Thinking About Automating Color In Your Plant

A Step-By-Step Guide To Making The Right Decision

Why automate your color?

• **Reduce batch errors.** Eliminates any chance of employee error, and there is no waiting for a person to weigh or empty pigment into the mixer. Automatic metering systems weigh precisely the correct pigment(s) each time and add the color to the mixer at the right time, every time.

• **Improve housekeeping.** Color metering systems are fast, accurate, enclosed, and automatic. Eliminates pigment dust caused by emptying bags of color into the mixer.

• **Lower labor costs and worker compensation claims.** Reduces labor and improves worker safety.

• **Create an unlimited color range from four primary pigments.** All that is needed to create a wide color pallet are two shades of red, one yellow, and one black. From these four colors, the system chooses the exact amount of the right pigment each time using a predetermined formula. The color system stores recipes for standard colors, and custom formulas can be entered easily. Additional hoppers for unique colors - like green - should be discussed.

• **Get custom colors immediately.** Eliminate waiting for your pigment supplier to pre-blend a custom color. Instead, enter a new formula into the color system for a new custom color immediately.

• **Reduce inventory of pigment.** Stock the four primary color shades only, not a wide range of colors in custom sized bags.

• **Automatic record keeping.** Each system is different in its ability to store batch information and print records. Consult the manufacturer for details.

Your choices in automation are dry pigments or liquid colors

Years ago, there was not a color metering system that could accurately weigh and meter dry pigment powders to the mixer. That is why over 20 years ago pigment manufacturers developed liquid colors: Pigment in a liquid "suspension" and a system that pumps that liquid color to the mixer.

But liquid colors posed other problems, so pigment granules were developed. Granules are many particles of standard Bayferrox iron oxide pigment powders that are held together by a binder. The Bayferrox granules are pure pigment that flow freely, like sugar, making it easy to automatically weigh and convey each batch of pigment accurately.

Today, with Bayferrox and LANXESS you have choices in automation:

- Dry powder metering
- Dry metering of granules
- Dry-to-wet metering for granules and powders

There are several approved vendors of a variety of metering systems for Bayferrox pigments. Each system uses 4 primary Bayferrox colors to create a wide variety of shades.

Bayferrox® iron oxide pigments

A. ISO certified and made by LANXESS. All Bayferrox manufacturing sites have ISO Certification. This is your guarantee that all steps in the manufacturing process have been outlined and are being followed to assure color consistency.

B. Meets ASTM requirements. Iron oxide pigments for concrete must be alkali resistant, light fast, water insoluble, chemically inert, and weather resistant to meet ASTM C-979 specifications.

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Bayferrox® pigments... *(Continued from page 3)*

C. Will not freeze, settle, or evaporate. As a dry pigment, the Bayferrox pigments are not subject to the problems that may affect liquid colors.

D. Has lower freight costs. Liquid colors contain water that weighs eight pounds per gallon. That's a lot of added freight.

E. Has no hidden costs. There is liquid pigment left over in totes, or totes to clean, dispose of, or return.

Automatic metering systems for Bayferrox® pigments

- There are systems that weigh and convey the 4 primary colors dry, right into the concrete mixer.

  1. Each primary color is weighed separately.
  2. Once all colors are weighed, they are transferred to the mixer.
  3. The action of the mixer and the aggregates disperses the pigment throughout the concrete mix to create the desired final color.

- There are systems that convert the Bayferrox pigment into a liquid on a batch-to-batch basis, then transfers the "liquefied" color to the mixer.

  1. Each primary color is weighed separately.
  2. The pigment is mixed with a predetermined amount of water.
  3. The "liquefied" pigment is transferred to the mixer.
  4. The lines are rinsed after each cycle to avoid any color contamination.

Call for a quote and more information about the system you want!

Slurry Price per pound	$0.60	$0.65	$0.70	$0.75	$0.80	$0.85	$0.90	$0.95	$1.00
Percent Pigment in Slurry	Pigment in Slurry Cost Per Pound Formula is cost/pound of slurry ÷ % solids = cost/pound of dry color								
55%	$1.09	$1.18	$1.27	$1.36	$1.45	$1.55	$1.64	$1.73	$1.82
60%	$1.00	$1.08	$1.17	$1.25	$1.33	$1.42	$1.50	$1.58	$1.67
65%	$0.92	$1.00	$1.08	$1.15	$1.23	$1.31	$1.38	$1.46	$1.54
70%	$0.86	$0.93	$1.00	$1.07	$1.14	$1.21	$1.29	$1.36	$1.43
75%	$0.80	$0.87	$0.93	$1.00	$1.07	$1.13	$1.20	$1.27	$1.33

Liquid colors

One pound of slurry @ 65% solids (specified on the drum) is .65 pounds pigment and .35 pounds water. And all slurries are not equal. Some have higher solids than 65%, some lower.

Here is a simple calculation to use to find out exactly the price per pound for the pigment in the slurry:

Cost per pound of slurry ÷ percent solids = cost per pound of dry color in the slurry

This is a good number to know when considering Bayferrox.

The chart above shows some average costs of slurries, and what the pigment in that slurry actually costs.

Automatic metering systems for liquid colors

Liquid color metering system may be $10-15,000 (or more) cheaper than a system for Bayferrox pigments as described above. Look at the "hard" and "soft" savings you will have using Bayferrox pigments. The time it takes to recover the cost difference depends on the amount of color you purchase annually.

Dry-to-Wet System

Manufacturers of Tested and Approved Metering Systems:

Advanced Concrete Technologies (ACT)
603-431-5661
www.concretebiz.com

Eagle Engineering
989-356-4526
www.eaglecompanies.com

FINKE available from
Turmac/Columbia Machine, Inc.
360-905-1640
www.turmac.com

Standley Batch Systems
1-800-325-8084
www.standleybatch.com

Dry Metering System

For more information on Bayferrox® pigments, or for assistance in choosing the right system for your application contact LANXESS.

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Note: The information contained in this bulletin is current as of June, 2007. Please contact LANXESS Corporation to determine if this publication has been revised.