



Technical Data Bulletin

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ColorBlend Colors®

color admixtures used for permanent coloring of concrete and mortars for architectural and decorative work.

Description: integral color admixtures are made from pure mineral oxides for use in Portland cement concrete, mortars and plaster mixes. Colors are permanent non-fading and streak free. Can be used for any interior or exterior application. The small particle size disperses quickly into concrete and plasters to become an integral part of the mix without the need for any additives. Our product does not impact the strength development of the mix and are free of chlorides and impurities that can affect performance, meeting the specification ASTM C-979 for mineral oxide colors. Pre-measured units for accurate dosage are made for 1 Cu/Yd. increments. Set controls are conveyed to the concrete manufacturer for the dosages adjustments of retarding admixtures and high range water reducing, agents, based on their laboratory testing, experience and in accordance to weather conditions and mix behavior at placement and meeting the provisions ACI 301.

Product Composition:

Pure premium iron and chromium mineral oxides micronized to a very small particle, encapsulated in a dispersant binder for rich color and faster distribution throughout the paste. Dosages are highly effective because there are no fillers associated with bleeding and surface efflorescence tendencies. Product is compatible across the board with all known concrete admixtures producers.

Product Limitations:

Shade variations from color chart chips are the result of variant regional cement or aggregate colors. These variations can be easily overcome by the custom adjustment of white or black pigmentation or other color adjustments if needed. Colors for concrete attach to the cement paste, therefore, a minimum cement content is advisable of at least 5 sacks of Portland cement per Cu/Yd. or higher for better density and durability. We employ field technicians to work with the architect and trades to overcome any situation. Setting times and mix behavior are beyond the scope of the color additive and left to the engineer and concrete supplier's designed mixes to

adjust according to specific situation needs for better control.

Applicable Standards:

Coloring conforms to ASTM C-979, Dept. of Transportation, Standard Building code, for color pigments conformance for use with or without reinforcement concrete, grouts and mortars.

Dosages

ColorBlend™ colors are manufactured in precise weight soluble bags, readily available for fast shipping nationwide. All concrete mixes in all of our 64 standard colors from our current color chart and many other competitive colors. In addition to all colors, we can produce custom units in dosages to achieve any desired color based on any special design mix, cement type and or Pozzolan combinations.

Packaging

We package each *ColorBlend™* color units to the exact color dosage in increments of one cubic yard for easy loading into the mixer. Unit weight is based on concrete cement contents. Higher weight dosages may be produced for 1/2 Cu/Yd. increments for easier handling.

Shelf Life:

Pure Iron & Chromium Oxides like many minerals do not have an expiration date and colors do not fade or spoil. Moisture is the main concern when storing the product to maintain the product dry until ready to use.

Concrete Production:

Provisions: ACI-301

There is no limitation on how color units are added into the mixing equipment, although it is best to add it at the end once slump range has been established. Mix in the drum for at least 90 revolutions and check for consistent mixing, use approved NRMCA mixing equipment free of excessive residue and drum fins in good condition. All loads shall be of the same slump and timely delivered to the jobsite and finished consistent with the same procedures for all color work. It is recommended the concrete supplier assigns the same set of trucks to one color throughout pour until finished.

Concrete Materials:

Select concrete materials from an approved supplier for concrete aggregates. All aggregates shall meet ASTM C-33 washed free from organic impurities.

Portland Cement Gray or White meeting ASTM C150 Type I.

Calcium chloride containing admixes or Fly ash additives shall not be used in color mixes. Air entraining admixtures meeting ASTM C 260 not to exceed 3% entrainment, and 5% in freeze thaw regions, depending on mix aggregate size. (ACI 21.3R)

Water reducing agents meeting ASTM C-494, class A or B. Type I & II.

Materials sources should be always maintained from the same sources for mixes to assure color consistency and finish throughout job. Slumps of all concrete shall be not higher than 5 inches with the exception of using an approved Super- plasticizer in difficult placement job situations. All Loads of same slump A pre-construction meeting is advised for all parties involved in the materials selection to meet job production and finish requirements. (ACI bulletins 305R and 306R)

Sub-grade Preparation & Forming:

Flatwork: It is of utmost importance to follow sound construction practices to achieve good results. Use well graded sand base that is moist prior to the placement. Follow *ACI guidelines for flatwork preparation, consolidation, finish and curing. Uneven subgrades will result in cracking and early failures under heavy traffic loads.

Formwork: use properly assembled systems using architectural concrete liners that are approved for color concrete, clean and oiled with an architectural grade non-staining release agent. Vibration and consolidation should be executed so no excessive air is entrained and poured in a continued monolithic motion, using a trunk or funnel to avoid honeycombs and marble like joint lines. Do not vibrate touching against the sides of the forms or rebar to not form halos. Never pour when inclement weather is imminent. Architectural liners selection should be careful based on finish specified and the forms suppliers recommendations and strictly enforced. Avoid cold-joints and delays and pour a complete full assembled section without breaks.

*Shortcuts in this area are prone to less than a desirable outcome in color and texture uniformity.

Concrete Pumping and conveying.

Concrete pumping equipment shall be able to convey color concrete without increasing slumps at the hopper. Priming slurry shall be also colored. Color concrete cannot be water added or re-tempered. Discard any concrete that has begun to hydrate inside the system.

Finisher Qualification:

Select a finisher with at least 10 years of experience in decorative concrete and a certified ACI contractor.

Flatwork and Special Finishes:

Dry Shake surface color hardeners may be integrated into flatwork as an alternative or in addition to integral coloring to obtain special finishes or highly pigmented applications where a combination of these systems may be specified that can be used in combination with integral color for imprinting patterned finishes with the addition of Patinas, multicolor antiquing using colored release agents specifically designed for decorative finishes. Use *ColorBlend*[®] color shake hardeners, releases, reflective surface additives, or special decorative aggregates and finishes are available to obtain the desire look and complement all integral colors or uses for severe traffic. Visit www.builderscolor.com for selection.

Concrete Consolidation and Finish:

Level concrete using Strikes, Screeds or Darby to level flatwork. Use Bull-float to embed large aggregate to leave surface paste available for finish.

Wait for concrete to stop bleeding before continuing, not doing so will result in problems like screeding the surface color pigment away with the bleed water, blisters, crazing and resulting color variations.

Never sprinkle water unto the surface as spots and mars will result when the surface dries.

To avoid trowel burns, always work in one direction careful not to overwork a spot. Burns show as a darker spot after surface dries.

Tooled joints should be installed immediately after surfaces are finished using proper tools to not damage adjacent finish.

(ACI 302 IR Bulletin) www.concrete.org.

Curing and Protection:

Standards for Curing and sealing: ASTM C 309, ASTM C 1315. Use non-wax based surface sealers. Do not use water curing, blankets or any other method except Builders C. P. approved chemical compounds.

Avoid delaying the curing process to avoid surface plastic shrinkage specially in windy conditions. Surface retarders are not recommended since it can produce color changes. Always test a small sample panel prior to using these products in overall placements and only in extreme circumstances.

Commence to cure once all of the surface water has left and safe to install without marring the surfaces. The first 4-18 hours after placement are critical in producing a defect free surface.

One coat of Cure and Seal applied in cross directions for full coverage.

Always cure & seal using an approved chemical liquid chemical membrane forming compound supplied for color concrete which does not to promote slippage or provide excessive gloss on textured concrete surfaces..

Low Sheen, Water based Products:

◇ Builders WB 309 Cure/Seal or

◇ DuraSeal WB

to produce an even sheen without a color enhancement.

High gloss, Solvent Based systems:

◇ Builders Super 33 Cure & Seal or

◇ Crystal Seal

These will produce a gloss with some surface color enhancement. Urethane grit may be added for slip resistance. Visit our Website www.builderscolor.com. for technical data on these products.

Formwork:

(Materials meeting ASTM C-171)

Cut Joints and Joint Sealants:

Joints should be at least 1/4 of the thickness in depth by mechanical cutting. Cut joints not later than 24 hours after finish and after concrete curing agent has been installed. Blow debris with compressed air all joints prior to joint sealants Fill all joints with an appropriate joint filler able to support the straight edges against spalling under traffic, tinted to the same color.

When tooling joints, do not bridge the joint with wire mesh. Cut the mesh and install and appropriate preformed expansion joint product. Leave 1/2 inch to install a joint sealant tinted to a matching color. Joint all L shape angles.

Joint spacing should be every 30 times the slab thickness in one direction. (ACI Bulletin 224.3R, AAShTO M-282-9)

Jobsite Sample Panels:

Produce one sample for each color and each finish specified at least 30 days prior to acceptance. Color concrete for samples shall be produce representative to the same mix and color, supplied from a minimum of a 3 yard load. The panel dimensions shall be ample enough to demonstrate the desired finish product and kept on the jobsite protected for the duration of the work for future comparison.

Precast and Tilt Up Concrete:

All precast color overlays should be wet cast at the plant. Exposed aggregate shall be produced thru sand blasting preferred over surface retarders. Tilt up panels shall be casted following the procedures of ACI 551.

Panels shall be produced monolithic with color throughout their thickness.

Maintenance

To remove efflorescence, dirt and atmospheric staining from unsealed color concrete or precast products, we do not recommend the use of harsh acidic cleaners that will etch the surface.

Use one of our biodegradable cleaners and degreasers to remove surface laitance. Clean with a brush or pressure cleaner set at 1200 psi and rinse with clean water. Un-sealed surfaces may be cleaned and re-coated with one of our either clear, or color sealers. Always use our color concrete cure and seal compound to avoid damage to fresh concrete. Call our technical line for more information on choice of products according to the intended service and stains severity.

Color Inconsistencies and damage:

Weather related problems, lack of timely curing and related mistakes may result in less than uniform color consistent surfaces. These can be easily repaired using *ColorBlend*[®] supporting products such as penetrating seal stain, Surface repair mortars, and joint sealants, all tinted to the same surface color. They are made specifically considering the performance needed to withstand commercial uses and design demands.

Protection During Construction:

Keep all traffic off the pavement for at least 24 hours and after joints are installed.

Never cover color concrete with blankets, plywood or other materials before curing with a chemical cure & seal compound.

Install a white uncoated Craft paper at least 6 mills and taped over a 6" lap over the finished surfaces to keep construction dirt off the decorative flatwork. Under severe construction traffic, it may be possible to cover the area with a non-staining rigid material over the Craft paper but not before the first 7 days.

Solar Reflectance Index SRI:

Urban heat effect has prompted many communities to address heat generation. Lighter colors will absorb less heat as darker colors will tend to be hotter. Please contact our office to supply an information bulletin on factors for colors choices and their SRI values.

Light effects on concrete surfaces:

What appears to be fading or stains can be attributed to light reflecting from organic growth, salt deposits in unsealed concrete, also efflorescence can be a major factor that can be overcome by proper curing and sealing surfaces and proper maintenance during surface use cycles.

Warranty: When product is used according to directions and when properly used, warranty is limited to one year after product is supplied to the concrete producer. Refund of the purchase price if deemed defective at manufacture. This product is intended for industrial professional use by competent tradesmen. Builders Construction Products shall not be liable to the purchaser or any third party for costs of labor or direct or indirect and incidental or consequential damages related to the use or suitability of this product. No other warranties are implied. Responsible disposal of used products and packaging is the responsibility of the purchaser and or user.

