizes depending on project requirements. Machines that drip oil or gasoline should not be used, and machines should not be refueled or serviced on the color-hardened surface.

The **mechanical spreader** should be of professional quality with an adjustable material flow capable of uniformly spreading between $\frac{1}{2}$ and 1 pound per square foot (2.5–5.0 kg/m²) of powdered hardener and a bridge section of sufficient length to span the slab.

The **power troweling machine** should be equipped with float blades (shoes) for working the hardener shakes into the surface of the plastic concrete. The float blades should be removed for final troweling operations. The use of a small machine, 24 inches (600 mm) in diameter, will facilitate finishing in areas as narrow as 4–5 feet (1.2–1.5 m) wide.

Floats, such as bull floats, darbies, or hand floats, must be made of wood and be of professional quality. Since they close the surface, metal floats or trowels, long-handled fresnos, or floats made from magnesium or fiberglass should not be used.

Hand trowels must be appropriately sized to apply the required pressure to the surface of the slab and be made of high-grade spring steel.

Bridges should be safe for use and of sufficient length to span the slab. Use of an aluminum walk board is suggested when building a bridge at the jobsite.

Internal vibrators for consolidating the concrete substrate prior to floating should be of high frequency and low amplitude. Use of a stubby-type vibrator, approximately 2 inches (50 mm) in diameter and 4 inches (100 mm) in length, is suggested.

15. Concrete Installation: Prior to placing the concrete substrate, representative jobsite samples should be produced and approved as described in 11. *Jobsite Samples*. Surrounding areas, landscaping, and adjacent surfaces should be protected. The work area should be roped off, nearby vehicles removed, and appropriate sections closed to traffic. Prior to concrete installation the required number of bags of floor hardener should be distributed outside the formwork proportional to the area to be covered. Quantities for the first shake, second shake, and so on should be separated. Needed equipment, as described in 14. *Equipment*, should be available.

Weather conditions should be considered when planning installation. Professional practices as described in the ACI standards 305R *Hot Weather Concreting* and 306R *Cold Weather Concreting* should be followed. Climatic and other conditions will affect the size of the work crew required. Sufficient personnel should be scheduled. When concrete is placed and finished in hot, windy weather, windbreaks may be needed. Precautions should be taken to prevent plastic shrinkage 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.

The concrete mix should be controlled to provide good batch-to-batch uniformity, and the slump should be consistent throughout the project at 4 inches (100 mm) or less. The concrete should be placed and spread so that it completely fills all space inside the forms, then consolidated by vibrating to provide a suitable surface for finishing. If tamping is used for consolidation it should be kept to a minimum, and concrete adjacent to the forms should be spaded.

Before the appearance of excess moisture or bleed water, the surface should be screeded and wood-floated to the finished grade specified by the architect for the required flatness and levelness. Suggested tolerances are given in ACI 302.1R *Guide for Concrete Floor and Slab Construction*. Exterior concrete should be sloped adequately for proper drainage, normally a minimum of $\frac{1}{4}$ inch per foot (2 cm/m). When the concrete is air-entrained, floating should be delayed to minimize stickiness.

16. Application: Adjacent concrete surfaces should be protected by plastic sheeting during application and finishing of the floor hardener. To ensure sufficient and uniform coverage, the EMERCHROME Floor Hardener should not be applied at less than the rate described in 8. *Coverage*. Bridges may be needed for wider areas during the initial application of EMERCHROME Floor Hardener when power floating, or during all applications when hand floating.

EMERCHROME Floor Hardener should be applied after the concrete substrate has reached the point where the bleed water disappears and the floating process will not disrupt the level of the surface. Earlier application may reduce durability and require a higher coverage rate. The floor hardener should never be used to dry bleed water remaining on the surface.

Using the dry-shake method, the powdered EMERCHROME Floor Hardener should be broadcast uniformly across the surface of the plastic concrete, normally in two separate applications (shakes). Two-thirds of the material should be applied in the first shake with one-third being withheld for the second shake and final touch-up. For applications of over 100 pounds per 100 square feet (5.0 kg/m²), three shakes should be considered with one-half of the material being applied during the first shake.

To prevent segregation of the aggregates, the floor hardener should not be broadcast from a point above knee level or thrown more than a few feet (1 m), less under windy conditions. For more uniform coverage, applications should be made at 90 degrees to each other. Since concrete sets more rapidly along the edges of the slab, material should be hand-applied to the edges first, and they should be worked before the rest of the surface. A small quantity of material should be withheld from the final shake

for touching up nonuniform or weakened areas as necessary.

To develop proper strength and monolithic bonding, the necessary moisture for wetting the floor hardener must come from the concrete substrate. Water must not be sprinkled or otherwise added to the surface during application, since reduced durability and a discolored, weakened surface may occur.

After each application, the powdered floor hardener must be thoroughly and completely worked into the surface by power or hand floating. Hand floats may be used for floating smaller projects or, when using a power troweling machine, for edges and other areas that cannot be reached by the machine. When power floating in hot, dry, or windy weather and it is desirable to begin application before the concrete will support the power-troweling machine, the first hardener application should be hand floated. Subsequent applications may be floated or troweled with power equipment.

After floating the final shake, the surface should be machine or hand troweled. To prevent burning or darkening of the surface, hard steel troweling (burnishing) should be minimized, especially at the edges and joint lines.

The specified texture should be applied uniformly using consistent finishing practices. All surfaces should be finished within reasonably the same time after placing. On troweled flat interior floors, final hand-troweling should be done in a consistent direction and uniformly so that the cured surface will not be slippery. A slip-resistant, flat-troweled finish is suggested.

When weakened-plane joints are to be saw-cut, the use of a dry-cut saw is suggested within the first few hours after concrete placement.

17. Curing and Sealing: Concrete hardened with EMERCHROME Floor Hardener should be cured with COLORCURE Concrete Sealer or LITHOCHROME Colorwax in the matching color. COLORCURE Concrete Sealer should be used to cure all interior floors and exterior flatwork that will receive regular maintenance and resealing. LITHOCHROME Colorwax should be used to cure exterior flatwork that will be allowed to weather naturally or that will only receive occasional maintenance and resealing. Use of a color-matched curing material enhances the depth of color and improves color uniformity as well as providing surface protection. If a colored curing material is not desired, SCOFIELD® Cureseal™ should be used. All three Scofield curing materials comply with ASTM C 309 *Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete*.

ACI 302.1R *Guide for Concrete Floor and Slab Construction* discusses curing colored concrete flatwork with special curing materials similar to Scofield's and recommends against the use of plastic sheeting, wet burlap, damp sand, curing paper, ponding, or other liquid-membrane curing compounds, since they are usually detrimental to color uniformity.

If the surface is imprinted and antiqued, or if it is to be acid washed, the hardened concrete should be cured with new and unwrinkled, nonstaining, reinforced, waterproof kraft curing paper.

The curing surfaces should be protected from damage by other trades. The concrete must not be covered with plastic sheeting. If additional protection is absolutely required, surfaces should remain uncovered for a minimum of 4 days, after which they may be covered with new and unwrinkled, nonstaining, reinforced, waterproof kraft curing paper.

When curing with LITHOCHROME Colorwax or SCOFIELD Cureseal, an optional thin seal coat may be applied if needed or desired. When curing with COLORCURE Concrete Sealer, one thin seal coat is required after the moisture content of the concrete is low enough so alkali and other salts do not become trapped beneath the sealer, normally 14–28 days after placement. To protect the appearance of sandblasted, acid-washed, or antiqued and imprinted concrete, the surface must be sealed with CEMENTONE Clear Sealer or SCOFIELD Cureseal. The appropriate Scofield Tech-Data Bulletin *A-514 LITHOCHROME Colorwax, A-634 COLORCURE Concrete Sealer, B-204 SCOFIELD Cureseal-W, B-604 SCOFIELD Cureseal-S, or A-764 CEMENTONE Clear Sealer* must be read completely before using.

All surfaces should be thoroughly inspected to verify and approve installation and safety, including wet and dry slip resistance, prior to opening the cured or sealed surface to traffic.

18. Plastering Vertical Concrete Surfaces: To match or blend with hardened hardscapes or floors, the freshly placed vertical faces of curbs, risers, and planters may be plastered with EMERCHROME Floor Hardener at the rate of approximately 80 pounds per 100 square feet (4.0 kg/m²). The forms should be removed as soon as the concrete is self-supporting. The powdered floor hardener should be mixed with clean water to a plaster consistency and immediately troweled onto the newly stripped surfaces. For a consistent appearance, the plastered surfaces should be textured, cured, and sealed in the same manner as the adjacent flatwork.

19. Joint Sealing: LITHOSEAL Trafficalk-3G is a premium-quality joint sealant for areas subject to pedestrian and vehicular traffic and is available in all standard, designer, and custom colors of EMERCHROME Floor Hardener. Information about sealing joints in colored flatwork is available in Scofield's Tech-Data Bulletin *S-404-3G LITHOSEAL Trafficalk-3G*.

20. Maintenance: 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, or CEMENTONE Clear Sealer, 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 the Scofield Tech-Data Bulletins *A-514 LITHOCHROME Colorwax, A-634 COLORCURE Concrete Sealer, B-204 SCOFIELD Cureseal-W, B-604 SCOFIELD Cureseal-S, and A-764 CEMENTONE Clear Sealer*.

For maintaining interior architectural floors or when a higher gloss is desired, a compatible, slip-resistant, emulsion-type, commercial floor polish should be applied and maintained 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.

21. Patching: Damaged areas in new or old, color-hardened concrete flatwork should be patched using EMERCHROME Floor Hardener in the matching color. The cause of the deterioration should be determined and corrected before patching so that the need for repairs will not recur.

Depth of the patch, patching techniques, tools used, texture applied, and curing method will affect the apparent color of the finished patch. If practical, patching procedures and mixes should be tested before general patching. To reduce shrinkage cracking, patching should be done when the concrete is shaded in the cool of the day.

Successful patching depends on proper surface preparation. The edges should not be featheredged. To eliminate spalling of the edges or cracking of the surrounding concrete, the perimeter of the area to be patched should be saw-cut with a diamond or carbide saw blade. Undercutting slightly will more firmly hold the patch in place. Saw-cuts should not be allowed to overlap so that damage to the adjacent concrete is avoided.

All unsound or cracked concrete must be completely removed inside the saw-cuts to a minimum depth of 1 inch (25 mm) using a hand-held hammer and chisel in small areas. A light- or medium-weight pneumatic chipping hammer fitted with a spade-shaped bit will facilitate removal in larger areas. Heavyweight air hammers and chisel-shaped bits should

not be used as they may cause cracking in the surrounding concrete.

The depth of the cavity should be reasonably uniform to reduce cracking of the patch, and its surface texture should remain rough to improve bond. If any reinforcing steel is exposed the concrete should be removed from around and under the exposed bars to a minimum depth of 1 inch (25 mm). To prevent surface spalling of the concrete, all exposed steel should be completely encased in the patching mix so that moisture will not reach the metal, causing its corrosion and expansion.

Immediately prior to placing the patching mix, any loose particles, oil, dirt, and standing water must be removed from the cavity. The sides and bottom should be uniformly dampened, then coated with a high-quality bonding agent following the manufacturer's instructions and safety requirements.

One part EMERCHROME Floor Hardener in the matching color should be field mixed with one part properly graded pea gravel and enough water to produce a low-slump mix with a trowelable consistency. The mix should firmly fill the cavity to within approximately $\frac{1}{16}$ inch (2 mm) of the top. Additional EMERCHROME Floor Hardener should then be broadcast over the surface and wood floated to the level of the surrounding concrete.

Freshly placed patches should be textured to match the adjacent concrete as closely as possible. To develop proper strength and color, the patch should be cured and if desired, sealed with LITHOCHROME Colorwax or COLORCURE Concrete Sealer in the matching color as described in *17. Curing and Sealing*. To blend the patch more closely with the surrounding concrete, the entire area may be cleaned and sealed with the same color-matched material if desired.

22. Availability: EMERCHROME Floor Hardener is marketed nationwide and internationally, directly to the user and through strategically located warehouses, dealers, and representatives. Scofield should be contacted for its nearest representative. EMERCHROME Floor Hardener is not normally stocked, but made to order. Adequate time should be allowed for production and delivery.

23. Warranty Summary: For the complete warranty statement and important limitations, read the *Material Safety Data Sheet and Warranty*. Generally, Scofield represents and warrants only that its products are of consistent quality. No other oral or written statement is authorized. Any liability is limited to refund or replacement of defective product. The end user shall determine product's suitability and assume all risks and liability.

Suggested Short Form Specification for Hardened Concrete: All concrete flatwork and adjacent vertical surfaces designated in the plans or specifications as having a hardened surface shall be hardened with EMERCHROME® Floor Hardener in accordance with Scofield's Tech-Data Bulletin A-204, using _____ color and a minimum of _____ pounds per 100 square feet. All hardened concrete shall be cured and sealed with COLORCURE® Concrete Sealer in the matching color in accordance with Tech-Data Bulletin A-634 (*or cured with LITHOCHROME® Colorwax™ in the matching color in accordance with Tech-Data Bulletin A-514*) and the joints sealed with LITHOSEAL™ Trafficalk-3G™ in the matching color in accordance with Tech-Data Bulletin S-404-3G. All products shall be manufactured by L. M. Scofield Company, (800) 800-9900, Los Angeles, CA, (323) 720-3000 and Atlanta, GA, (770) 920-6000.