Uni-Mix® Liquid Integral Concrete Colorant

Technical Data Sheet UL-0605

Engineered Concrete Performance
BUTTERFIELD COLOR

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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). All information is available for download online at www.butterfieldcolor.com and at point of purchase.

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 and at point of purchase.

1. Description: Uni-Mix® Liquid Integral Concrete Colorant is an admixture for integrally coloring ready mixed concrete during batching. Conforming to ASTM Standard C979, (Standard Specification for Pigments for Integrally Colored Concrete), it is a blend of non-fading synthetic iron oxides, which produce uniform, streak free colors in concrete. Uni-Mix® Liquid colorants mix freely, quickly and evenly without additional water, maintaining the strength and freeze/thaw resistance of the cured concrete. Superior quality control during manufacturing ensures that your installations will have uniform color from load-to-load and year-to-year.

Uni-Mix® Liquid Integral Concrete Colorant is suitable for all concrete flat work installations such as interior floors and exterior hardscapes, as well as precast, tilt-up and cast-in-place applications. For truly unique and creative concrete installations, use of Uni-Mix® Liquid Integral Concrete Colorant can be combined with other Butterfield Color® products: Perma-Cast® Shake-on Color Hardener, Perma-Cast® Sierra Stain™, Elements™ Transparent Concrete Stain, Butterfield Color® Stamping Tools, Perma-Cast® Antiquing Release, Butterfield Color® Clear Liquid Release and Perma-Tique™ Antiquing Agent.

Uni-Mix® Liquid Integral Concrete Colorant is composed of synthetic iron oxide pigments dispersed and suspended in a pH adjusted water-based solution. It is a high solid, thixotropic dispersion containing between 60% and 70% total pigment loading. Uni-Mix® Liquid Integral Concrete Colorant can be added to ready mixed concrete at the batch plant or on site with pre-measured pails made with a Butterfield Color® Uni-Mix® Liquid Dispensing System. Uni-Mix® Liquid Integral Concrete Colorant is available in 48 standard colors. Butterfield Color® Uni-Mix® Liquid Dispensing Systems also allow for the formulation of numerous custom colors and colors that compare with other manufacturers.

2. Pails: Uni-Mix® Liquid Integral Concrete Colorant can be automatically dispensed into 1, 2, 3.5-gallon (3.8, 7.6, 13.3 L) plastic pails for any cement content using a Butterfield Color® Uni-Mix® Liquid Dispensing System. The dispensing system is PC controlled to ensure color accuracy and consistency.

3. Limitations: Uni-Mix® Liquid Integral Concrete Colorant should be kept from freezing. Frozen material requires additional remixing before product can be used.

4. Packaging: Uni-Mix® Liquid Integral Concrete Colorant is available in 4000 pound/275 gallon (1814 kg/1041 L) totes when using a Butterfield Color® Uni-Mix® Liquid Dispensing System or pre-measured into 1, 2, or 3.5-gallon (3.8, 7.6, 13.3 L) pails.

4.1 SHELF LIFE:
Pails - 2 years, in unopened, original containers, when stored between 60°-80°F

Bulk totes - 2 years, when stored between 60°-80°F and re-mixed daily for 1 hour

5. Mix Design: Concrete should have a minimum of 5-sacks of cement per cubic yard of concrete. If cement substitutes such as fly ash or blast furnace slag are utilized, that mix should be used for all adjacent pours as it will have a slight effect on color. Concrete must be free of reactive ingredients, and poured at a 4 inch slump or less. The water/cement ratio needs to be consistent throughout the entire project. In hot weather, the use of a retarder should be considered. In cold weather, when an accelerator is needed, choose a non-chloride accelerator. Never use calcium chloride. Uni-Mix® Liquid Integral Concrete Colorant is compatible with most chemical admixtures and fibers. All concrete subject to freeze/thaw cycles should be properly air entrained (typically 5%-7%), as prescribed by the mix design.

Uni-Mix® Liquid Integral Concrete Colorant is always consistent. Other variables can affect the appearance of concrete. Therefore, it is important that you discuss your project with your Ready Mix supplier. The same cement, sand, and aggregates must be utilized throughout the project. Any deviations will effect the final color. Contact Butterfield Color® with any questions concerning admixtures and mix design.

6. Batching: The maximum loading of Uni-Mix® Liquid Integral Concrete Colorant should not exceed 10% by weight of the total cement and cement substitutes in the mix. Higher loadings may reduce the strength of the finished product. A loading below 1% may appear muted and or mottled. The ideal loading is between 2% and 6%.

The mixer drum should be in good condition with little or no buildup on fins. 1/4 of the mixer volume is the minimum amount of concrete that should be batched to develop a consistent mix. Spin the drum in reverse until the load backs up to the top. Pour or dispense Uni-Mix® Liquid Integral Concrete Colorant directly onto the concrete. Once added, ensure that any colorant retained on the fins is thoroughly mixed into the load by slowly reversing drum so that concrete makes contact with and removes colorant from the fins. Rotate drum at optimal mixing speed as recommended by the mixer manufacturer for 100 revolutions.

7. Installing Colored Concrete Flatwork:

7.1. SUB-BASE: The subgrade should be carefully prepared and compacted using an approved gravel fill, such as CA-6. A minimum of 4 inches 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.

7.2. PLACING AND FINISHING: Once placing has begun, do not randomly add water to the mixer drum or to the surface of the colored concrete. This will create color variations and a strength loss. 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 through out 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 Uni-Mix® Liquid Integral Concrete Colorant. Use of such admixtures may affect the finishing characteristics of the concrete.

After placing and initial bull floating, no further finishing should be performed until bleed water has evaporated, after which final finishing can take place. Closing with a steel trowel can diminish the effectiveness of air entrainment at the surface and should be avoided where freeze/thaw is a

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9 FINISHES 3 CONCRETE

concern. Texture all surfaces adequately and uniformly for slip resistance. For exterior installations, apply a broom finish or swirl finish using a float. When broom finishing concrete, shake off any water that may be left on broom after rinsing, as it can cause discoloration. Finishing techniques must be consistent. Differing finishing techniques will change the appearance of the color.

7.3. 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 the 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. Curing and Sealing: Never use plastic sheeting or water spray to cure colored concrete as it will mottle and streak the surface. Use liquid, membrane-forming compounds such as Clear Guard® Cure and Seal, Clear Guard® PRO 350® Cure and Seal, Clear Guard® H_2O Water-Based Cure and Seal, or Clear Guard® H_2O Wet Look Water-Based Sealer. Read the 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 apply curing and sealing compound if there are concerns with the quality of the color or finish, until those concerns are adequately addressed. 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 textured 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, Clear Guard® PRO 350® Cure and Seal, Clear Guard® H_2O Water-Based Cure and Seal, or Clear Guard® H_2O Wet Look Water-Based Sealer 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 may be utilized when resealing colored concrete.

10. Installing Vertical Colored Concrete: Unless a special form liner has been specified, use a clean epoxy coated or urethane coated plywood form. Use non-leaking snap-tie cones. Clean and then tape or seal all joints to prevent leakage. Any bleed water leaking along joints may discolor wall. Choose a release agent that does not discolor concrete. Do not use metal form ties or chairs within 1.5 inches (38 mm) from the surface.

Keep the slump consistent from load-to-load. Do not add water after a portion of the load has been discharged. Never re-temper concrete that has started to set. Cast all walls in a continuous pour to their full height between engineered horizontal joints. When possible, use both external and internal vibrators. Vibrate the concrete in lifts up to two feet or less. Do not touch the interior face of form with vibrator. Perform vibration long enough to consolidate concrete and dislodge entrapped air. Do not over vibrate concrete causing segregation of the mix. Strip all forms when the concrete is the same age. Lightly sandblast all surfaces sufficiently to remove form marks and form release residue. Note: excessive sandblasting may expose sand and aggregates, substantially changing the color of the finished wall.

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. 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: USE WITH ADEQUATE VENTILATION WHEN DUSTY CONDITIONS OCCUR, 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. MOVE TO FRESH AIR IF INHALED. IF SYMPTOMS DEVELOP OR PERSIST, OR IF INGESTED, SEEK MEDICAL ATTENTION. READ MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR USE. ALL INFORMATION IS AVAILABLE FOR DOWNLOAD ONLINE AT WWW.BUTTERFIELDCOLOR.COM AND AT POINT OF PURCHASE. **KEEP OUT OF THE REACH OF CHILDREN.**

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Suggested Short Form Specification for Butterfield Color® Uni-Mix® Liquid Integral Concrete Colorant:
Add Butterfield Color® Uni-Mix® Liquid Integral Concrete Colorant to concrete in proportion required to obtain [_____] color and mix according to manufacturer’s instructions. Maintain mix characteristics for all concrete having matching finish. Concrete shall contain a minimum of five sacks of cement per cubic yard and have a maximum slump of 4 inches. Do not use calcium chloride. Place and finish concrete according to industry standards. [Optional: Apply Butterfield Color® Perma-Cast® Antiquing Release according to manufacturer’s instructions using [_____] color and imprint using Butterfield Color® Stamping Tools using [_____] pattern according to manufacturer’s instructions.] Cure and seal concrete with 2 coats Butterfield Color® Clear Guard® Cure and Seal with slip-resistive additive according to manufacturer’s instructions.