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, Uni-Mix® Liquid Integral Concrete Colorant or Select Grade™ Integral Concrete Colorant. Perma-Cast® Shake-on Color Hardener is also used when imprinting, texturing, or stenciling new concrete with Butterfield Color® Stamping Tools, Texture Rollers and Stencils. It is compatible with Butterfield Color® Clear Liquid Release, Perma-Cast® Antiquing Release and Select Grade™ 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 metal 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. Custom colors, color matching, and colors selected from the Uni-Mix® Integral Concrete Colorant and Uni-Mix® Liquid Integral Concrete Colorant color charts can be formulated with ample lead-time. Note: When a Perma-Cast® Shake-on Color Hardener is formulated from the Uni-Mix® Integral Concrete Colorant or Uni-Mix® Liquid Integral Concrete Colorant 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. All information is available for download online at www.butterfieldcolor.com and at point of purchase.

Perma-Cast® Shake-on Color Hardener adds a wide array of color options to your architectural designs and landscape 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 4. 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 surfaces as a top risers or curbs. Review section 7.4 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. Packaging: Perma-Cast® Shake-on Color Hardener is packaged in 50 lb. (22.68 kg) plastic pails.

3.1 SHELF LIFE: 2 years from the date of invoice in original, unopened containers, in dry storage.

4. Coverage: For most applications and colors, coverage is 50-pounds per 100 square feet. Lighter colors require about 50 pounds per 80 square feet. 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.

5. 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 the 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.

6. 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.

7. Placing and Finishing: Once placing of the concrete has begun; do not ran-
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.

7.1. 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 stencil and color hardened surface can be lightly broomed, floated or textured with Butterfield Color® Texture Rollers. Utilize Butterfield Color® 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, as this will make their removal time consuming and cause damage to the stencil patterned surface.

7.2. STAMPING: If the color hardened, surface will be imprinted with Butterfield Color® Stamping Tools, Butterfield Color® 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. All information is available for download online at www.butterfieldcolor.com and at point of purchase. Mix approximately 2 lb. of Perma-Cast® Shake-on Color Hardener with 1/2 cup of clean water to a consistency of mortar. Mix water can be adjusted to accommodate the installation. Do not exceed a thickness of 1/4" (6 mm). For areas exceeding 1/4", first utilize a compatible cementitious patching material to repair the areas within 1/4" of the surface. Then proceed to priming and patching. Once the material has been applied, finish and texture to match surrounding area. Surfaces to be repaired should not be below a temperature of 50°F and not exceed a temperature of 80°F. Avoid using Perma-Cast® Shake-on Color Hardener as a patch in
8. 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 and Seal or Clear Guard® Cure and Seal. Read Technical Data Sheets before using these products. All information is available for download online at www.butterfieldcolor.com and at point of purchase. 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.

9. Maintenance: Periodically inspect surfaces sealed with Clear Guard® Cure and Seal or Color Guard™ Cure and 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.

10. 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. Discuss maintenance requirements. Site visits by Butterfield Color, Inc. Personnel are for making technical recommendations only and not for supervising or providing quality control. Maintenance requirements should also be discussed.

WARNING: 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 IS IRRITATING TO EYES AND SKIN AND MAY CAUSE ALKALI BURNS. ALWAYS USE PROTECTIVE GLASSES, GLOVES AND DUST MASK (NIOSH/MSHA TC-21C APPROVED). IMMEDIATELY AFTER USE WASH ANY AREA OF EXPOSED SKIN. IF CONTACT IS MADE WITH EYES FLUSH THOROUGHLY WITH WATER, DO NOT RUB. IF INHALED, MOVE TO FRESH AIR. IF SYMPTOMS DEVELOP OR PERSIST, OR IF INGESTED, SEEK MEDICAL AT- TENTION. DO NOT TAKE INTERNALLY. KEEP OUT OF REACH OF CHILDREN AND ANIMALS. DISPOSE OF ALL RESIDUAL MATERIALS ACCORDING TO LOCAL, STATE, AND FEDERAL REGULATIONS. READ THE MATERIAL SAFETY DATA SHEET BEFORE USING OR HANDLING THIS PRODUCT. ALL INFORMATION IS AVAILABLE FOR DOWNLOAD ONLINE AT WWW.BUTTERFIELDCOLOR.COM AND AT POINT OF PURCHASE.

LIMITED WARRANTY AND DISCLAIMER – EXCLUSIVE REMEDY: Butterfield Color, Inc. ("BC") warrants that this product conforms to its published specifications when it is shipped. THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY AND THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BC does not warrant any particular method of use or application of the product or its performance under any particular condition. If this product does not conform to its published specifications when shipped, we will replace the product as your exclusive remedy. Any action for breach of the limited warranty or any other liability arising from this product must be brought within 90 days of receiving the product. BC is not liable for consequential damages or personal injury arising from the use, storage or handling of this product.

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.