



SOLACHROME™ Integral Coloring Treatment for High-SRI Concrete

A powdered fade-resistant concrete admixture used to create vibrant solar reflective colors that conform to LEED requirements for reducing the Urban Heat Island Effect.

TECH-DATA BULLETIN A-334.06

1 Product Description:

SOLACHROME™ Integral Coloring Treatment for High-SRI Concrete is a patented easy-to-use powder concrete admixture that will permanently color concrete and other cementitious materials. Its unique composition enables the creation of deep vibrant solar reflective colors that will stay cool longer than colors made from traditional technologies.

SOLACHROME Integral Coloring Treatment for High-SRI Concrete will not migrate in water, and may be used to color concrete for fountains, pools, water features, or concrete that will be polished and encounter wet environments. All pigments used are fade resistant, and conform to the light Resistance (color fastness) requirements of ASTM C 979 Pigments for Integrally Colored Concrete. Each packaged unit will color one yard of concrete that contains between five and seven 94-pound sacks of cement, and is suitable for coloring concrete used to make floor slabs, walls, steps, sidewalks, curbs, columns, structural arches and other precast objects.

Specified Colors made from SOLACHROME Integral Coloring Treatment can exceed the LEED building material Solar Reflectance Index (SRI) requirement of 29 or greater. This can allow colored concrete to contribute to earning LEED credits in the Sustainable Sites category 7.1 Heat Island Effect: Non-Roof for New Construction, Existing Buildings, Schools and Core and Shell in LEED 2009.

2 Colors:

SOLACHROME™ Integral Coloring Treatment for High-SRI Concrete is available in 16 standard variations that can be mixed with either gray or white cement to produce 32 solar reflective colors. See color chart SIC-CC for the entire range of standard colors, or SICT-SBC, SICT-SWC, SICT-UPC, or SICT-PNWC for select regional color palettes. Custom colors are available with order minimums.

3 Dosage:

SOLACHROME Integral Coloring Treatment is packaged in five-gallon pails. New Easy-Dose™ technology enables a single package to color one yard of concrete containing five to seven 94-pound sacks of cement. (470-658 lbs or 213-300 kg of cement) Each pail will color one cubic meter of concrete with cement content between 213-300 kg. Concrete with higher cement content per yard or meter require proportioned amounts of additional SOLACHROME to achieve the intended color.

4 Concrete Mix Design Modifications:

SOLACHROME Integral Coloring Treatment can influence the effect other admixtures will have on concrete properties. Water, Water Reducers (inclusive of Mid-Range or High-Range Water Reducer), and AEA (Air Entrainment Agent) are key ingredients that can require adjustment. When making any mix design modification, always perform a jobsite test as described later in this bulletin.

5 Preferred Use Procedures:

1. Clean concrete mixer or mixing truck. Remove any previous cleaners, retarders, or traces of previous color.
2. Size the mix design to ensure the mixer is at least 1/3 full, or of a size that ensures mix uniformity within the prescribed number of mixing revolutions or mix time.
3. Introduce water, sand, aggregates, and other admixtures in preferred order.
4. Introduce cement.
5. Introduce Solachrome Integral Coloring Treatment.
6. Mix a minimum of 120 revolutions or until a consistent color that does not streak upon finishing is achieved.

Modification of Preferred Use Procedures:

Order of addition changes may be necessary to accommodate split loads or plant conditions. Good results should be obtained when added at any time as long as it is given the opportunity to mix until uniform. If not, streaking and uneven color within the concrete can result.

6 Factors Influencing Final Color, Appearance, and Solar Reflective Index:

Colors represented on the SOLACHROME Integral Coloring Treatment for High-SRI Concrete color charts depict actual samples of smooth finished concrete made with a medium gray or white cement and cured with SCOFIELD® Cureseal-W™ Concrete Curing Compound and Sealer. The final color, appearance and SRI obtained on the jobsite will be influenced by concrete composition, surface finishing technique, and curing compound/sealer selection.

Composition variations that can impact color and final SRI include cement type and color, aggregate selection, and the use of pozzolans such as slag or fly ash. Finishing techniques such as wood float troweled, hard steel troweled, wet broom, or dry broom finishes will influence surface texture, sealer penetration, and final concrete appearance. Differences in sealer or curing compound type, such as water or solvent based, or if no sealer is used, will influence final appearance and SRI.

Changes in water content and water to cement ratio can influence color development. Mix designs that develop excessive bleed water can float pigment to the surface and cause trails of uneven color. Once mix designs are established, avoid adding water to loosen partially cured loads, "watering" concrete with sprinklers as it cures, or using wet brooms and tools.

As freshly placed concrete cures, its color will vary with differences in surface moisture. Concrete curing in shaded areas or in the center of large slabs will surface dry slower than those exposed to sunlight or closer to form edges. Avoid high salt aggregates. If salt content of aggregates are high, efflorescence can bloom to the surface and alter colors in irregular patterns. These visual differences can be long lasting, and raise questions about the quality of the concrete placement. Use SCOFIELD Cureseal-W Concrete Curing Compound and Sealer to avoid these problems and deliver jobs that are uniform in color and appearance.

As with adjustments in mix design, always evaluate composition and finishing techniques as described in section 8. *Jobsite Test Sections* below.

7 Limitations:

The compatibility of SOLACHROME Integral Coloring Treatment for High-SRI Concrete with other admixtures used in the production of concrete must be verified prior to use. SRI determinations were performed using integrated sphere reflective spectroscopy as specified on the SOLACHROME color card. Actual SRI determinations may vary with alternate techniques and normal raw material variance. The use of this product with calcium chloride or high salt containing aggregates may accentuate possibilities of early efflorescence and is not recommended.

8 Jobsite Test Sections:

Prior to large scale production, the concrete or cementitious mix design for each color to be produced must be made. Conduct small scale testing to demonstrate concrete from the mix design meets all slump, flow, air content, compressive strength, and any other required concrete specifications.



Prior to general jobsite use, representative Jobsite Test Section(s) or “Mock-Ups” must be produced and approved for each individual concrete color mix design, surface finish/texture, and for each curing compound/sealer combination that will be created.

Use Jobsite Test Sections to verify entire system suitability including frame/mold and foundation preparation methods, surface concrete specification compliance, finishing techniques, safety procedures, and achieved performance of the fresh and fully cured concrete. When applicable, test completed systems for wet and dry slip resistance. Evaluate polishing or coating application techniques, final color, and visual appearance. Do not proceed with products, techniques, or finishing systems that do not meet required specifications or meet with site owner approval.

Selected Jobsite Test Sections should be in close proximity to the larger job area, and made from the same concrete mix design that will be used on the larger project. Test sections should be sized to be representative of the finished project, and be produced by the same workers who will perform the project installation.

9 Packaging

SOLACHROME Integral Coloring Treatment for High-SRI Concrete is packaged in five-gallon pails.

10 Storage and Shelf Life:

Unopened and stored below 140°F (65°C), SOLACHROME Integral Coloring Treatment for High-SRI Concrete has a shelf life of one year from date of purchase.

11 Cautions

WARNING!

DO NOT TAKE INTERNALLY OR BREATHE IN DUST. DO NOT EAT OR TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. Use with adequate ventilation. Wear NIOSH TC-84A approved dust particulate respirator, eye protecting goggles, and gloves when handling this product.

First Aid: Eyes—DO NOT RUB EYES. FLUSH IMMEDIATELY WITH WATER. Hold eyelids apart while flushing material out thoroughly with large amounts of water. Skin—Wash thoroughly with soap and water. Remove soiled clothing and footwear and wash before reuse. Inhalation—Move to fresh air. If symptoms develop or if ingested, get medical attention.

Wash thoroughly immediately after handling. Do not reuse empty container. Before using or handling, read the Material Safety Data Sheet and Warranty.

12 Availability:

SOLACHROME Integral Coloring Treatment for High-SRI Concrete is marketed internationally through strategically located dealers, and representatives. Scofield offers a complete line of engineered systems for coloring, texturing, and improving performance of architectural concrete. These include coloring admixtures, color hardeners, colored cementitious toppings, stains, curing compounds, sealers, coatings, repair products and texturing tools. Visit the Scofield website at www.scofield.com for further information. This product may be covered by one or more of the following patents: US 7,815,728; US 8,366,824; US 8,157,910, 8,632,631 or Patent Pending.

13 Limited Warranty:

L. M. Scofield Company (Scofield) represents and warrants only that its products are of consistent quality and within manufacturing tolerances. NO OTHER ORAL OR WRITTEN REPRESENTATION OR STATEMENT OF ANY KIND, EXPRESS OR IMPLIED, NOW OR HEREAFTER MADE IS AUTHORIZED OR WARRANTED BY SCOFIELD, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Liability for breach of contract, negligence, or on any other legal basis is limited to the lesser of refund or replacement of defective materials. SCOFIELD WILL NOT BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING FOR DELAYS OR LOST PROFITS. Communication of this warranty and its limitations to end users is not the responsibility of Scofield, but should be communicated by those in direct contract with the end user. Any claim regarding product defect must be received in writing within one year from the date of manufacture. No claim will be considered without such written notice or after the specified time interval. The end user shall determine the suitability of the products for the intended use, and assumes all risks and liability in connection therewith.

SOLACHROME Solar Reflectance Index Laboratory Test Values

SOLACHROME Color	SRI Value with Gray Cement	SRI Value with White Cement
SC4271 Quicksilver	33	56
SC4272 Cool Bimini	37	83
SC4273 Sago Palm	33	54
SC4274 Caribou	32	54
SC4275 Moonstone	36	63
SC4276 Cayman Dream	38	68
SC4277 Laguna Beach	34	67
SC4278 Amethyst Ice	34	64
SC4279 Rose Quartz	32	60
SC4280 Cool Brick	30	55
SC4281 Coco Bay	30	57
SC4282 Cool Canyon	31	56
SC4283 Iced Tea	31	55
SC4284 Cool Taupe	30	56
SC4285 Sunstone	33	56
SC4286 Cold Front	25*	35

* Note that Cold Front does not meet the LEED minimum for SS 7.1 when made with gray cement.



Suggested Short Form Specification for Coloring Concrete Flatwork:

All concrete designated as colored in the plans and specifications shall contain the proper portion of SOLACHROME™ Integral Coloring Treatment for High-SRI Concrete, color designation _____, manufactured by L. M. Scofield Company, (800) 800-9900, Los Angeles, CA, (323) 720-3020 and Atlanta, GA, (770) 920-6000. The color-conditioned admixture shall meet the requirements of ASTM C 979 and ACI 303.1. All SOLACHROME treated concrete shall be cured and sealed with SCOFIELD® Cureseal-W™ Concrete Curing Compound and Sealer.



1 800 800 9900 or www.scofield.com

SCOFIELD PRODUCTS ARE INTENDED FOR PROFESSIONAL USE ONLY

■ **L. M. Scofield Company customer service:** 1 800 800 9900

Western Headquarters: 6533 Bandini Blvd., Los Angeles, CA 90040 **voice:** 323 720 3000 **fax:** 323 720 3030

Eastern Headquarters: 4155 Scofield Road, Douglasville, GA 30134 **voice:** 770 920 6000 **fax:** 770 920 6060

www.scofield.com