TECHNICAL DATA - PRODUCT INFORMATION

Con-Spec Industries Ltd.

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CON-SPEC PM1 HARDENER

DESCRIPTION:

Con-Spec PM1 Hardener is a pre-bagged blend of Normal Portland Cement, Silica Quartz (Non-Metallic) aggregate and selected admixtures that provides enhanced resistance to abrasion on commercial and industrial base slabs. PM1 Hardener densifies the surface layer of concrete slabs by carefully graded aggregates and void filling. PM1 Hardener is manufactured under ridgid quality control standards and incorporates "superplasticizing" agents to aid in finishing.

USES:

Con-Spec PM1 Hardener is used on any base slab where improved abrasion resistance and low permeability is desired. PM1 Hardener is ideally suited for commercial and industrial base slabs subject to medium to heavy loads. PM1 Hardener is typically used on warehouse floors, parking garages, schools or instiutions or wherever a mild chemical and abrasion resistant floor is desired. PM1 Hardener is available in natural or several standard and designer colours.

PM1 Hardener can be formulated to a reflective white and a yellow colour for architects and engineers who wish to incorporate floor zoning into the operational and safety programs. PM1 Hardener can also be formulated to use Type 50 cement for sulphate resistance.

BENEFITS:

Ready-to-use
Higher hardness compared to conventional concrete
Available in natural or several standard colours
Versatile
Chemically enhanced for ease of application
Resist mild chemicals
Low permeability

LIMITATIONS:

Do not use in enviroments subject to frequent spillage of chemicals know to attack and deteriorate concrete. Do not apply PM1 Hardener to base slabs incorporating calcium chloride or air entraining agents.

PROPERTIES:

Hardness:		6.5 Mohs
Compressive Strength	3 Days	28 Mpa (4100 psi)
	28 Days	50 Mpa (7250 psi)

COVERAGE:

Con-Spec PM1 Hardener is packaged in 22.7 kg (50lb) bags. PM1 Hardener is applied at 2.4 - 6.1 Kg/m^2 (0.5 - 1.25 lb/ft^2).

SURFACE PREPARATION:

Place the base slab. Stike base to specified level. Level slab using a wood float.

INSTALLATION TECHNIQUES:

Broadcast PM1 Hardener uniformly when the slab can support the weight of a worker on knee boards. Broadcast 3/4 of the specified amount of Hardener on the first shake. Rake the surface to even the shake. After the PM1 has absorbed sufficient surface moisture, power float the material into the surface. Broadcast the remaining amount of PM1 Hardener onto the surface. Rake the surface to even the shake. Continue to float and trowel the surface to achieve the desired finish.

CURING TECHNIQUES:

Following the finial finishing operations and after all surface moisture as evaporated from the surface apply Con-Spec 309 Cure & Seal at 200 square feet per gallon.

CLEAN UP:

Clean application tools with water immediately following use.

SAFETY PRECAUTIONS:

Con-Spec PM1 Hardener is a blend of Portland Cement, Silica sand and chemical admixtures. Appropriate safety wear like dust masks, rubber gloves and safety glasses should be worn throughout the handling and placing process. Consult Con-Spec PM1 Hardener MSDS for further information.

REV. 08/24/05

SURFLEX®

Non-Metallic Floor Hardener

Description

SURFLEX® is a quartz-silica mixture of finely graded non-metallic aggregates, plasticizer and cement binder. It is an economical concrete floor hardener recommended for both interior and exterior use. It is particularly valuable because of its non-rusting characteristics when floors will be frequently wet. SURFLEX is available in non-fading colors in addtion to the standard natural cement color.

Primary Applications

- Lobbies and waiting rooms of commercial and public buildings
- Corridors and washrooms in institutional and public buildings
- Auto showrooms and service centers
- Factory and warehouse floors
- Commercial and industrial facilities
- Restaurants and dairies

Features/Benefits

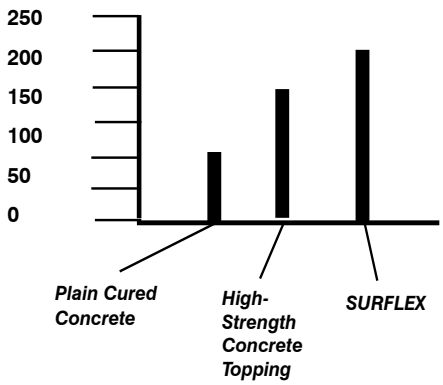
- Hardens concrete in one economical operation
- Use of hard and properly graded aggregates increases the wear resistance over plain concrete floors
- Ready-to-use factory blend eliminates messy and expensive job mixing and minimizes errors
- Non-rusting materials make it possible to use SURFLEX outdoors as well as indoors
- Eucon dispersing agent contained in SURFLEX makes it possible to incorporate SURFLEX into the surface of low slump concretes resulting in exceptionally high surface strengths for maximum wear resistance

Technical Information

Typical Engineering Data

Relative Abrasion Resistance

ASTM C 779 Maximum Ranges



Appearance: SURFLEX is a free flowing powder as packaged. It is available in a natural cement color or in tile red, terra cotta, black, green, french gray, battleship gray, light gray, brown and tan. The final finish can be any texture normally achievable with concrete and should be specified by the owner.

Packaging

SURFLEX is packaged in 50 lb (22.7 kg) bags with polyethylene liners for moisture protection. Material is shipped 64 bags per pallet.

Shelf Life

2 years in original, unopened package.

Specifications/Compliances

U.S.D.A.compliant

The Euclid Chemical Company
19218 Redwood Rd. • Cleveland, OH 44110
Phone: [216] 531-9222 • Toll-free: [800] 321-7628 • Fax: [216] 531-9596
www.euclidchemical.com

Coverage

SURFLEX may be applied at rates from 0.5 to 2.0 lb/ft^2 (2.4 to 9.8 kg/m^2). Higher application rates yield better total abrasion resistance. Greater application rates may be used with special considerations. Contact your Euclid Chemical Company representative for recommended procedures.

Directions for Use

The contractor and engineer are encouraged to consult and review the Euclid Chemical bulletin **"Application Instructions- Dry Shake Floor Hardeners"**. The document offers instructions detailing the general installation of Euclid Chemical manufactured dry shake floor hardeners. **Note:** *If the contractor is not familiar with the standard application techniques of a dry shake floor hardener, a pre-job meeting is suggested to review the project concrete mix design as well as placement and curing details unique to the particular job. Contact your local Euclid Chemical Company representative for additional information.*

Application Tips: Colored (pigmented) dry shakes require special attention for a uniform color. If the job involves placement of SURFLEX, care should be taken with regards to the following; delay application of the shake as long as possible to get the maximum color saturation at the surface of the slab, apply the shake as evenly as possible and in two applications for maximum uniformity, and do not burnish trowel the floor. Best appearance is achieved by hand troweling the final finish.

Curing and Sealing: Curing and sealing SURFLEX may be done with a EUCLID CHEMICAL water based or solvent based cure and seal. Each has its own advantages and unique properties. Consult the individual technical data sheet for each curing and sealing product or contact your Euclid Chemical Company representative for a recommendation regarding your specific project.

Note: If the floor surface will later be frequently exposed to solvents, hydraulic fluid etc. cure the floor with KUREZ DR VOX applied at 400 ft^2/gal (9.8 m^2/L). Seal the floor with EUCO DIAMOND HARD penetrating sealer. Consult individual product data sheets for suitability and application information.

Clean-up

Clean tools and equipment with soap and water before material hardens.

Precautions/Limitations

- Proper curing and sealing is required.
- Sufficient manpower is required to produce consistent results on large placements.
- **Important:** Air-entraining admixtures may complicate finishing operations and cause blistering. Contact The Euclid Chemical Company if application of this product will be over air entrained concrete with more than 3% total air content.
- For additional abrasion resistance beyond that offered by SURFLEX, consider the use of EUCO-PLATE HD, an iron aggregate floor hardener.
- Store product in a dry place.
- In all cases, consult the Material Safety Data Sheet before use.

Rev. 10.09

SURFLEX TR®

Traprock Floor Hardener

Description

SURFLEX TR® is a special formulation of finely graded trap rock aggregates, plasticizers and cement binder. It is an economical concrete floor hardener recommended for both interior and exterior use. SURFLEX TR has been designed to give increased abrasion resistance to both interior and exterior floors and slabs.

Primary Applications

- Loading docks
- High wear floors and aisleways
- Factory and warehouse floors
- Commercial and industrial facilities
- Restaurants and dairies

Features/Benefits

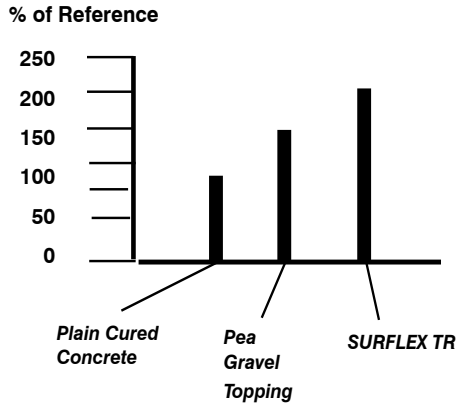
- Hardens concrete in one economical operation
- Use of hard and properly graded aggregates increases the wear resistance over plain concrete floors
- Ready-to-use factory blend eliminates messy and expensive job mixing and minimizes errors
- Non-rusting materials make it possible to use SURFLEX TR outdoors as well as indoors
- Eucon dispersing agent contained in SURFLEX TR makes it possible to incorporate SURFLEX TR into the surface of low slump concretes resulting in exceptionally high surface strengths for maximum wear resistance.

Technical Information

Typical Engineering Data

Relative Abrasion Resistance

ASTM C 779 Maximum Ranges



Appearance: SURFLEX TR is a free flowing powder as packaged. It is available in a natural cement color only. The final troweled appearance can be any texture consistent with that expected from concrete and should be specified by the owner.

Packaging

SURFLEX TR is packaged in 55 lb (24.9 kg) bags with polyethylene liners for moisture protection. Material is shipped 56 bags per pallet.

Shelf Life

2 years in original, unopened package.

Specifications/Compliances

U.S.D.A.compliant

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Coverage

SURFLEX TR may be applied at rates from 0.75 to 2.0 lb/ft^2 (3.7 to 9.8 kg/m^2). The higher the application rate the better total abrasion resistance. Greater application rates may be used with special considerations. Contact your Euclid Chemical Company representative for recommended procedures.

Directions for Use

The contractor and engineer are encouraged to consult and review the Euclid Chemical bulletin **"Application Instructions- Dry Shake Floor Hardeners"**. The document offers instructions detailing the general installation of Euclid Chemical manufactured dry shake floor hardeners. **Note:** *If the contractor is not familiar with the standard application techniques of a dry shake floor hardener, a pre-job meeting is suggested to review the project concrete mix design as well as placement and curing details unique to the particular job. Contact your local Euclid Chemical Company representative for additional information.*

Curing and Sealing: Curing and sealing SURFLEX TR may be done with a EUCLID CHEMICAL water based or solvent based cure and seal. Each has its own advantages and unique properties. Consult the individual technical data sheet for each curing and sealing product or contact your Euclid Chemical Company representative for a recommendation regarding your specific project.

Note: If the floor surface will later be frequently exposed to solvents, hydraulic fluid etc. cure the floor with KUREZ DR VOX applied at 400 ft^2/gal (9.8 m^2/L. Seal the floor with EUCOSIL applied at 350 to 400 ft^2/gal (8.6 to 9.8 m^2/L) or with EUCO DIAMOND HARD penetrating sealer. Consult individual product data sheets for suitability and application information.

Clean-up

Clean tools and equipment with soap and water before material hardens.

Precautions/Limitations

- Interior concrete must be non air-entrained. For exterior, air-entrained concrete, contact The Euclid Chemical Company for special instructions.
- For additional abrasion resistance beyond that offered by SURFLEX TR consider the use of EUCO-PLATE an iron aggregate floor hardener.
- Store in a dry place.
- In all cases, consult the Material Safety Data Sheet before use.

Rev. 10.09

Concretech™
Decorative Concrete Supply Ltd.

TECHNICAL BULLETIN

PRODUCT NAME
Color Hardener

MANUFACTURER
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Delta, B.C. Canada
V4G 1B1
Phone (604) 952-0057
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http://www.concretech.com

COMPLIANCE
Not Applicable

PRODUCT DESCRIPTION
Concretech Color Hardener is a dry shake material formulated to color "poured in place" concrete. Color Hardener is designed for architectural flat work and stamped concrete surfaces. Concretech Color Hardeners are blended, UV stable, high quality synthetic pigments, Portland cements, hard surface aggregates and admixtures, providing permanent long wearing surfaces for vehicle and foot traffic. Concretech Color Hardeners increase abrasion resistance, increase surface strengths and reduce scaling. Concretech Color Hardener is available in 27.27KG (60lbs) pails.

USES
For use on all interior and exterior concrete, stamped concrete, colored and flat work concrete.

LIMITATIONS
Do not apply when temperature is below 40°C(38°F) or above 43°C(110°F). Take caution when using during windy conditions or where rapid air movement exists. Do not apply when rain or inclement whether is anticipated in the first 24 hours after application. Surface must be dry before applying any sealer.

INSTALLATION DATA
Place at least 4″depth concrete of a mix design suitable for stamped concrete not to exceed a 5″ slump. Screed in two directions providing a consistent and uniform surface. Allow bleed water to dissipate before broadcasting Color Hardener on surface .Color Hardener shall be applied in two broadcasts. Use "hand broadcast" method applying evenly and consistently. First broadcast apply 75% of specified amount and bull float in. Second broadcast apply the remaining 25% of specified amount and bull float, fresno or trowel in to uniform and even finish. Recommended application rate is 27.27KG (60lbs) per 100 sq ft. Keep troweling to a minimum to prevent discoloration and color inconsistency. Do not add water to surface while troweling in Color Hardener. Do not use admixtures containing chloride with Color Hardener .Color Hardener may be mixed with Polytop liquid for use on vertical surfaces such as stair risers. All color hardened concrete surfaces shall have a sealer or water repellant coating applied to protect the finish from moisture and oxidization. Apply Concretech cure and seal (CS 15) as soon as possible. Follow up with Concretech high solids sealer (CS 25 or CS 30) after 28 days. Follow Concretech technical bulletins for the applied product.
Caution - Contains Portland cement. Wear protective clothing, rubber gloves, eye protection and dust respirator mask. Prolonged exposure may result in respiratory illness. Keep away from children.
First Aid **-** Flush contaminated areas immediately and seek medical attention. Remove contaminated clothing. Wash hands with soap and water. Flush eyes with clean water or eye wash solution. In all cases seek immediate medical attention.

STORAGE & HANDLING
Store in cool dry area out of direct sunlight. Shelf life under normal conditions is one year. Store in sealed containers .Color Hardener that has been exposed to moisture for prolonged periods should be discarded.

AVAILABILITY
Concretech Color Hardeners are packaged in 27.27KG (60lbs) pails and in 25 standard colors. Custom colors available upon request.

WARRANTY
The information herein is general information to assist our customers in determining whether our products are suitable for their applications. Our products are intended for sale to commercial and industrial customers. We require customers to inspect and test our products before use and to satisfy themselves as to contents, suitability and applications. We warrant that our products will meet with our written specifications. Nothing herein shall constitute any other warranty, express or implied, including any warranty of merchantability or fitness for a particular purpose, nor is any protection from any law or patent inferred. All patent and trademark rights are reserved. The exclusive remedy for all proven claims is replacement of our materials and in no event shall we be liable for incidental or consequential damages.

TECHNICAL SERVICES
Complete technical information is available from Concretech Decorative Concrete Supply Ltd. and its authorized applicators and distributors. In house laboratory testing is available for specialty applications. Technical services available in North America, call toll free 1- 877-952-0157.

TYPICAL PROPERTIES

Colors	25 Standard Colors plus custom colors available
Cure time	12 Hours @ 21°C (70°F)
As supplied	

Revised : January 2004

COLOR HARDENER AND RELEASE POWDER COLORS

When Ordering Use: CH-## For Colored Hardener or RA-## For Release Powder


Peanut Butter - 01

Peach - 02


Adobe - 03


Gun Metal Green - 04

Vanilla - 05


Cabaret Tile - 06


Monterey Magic - 07


Brick Red - 08


Farmhouse Red - 09


Baja Red - 10


Forest Green - 11


Desert Tan - 12


Frappuccino - 13


Coffee and Cream - 14


Arizona Sunrise - 15


Autumn Brown - 16


Terracotta - 17


Driftwood - 18


Hot Chocolate - 19


Black Coffee - 20


Plum Pudding - 21


Lilith Charcoal - 22


Sun Gray - 23


French Gray - 24


Military Gray - 25

BREAKTHROUGH IN COLOR TECHNOLOGY

Introducing Concretech's breakthrough in color technology for cementatious materials. Concretech has developed and released its innovative method for coloring concrete. Now you can easily color any type of concrete, from slab on grade to retaining walls to roof tile, just use our proprietary color creation system on the Internet. You can find it at **www.concretech.com.** This proprietary tool will enable you to create any color you desire and it will produce the exact measurements in units required to obtain the desired color. Our innovations in coloring concrete reduce the inventory you need to carry. If you have any questions on this breakthrough in colored concrete call **1-877-952-0157** from anywhere in North America.

Perma-Cast® Shake-on Color Hardener

Technical Data Sheet P-0002

Engineered Concrete Performance
BUTTERFIELD COLOR®

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www.butterfieldcolor.com

FOR PROFESSIONAL USE ONLY. Read all applicable and current product information for your project: Technical Data Sheet (TDS), Color Chart, Installation Guide, Material Safety Data Sheet (MSDS).

MasterFormat™ Guide Specifications, and Butterfield Color Architectural Details and Specifications are available for the specifier/designer. All information is available for download online at www.butterfieldcolor.com

1. Description: Perma-Cast® Shake-on Color Hardener is a dry shake, color hardener that is applied to the surface of freshly placed concrete. It is a cementitious-based coloring material that may be used to create abrasion resistant interior floors and freeze-thaw stable exterior hardscapes. The time-tested formulation of Perma-Cast® Shake-on Color Hardener creates an extremely dense surface that is resistant to foot and vehicular traffic, and extreme weather. It is available in a wide range of streak free, uniform colors ranging from subtle pastels to deep, rich hues. It is used to uniformly color gray concrete, or provide random accents of color on concrete integrally colored with Uni-Mix® Integral Colorant or Uni-Mix® Liquid. Perma-Cast® Shake-on Color Hardener is also used when imprinting, texturing, or stenciling new concrete with Butterfield Color® Stamping Tools, Texture Rollers or Stencils and Perma-Cast® Clear Liquid Release or Perma-Cast® Antiquing Release. Color hardened surfaces may also receive additional coloration by applying one or more colors of Perma-Cast® Sierra Stain™.

Perma-Cast® Shake-on Color Hardener is a precise blend of cement, silica quartz aggregates, synthetic iron oxides, and plasticizer. Perma-Cast® Shake-on Color Hardener conforms to ASTM Standard C979 for color stability. The water-reducing wetting agent in Perma-Cast® Shake-on Color Hardener allows it to be readily incorporated into the concrete surface, forming a rich paste that makes finishing easier. In addition to strength and durability, the color hardened surface is resistant to fading.

Perma-Cast® Shake-on Color Hardener is a prepackaged material available in 24 standard colors, including white and black. Custom colors, color matching, and colors selected from the Uni-Mix® Integral Colorant and Uni-Mix® Liquid color charts can be formulated with ample lead-time, without up charges or minimums. Note: When a Perma-Cast® Shake-on Color Hardener is formulated from the Uni-Mix® Integral Colorant or Uni-Mix® Liquid color charts, the cured color will not be an exact match to the concrete colored with those integral coloring systems. Read all related or companion product Technical Data Sheets before installation.

Perma-Cast® Shake-on Color Hardener adds a wide array of color options to your architectural designs and hardscape projects while providing an extremely durable surface for pedestrian and vehicular traffic. Perma-Cast® Shake-on Color Hardener, used in conjunction with varying finishing techniques such as jointing schemes, saw cutting and/or pattern stamping, can create a striking effect. Combinations of colors can be used to create a desired mood and theme. Perma-Cast® Shake-on Color Hardener is an excellent choice for high traffic industrial flooring, since it greatly increases the strength and durability of the concrete surface. Using lighter colors will optimize lighting in an industrial environment.

2. Limitations: Perma-Cast® Shake-on Color Hardener must be applied at the recommended broadcast rate. Review section 5. Coverage. Applying insufficient material will reduce the abrasion resistance and may alter the color of the cured surface. Perma-Cast® Shake-on Color Hardener should not be mixed into ready mixed concrete nor applied onto cementitious overlays.

Perma-Cast® Shake-on Color Hardener is intended for application during new concrete flatwork installations. It may, however, be mixed with water and then plastered onto fresh vertical concrete such as step risers or curbs. Review section 8.4 Vertical Surfaces before Installation. Utilize concrete mix designs, tools, and techniques that ensure the thorough hydration of the material for proper finishing and curing.

3. Cautions: Harmful if inhaled. This product contains silica (crystalline quartz) and Portland cement. Do not breathe dust. Prolonged exposure can result in Silicosis. Use with adequate ventilation. Portland cement may cause alkali burns. Irritating to eyes and skin. Wear a respirator, safety goggles, gloves, and other protective clothing during installation. Immediately after use, wash any area of exposed skin. If contact is made with the eyes, flush thoroughly with water, do not rub. Do not take internally. Keep out of reach of children and animals. Dispose of all residual materials according to local, state, and federal regulations. Slip resistant finishes, slip resistant additives must be utilized in order to minimize dry or wet slip. Read the Perma-Cast® Shake-on Color Hardener Material Safety Data Sheet (MSDS) before installing the product.

4. Packaging: Perma-Cast® Shake-on Color Hardener is packaged in 60-pound (27 kg) plastic pails. Shelf life in original, unopened containers is 6 months from the date of invoice. Stock should be rotated.

5. Coverage: For most applications and colors, coverage is 60-pounds per 100 square feet (2.9 kg/m²). Lighter colors require 90-120 pounds per 100 square feet (4.40-5.80 kg/m²). Slump, ambient temperature, humidity, use of admixtures or finishing aids, and finishing methods will affect the coverage rate of Perma-Cast® Shake-on Color Hardener.

6. Mix Design: Concrete should have a minimum of 5-sacks of cement per cubic yard of concrete. Exterior concrete requiring freeze/thaw resistance should have a minimum of 6-sacks of cement per cubic yard of concrete. Concrete must be free of reactive ingredients, and should be poured at a 4-inch (100 mm) slump or less. The water/cement ratio needs to be consistent throughout entire project. In hot weather the use of a set retarder should be considered. In cold weather, when an accelerator is needed, choose a non-chloride accelerator. Never use calcium chloride. All concrete subject to freeze/thaw cycles should be properly air entrained (typically 5%-7%), as dictated by the mix design. Perma-Cast® Shake-on Color Hardener is always consistent. There are other variables that can affect the appearance of concrete. The same slump and mix design must be maintained throughout the installation. Any alterations will affect the final color. Mixes containing fly ash may be difficult to finish when a color hardener is applied.

7. Subgrade: The subgrade should be carefully prepared and compacted using an approved gravel fill, such as CA-6. A minimum of 4 inches (100 mm) is recommended. The subgrade should be leveled to ensure a uniform thickness of concrete during placing and finishing. The subgrade must be free of frost with no standing water. Prior to placing concrete, dampen the sub-base with water.

If the color hardened surface will be stamped or stenciled, layout of the forms is especially critical. Set the forms to the correct elevation. The forms must be square at the corners. Install adequate bracing to keep the forms from moving or bulging once concrete placement has started.

8. Placing and Finishing: Once placing of the concrete has begun; do not randomly add water to the mixer drum or to the surface of the concrete. This potentially will create color variations and a strength loss in the color hardened surface. Water may be added to the drum before initial discharge to attain, but not to exceed, the specified slump. Once discharged, the specified slump must be maintained throughout the installation, particularly for adjacent pours of concrete. Never retemper concrete that has started to set. Water reducing and plasticizing admixtures may be used with Perma-Cast® Shake-on Color Hardener. However, use of such admixtures may effect the finishing and setting characteristics of the color hardened surface.

After placing, and initial bull floating or hand floating, no further finishing or application of the color hardener should be performed until the bleed water has dissipated from the surface. Do not use the color hardener product to absorb excess moisture from the concrete surface. Perma-Cast® Shake-on Color Hardener is typically hand broadcast. The first application should be approximately 2/3 of the required amount of color hardener. Once broadcast, allow the color hardener to absorb moisture, slightly darkening, before working the surface with a magnesium or wood float. After bull floating or hand floating, apply the remaining 1/3 balance of the color hardener, concentrating on those areas where the underlying gray concrete color is still visible. Float as before, after it has absorbed moisture.

If the slab is too wide to broadcast by hand, bridging the slab or the use of a mechanical

spreader may be more efficient. If a mechanical spreader is used, 85% of the color hardener should be broadcast in the first application with 15% being retained for broadcast on any light areas during the finishing operation. Water should never be applied to the color hardener, as it will weaken and discolor the surface. Perma-Cast® Shake-on Color Hardener must be correctly applied and finished before the underlying concrete starts to dry and harden. During hot or windy conditions, the use of an evaporation retarder or a finishing aid should be considered.

Texture all surfaces adequately and uniformly for slip resistance. Closing with a steel trowel can diminish the effectiveness of air entrainment at the surface and should be avoided where freeze/thaw is a concern. For exterior installations apply a broom, or swirl finish using a float. When brooming concrete, care should be taken to shake off any residual rinse water before brushing the surface. Apply adequate pressure while brooming, but avoid exposing the underlying concrete. Finishing techniques should be consistent and timely to avoid color and texture variations. Interior floors should not be burnished by aggressive hard troweling of the surface. Darkening of the surface may occur. All newly color hardened surfaces should be protected from damage from other trades, liquid spills and foot traffic until the surface is fully cured and sealed

8.1. STENCILING: If Butterfield Color® Stencils will be used to pattern the color hardened surface, place the stencils before the initial broadcast of Perma-Cast® Shake-on Color Hardener. Stencils should be placed after the bleed water has dissipated and set flat on the concrete surface. Utilize a stencil roller to lay the stencils on the surface of the concrete. Do not push the stencils below the concrete paste. Once the stencils are placed and trimmed, color hardener is applied as previously described. After finishing is complete, the stenciled and color hardened surface can be lightly broomed, floated or textured with Butterfield Color® Texture Rollers. Utilize Perma-Cast® Clear Liquid Release or Perma-Cast® Antiquing Release when texture rolling the color hardened surface. Butterfield Color® Stencils should be removed the same day after installation. Do not leave the stencils on the concrete surface overnight, which may their removal time consuming and cause damage to the stencil patterned surface.

8.2. STAMPING: If the color hardened, surface will be imprinted with Butterfield Color® Stamping Tools, Perma-Cast® Clear Liquid Release, or Perma-Cast® Antiquing Release must be used to act as a bond breaker between the stamp mats and Perma-Cast® Shake-on Color Hardener. Imprinting should commence as soon as the surface is firm enough to bear the weight of the installer without excessively deflecting the mat tool, thereby causing depressions in the concrete surface. Stamping must be completed before the surface dries and hardens appreciably, rejecting or minimizing the accurate transfer of the pattern and texture. Read all applicable product Technical Data Sheets before installing.

8.3. CONTROL JOINTS: Random cracking of a concrete slab is minimized by the timely and correct placement of control joints. Control joints may be introduced during concrete placement with a groover, or after the concrete has reached initial, set by power sawing. Each method should be evaluated prior to installation and should be incorporated into the pre-job mock up. Refer to following The American Concrete Institute publications for additional information: Guide for Concrete Floor and Slab Construction (ACI 302.1R), Joints in Concrete Construction (ACI 224.3R)

8.4. VERTICAL SURFACES: On vertical surfaces such as risers or curbs, Perma-Cast® Shake-on Color Hardener may be plastered onto the freshly placed concrete at the rate of 70-90 pounds per 100 square feet (3.30 - 4.40 kg/ m²). Perma-Cast® Shake-on Color hardener must be mixed with water and plastered onto surface with the aid of a bonding agent prior to the concrete curing completely, typically the same day of the pour and as soon as the verticals surfaces can be stripped of forming without slumping. Once the plaster mix is applied, employ the same finishing techniques that were utilized on the adjacent horizontal surfaces.

9. Curing and Sealing: Never use plastic sheeting or water spray to cure Perma-Cast® Shake-on Color Hardener, as it will mottle and streak the surface. Use curing blankets with caution. Use liquid, membrane-forming compounds such as Clear-Guard™ Cure & Seal or Color-Guard® Cure & Seal. Read Technical Data Sheets before using these products. Do not over apply. To avoid discoloration do not store objects on colored concrete for at least seven days after the pour. Cured and sealed surfaces may become slippery when wet if the concrete surface is not adequately finished for slip resistance. Incorporate a slip resistant additive into the sealer for additional slip resistance. Interior floors may be maintained with a slip resistant wax.

10. Maintenance: Periodically inspect surfaces sealed with Clear Guard® Cure & Seal or Color-Guard® Cure & Seal for wear or damage, and reseal as needed. Avoid exposing sealed surfaces to strong solvents and corrosives. Clean motor oil and gasoline spills as soon as possible. Avoid dragging, dropping or placing sharp objects on sealed surfaces. Prior to resealing, surfaces must be thoroughly cleaned, dry, and free from residual cleaning products or any condition that will affect adhesion. Do not over apply sealer. A slip resistant additive should be utilized when resealing colored concrete.

11. Quality Control: Cast a job site sample at least 21 days prior to the installation for approval of color and finish. Utilize all materials, tools, and techniques from the actual job in the mock-up. Consistent batching, pouring, finishing, curing, sealing, and preparation techniques, will ensure the uniformity of architectural concrete. Verify adequate wet and dry slip resistance. Verify maintenance requirements. Site visits by Butterfield Color, Inc. personnel are for making technical recommendations only and not for supervising or providing quality control.

Warranty Disclaimer/Limitation of Liability:
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Suggested Short Form Specification for Butterfield Color Perma-Cast® Shake-on Color Hardener:
Apply Butterfield Color Perma-Cast® Shake-on Color Hardener to fresh concrete according to manufacturer's instructions using [_____] color and a minimum of [_____] pounds per 100 square feet. Apply Butterfield Color Perma-Cast® Antiquing Release according to manufacturer's instructions using [_____] color and imprint using Butterfield Color® Stamping Tools using [_____] pattern. Seal concrete with 2 coats Butterfield Color Clear Guard™ Cure and Seal with slip-resistive additive according to manufacturer's instructions.

Suggested Short Form Specification for Butterfield Color Stencils:
Apply Butterfield Color Stencils in [_____] pattern to wet concrete according to manufacturer's instructions. Apply Butterfield Color Perma-Cast® Shake-on Color Hardener using [_____] color and a minimum of [_____] pounds per 100 square feet according to manufacturer's instructions. Apply Butterfield Color® Clear Liquid Release and imprint concrete with Butterfield Color® Stamping Tools in [_____] pattern. Remove stencils before concrete has fully set. Remove debris with a mechanical blower and apply 2 coats Butterfield Color Clear Guard™ Cure and Seal with slip-resistive additive according to manufacturer's instructions.

Engineered Concrete Performance

BUTTERFIELD COLOR

Perma-Cast® Shake-on Color Hardener

P41 Blue Stone	P34 Nantucket White	P20 Ginkgo	P201 Travertine
P11 Gray Plum	P21 Coral Gables Pink	P31 Gray Linen	P32 Bone
P29 Wheat	P24 French Cream	P22 Arena Buff	P23 Smoke
P28 Slate Gray	P26 Cape Cod Gray	P12 Storm Gray	P13 Deep Charcoal
P25 Colina Tan	P14 Walnut	P15 Brick Red	P16 Dark Red
P33 Juniper	P17 Terra Cotta	P18 Chestnut	P19 Russet

Many things can affect the appearance of color. For best color matching results, a representative job-site sample should be cast using materials from the project location.

Colors shown on this chart represent formulations using medium gray cement. Variations can be expected due to differences in cement, aggregates and method of application.

3 CONCRETE 9 FINISHES