

## TECHNICAL SPECIFICATIONS

### IRON OXIDE PIGMENTS

The use of iron oxide colors in concrete has grown to be the single largest application for this type of pigment. This increase in usage has created a demand for better technology and quality control throughout the concrete industry.

### MIXING

- The drum must be cleaned. Do not use reclaimed slurry water or reclaimed aggregates.
- Add approximately two-thirds of the mix water and one-half of the aggregates to the drum, then add color pigment at full charging speed. Add the balance of the ingredients (water, aggregates, cement and admixtures) and mix at a full charging speed for a minimum of 5 minutes (60 revolutions) when using Solomon Color ColorFlo liquid color, or 10 minutes when using dry pigment powder or granules (100 revolutions), before pouring concrete (6.13-7.36 m<sup>2</sup>/L).
- When using small or smooth rounded aggregates, or sand-blasted or exposed aggregate finishes, do not add the bag to the truck. Add only the color pigment by opening the bag and pouring all color into the truck.
- Mixer should be loaded to a minimum of 40% capacity to ensure good color dispersion.
- Be sure to use the same mix design and maintain a consistent water-to-cement ratio throughout the job. The use of plasticizers, water reducers and air entraining products designed for colored concrete production are acceptable. Solomon Colors strongly recommends the use of test slab to determine final color outcome.
- After pour has begun, adding water to the load to improve workability often causes color variation.
- When using Solomon Colors pigments packaged in repulpable bags, slit the bag along the top dotted line, and completely remove and discard the top portion of the bag. Also slit the bag along the other dotted lines before dumping the entire bag into the mixer. Following these guidelines will destroy the paper bag and provide the best dispersion of the pigment.

### ADDITIVES

- DO NOT use calcium chloride. This product can cause discoloration in the form of light and dark areas in the finished product. Non-chloride accelerators, including hot water, are acceptable accelerators.
- Check the compatibility of the mix design (plasticizers, water reducers and air entraining products) with the addition of color by pouring a test slab to confirm the preferred results.

### JOB PREPARATION

Good drainage and compacted aggregate add many benefits to decorative concrete. Pouring concrete over an inconsistent sub-grade or mix of dirt, plastic, wood, asphalt and existing concrete will not cure evenly. These types of sub-grades will force the majority of water to the surface to evaporate, causing efflorescence in those affected areas.

In hot conditions, dampen the sub-grade before each pour to keep moisture in the concrete to allow better hydration. Keep the sub-grade moisture consistent throughout the day without allowing the water to pool.

Jobs requiring a vapor retarder, and job sites having high heat and low humidity conditions, are exceptions to pouring over plastic. Pouring concrete directly over plastic can lead to numerous problems including excessive bleed water, uneven drying time, shrinkage, cracking, and efflorescence. Consider adding 2"-4" of sand between plastic and concrete. If pouring directly over plastic, mix design may need to be altered. Slump and placement techniques require tighter tolerances, and finishers need to be well trained and experienced.

### FOR VERTICAL APPLICATIONS (CAST-IN-PLACE OR TILT-UP WALL)

All forms should be cleaned thoroughly prior to use or reuse, and applied release agents should be non-staining. For best results, forms should be free of cement residue from any prior concrete pour of a different color. Vertical wood forms should be made of medium-density overlay plywood. For color uniformity, methods and material used in preparing the forms should be consistent through the completion of the job. Lightly and uniformly sandblasting vertical surfaces is highly recommended to remove minor form marks and any colored residue resulting from water, cement and coloring agents bleeding toward the forms during concrete placement.

### CURING

- DO NOT fog or spray water on the surface during the initial curing period.
- DO NOT cover the surface with plastic.
- Failure to follow these guidelines can lead to uneven curing and coloration.

Solomon Colors recommends the following products and curing method:

BRICKFORM CURE & SEAL products meet the ASTM Standards C 309 and C 1315 for curing most new colored architectural concrete flatwork. Apply at a rate of 250-300 sq. ft. per gallon (6.13-7.36 m<sup>2</sup> per liter) once the slab is hard enough to be walked on without marring the surface. Use caution when applying these products in high heat, direct sunlight, and/or in windy conditions. Please reference the appropriate Cure & Seal Technical Information Sheet for a full description of the product use, limitations and precautions. Links to these sheets and additional coloring information are available at [www.brickform.com](http://www.brickform.com).

Proper curing, along with maintaining a low slump and protecting the surface against water penetration, reduces the possibility of efflorescence. If efflorescence does occur, remove efflorescence using BRICKFORM E-ETCH. Follow with a light scrubbing or the use of a low r.p.m. rotary scrubbing machine.

### TECHNICAL SPECIFICATION DATA

Composition and Materials: Pigments are pure red, yellow, and black synthetic iron oxides.

Solomon Colors has expanded the color range by formulating laboratory-controlled, high tinting strength pigment blends. Each of these colors is 95% to 99% minus 325 mesh particle size. Solomon Colors iron oxides are permanent, inert, stable to atmospheric condition, sunfast, limeproof, and free of deleterious fillers and extenders. All Solomon Colors pigments comply with ASTM C979 for integrally colored concrete and are produced and tested to an established plant standard.

### SOLAR REFLECTANCE INDEX (SRI)

SRI is the measure of a surface's ability to stay cool in the sun by reflecting solar radiation and emitting thermal radiation. The SRI value is calculated according to ASTM E 1980. Please visit the Solomon Colors website for additional SRI information: [www.solomoncolors.com](http://www.solomoncolors.com)

### LIMITATIONS

A level of 7% (by dry weight) color based on the weight of total cementitious material used is the color saturation point. Color added in excess of 10% (by dry weight) can reduce the overall strength of the finished product. Conversely, a level of color below 1% can cause irregular coloring and general "washed out" appearance. The suggested "optimum" range is 2% to 4% pigment loading based on total cementitious material weight.

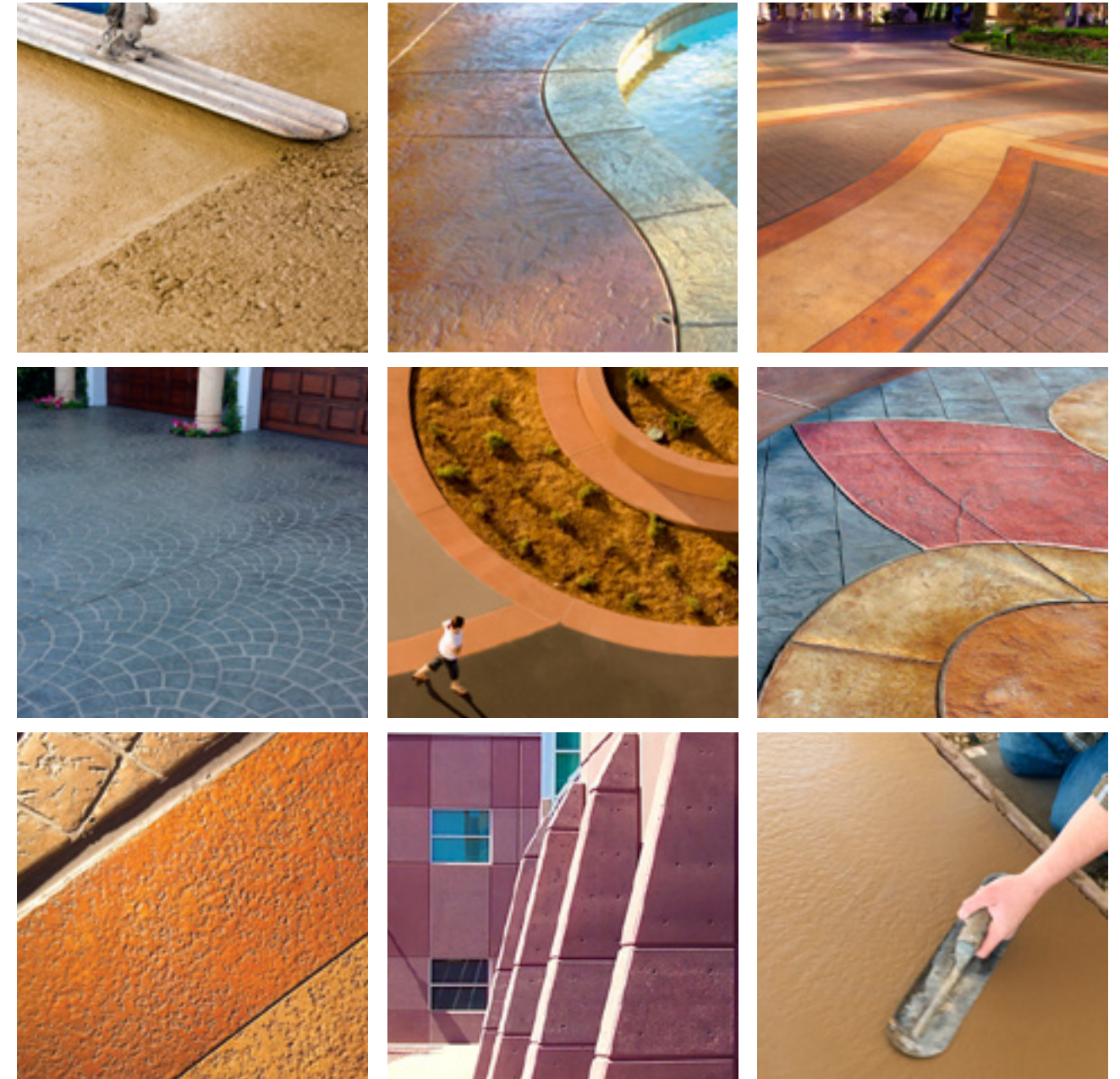
When using our 908 CARBON BLACK, a level of 2% color based on the weight of total cementitious material used is the color saturation point. Color added in excess of 2% will not provide additional benefits. The suggested "optimum" range is 1% to 2% pigment loading based on total cementitious material weight. (Cement, Lime, Fly Ash, GBFS and other Pozzolan materials). Due to the particle size of Carbon, it has a tendency to dissipate out of concrete over time. Solomon Colors recommends sealing the concrete with a Brickform concrete sealer. It is important to maintain a proper sealer maintenance program to protect the surface color, as this will help slow this process down and in some cases prevent it. Carbon particles will decrease the amount of entrained air during the mixing process. Monitoring air content to specification will be necessary.

### LIMIT OF WARRANTY AND LIABILITY

Solomon Colors, Inc. warrants that their products conform to the description and standards as stated on the product packaging and specific product literature. If properly mixed and applied, Solomon Colors, Inc. warrants the color to be uniform, limeproof, and sunfast. The exclusive remedy of the user or buyer and the limit of the liability of this company shall be the purchase price paid by the user or buyer for the quantity of the Solomon Colors, Inc. products involved.

For more information go to:  
[www.solomoncolors.com](http://www.solomoncolors.com)  
[www.brickform.com](http://www.brickform.com)

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# READY MIX COLORS

ColorFlo® CF Liquid / ColorFlo® SG Granular / Dry Integral Color

These color chips represent shades of integral colors based on medium tone gray Type I-II Portland cement with 4" slump. Use this chart as a guideline only. The colors may not exactly represent the final color. Shade variations of cement and aggregate, plus variations in the mix design, volume of water, addition of admixtures and other additives, etc., may have an effect on the final color. Therefore, we recommend that a test slab be poured and approved prior to the start of the job.

413 Colony Red	413 Clay (SRI 50)	750 Desert Tan (SRI 45)	750 Salmon (SRI 45)	306 Canvas (SRI 37)	306 Toffee (SRI 29)
413 Fox Red (SRI 37)	413 Terra Cotta (SRI 48)	750 Prairie Tan	750 Peach	306 Burlap (SRI 29)	306 Cinnamon
417 Rose	417 Brick Red (SRI 40)	775 Sand (SRI 46)	775 Cedar (SRI 45)	238 Thyme (SRI 44)	238 Doeskin (SRI 41)
417 Paver Red	417 Apple Red	775 Camel (SRI 45)	775 Sedona	238 Buttercup (SRI 44)	238 Marigold
489 Dusty Rose	489 Light Plum (SRI 24)	757 Buckwheat (SRI 44)	757 Pecan (SRI 41)	338 Earthen	338 Rawhide (SRI 25)
489 Redwood (SRI 22)	489 Dark Redwood	757 Antique Gold (SRI 41)	757 Old Gold	338 Buckskin (SRI 24)	338 Leather
288 Rosemary	288 Ginger (SRI 41)	755 Trail Dust	755 Driftwood (SRI 40)	385 Taupe (SRI 29)	385 Lava (SRI 23)
288 Bamboo (SRI 41)	288 Straw (SRI 48)	755 Spice (SRI 41)	755 Apricot	385 Buffalo (SRI 20)	385 Bark (SRI 16)

242 Sandstone (SRI 36)	242 Sahara (SRI 46)
242 Sandalwood (SRI 24)	242 Nutmeg
492 Mauve	492 Merlot
492 Lilac	492 Garnet
467 Ash	467 Oyster (SRI 15)
467 Orchid (SRI 13)	467 Rustique
908 Lunar Eclipse	908 Asphalt
<p>Caution: 908 Carbon Black can negate the amount of entrained air in the concrete mix. See back page for more information.</p>	
908 Ultra Black	

5092 Olive	5092 Sage	920 Slate (SRI 22)	920 Smoke
5092 Avocado	920 Charcoal	920 Onyx	
115 Limestone	115 Shell (SRI 56)	600 Fog (SRI 61) 600 Fog is 2% white in gray cement	
115 Yellow (SRI 44)	115 Safety Yellow*	600 Ceramic (SRI 71) 600 Ceramic is 4% white in gray cement	

\*115 Safety Yellow is a 4% loading in white cement.

DRY PIGMENT DOSAGE RATES (25 LB. & 6.25 LB. BAGS)			
1 - 6.25 lb. bag per 1 yard 1 - 25 lb. bag per 4 yards	2 - 6.25 lb. bag per 1 yard 1 - 25 lb. bag per 2 yards	4 - 6.25 lb. bag per 1.5 yards 1 - 25 lb. bag per 1.5 yards	4 - 6.25 lb. bag per 1 yard 1 - 25 lb. bag per 1 yard
413 Colony Red	413 Clay	413 Fox Red	413 Terra Cotta
750 Desert Tan	750 Salmon	750 Prairie Tan	750 Peach
306 Canvas	306 Toffee	306 Burlap	306 Cinnamon
417 Rose	417 Brick Red	417 Paver Red	417 Apple Red
775 Sand	775 Cedar	775 Camel	775 Sedona
238 Thyme	238 Doeskin	238 Buttercup	238 Marigold
489 Dusty Rose	489 Light Plum	489 Redwood	489 Dark Redwood
757 Buckwheat	757 Pecan	757 Antique Gold	757 Old Gold
338 Earthen	338 Rawhide	338 Buckskin	338 Leather
288 Rosemary	288 Ginger	288 Bamboo	288 Straw
755 Trail Dust	755 Driftwood	755 Spice	755 Apricot
385 Taupe	385 Lava	385 Buffalo	385 Bark
242 Sandstone	242 Sahara	242 Sandalwood	242 Nutmeg
5092 Olive	5092 Sage		5092 Avocado
920 Slate	920 Smoke	920 Charcoal	920 Onyx
492 Mauve	492 Merlot	492 Lilac	492 Garnet
115 Limestone	115 Shell	115 Yellow	115 Safety Yellow
467 Ash	467 Oyster	467 Orchid	467 Rustique
600 Fog			600 Ceramic

908 CARBON BLACK COLOR SHADE GUIDELINE		
1 - 6.25 lb. bag per 1 yard 1 - 25 lb. bag per 4 yards	4 - 6.25 lb. bags per 3 yards 1 - 25 lb. bag per 3 yards	2 - 6.25 lb. bag per 1 yard 1 - 25 lb. bag per 2 yards
908 Lunar Eclipse	908 Asphalt	908 Ultra Black