

Milliken®

# Reactint®

Colorants for Polyurethane



Milliken™



# Why Color Polyurethanes?

Color is a powerful tool in the marketing of products. At Milliken we believe color makes products better, and better colors make better products. In polyurethane applications color can be used to create value in various ways:



## Associations

- Green = Fresh and natural
- Pink = Relaxing and inviting
- Purple = Exotic and energetic
- Blue = Lively and regal
- Orange = Optimistic and powerful



## Functional benefits

- Mask stains, yellowing, & surface damage
- Coordinate packaging with products
- Enable visual detection of products
- Consumers associate color with value

## Differentiation and customer appeal

- Color is a key differentiator in some markets
- Color adds consumer appeal



## Property identification

- Grade Identification
- Density Identification



## Branding

- Color can be tied to a brand and carry the brand image
- Most successful consumer products companies have a "signature" color

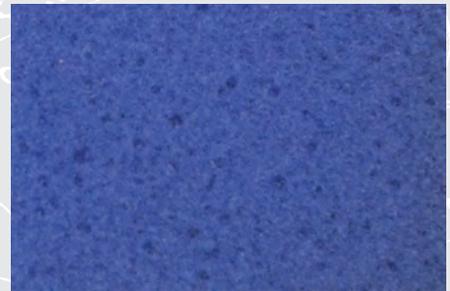
# Why use Reactint® Colorants?

## Better Colors...Better Cost Efficiency

- **High color strength**  
Typically 3 - 5 times stronger than pigments. (See photo at right)
- **Cost effective matches**  
Our color matching experts can formulate the most economical blends of Reactint primary colors.
- **Reduce waste from color changeover**  
Short color transitions because of the high polyol solubility of the colorants.
- **Improve product quality**  
Eliminates problems (such as voids, cracks, and slow rise times) often seen with high dosage levels of pigments.
- **Reduce color inventory**  
Virtually any color desired can be produced from just a few (3 to 5) Reactint primary colors.
- **Eliminate obsolete inventory**  
Make to order only what your customers need, when your customers need it.

## Better Colors...Better Product Appearance and Quality

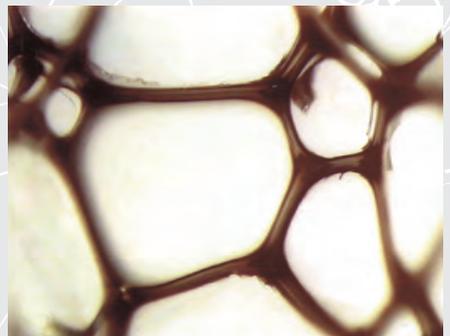
- **Deeper and brighter shades**  
Dosage levels required to achieve very dark colors are possible without effecting the physical properties of the foam or resin system.
- **Non-migrating and non-extractable**  
Color reacts into the polyurethane matrix regardless of color depth, and once locked in it will not extract.
- **Less streaking**  
Proper introduction of these low viscosity, highly soluble colors will help reduce streaking problems in polyurethane applications.
- **Reduced scorch**  
Reactint colorants are free of heavy metals (i.e. copper, iron, chromium, etc.) and will not promote scorch.
- **No effect on polyurethane system**  
Reactint polymeric colorants become part of the urethane resin matrix. They are not solid particles and will not nucleate or cause voids, and they have little or no effect on catalyst loading or foam formation. (See photo at right)



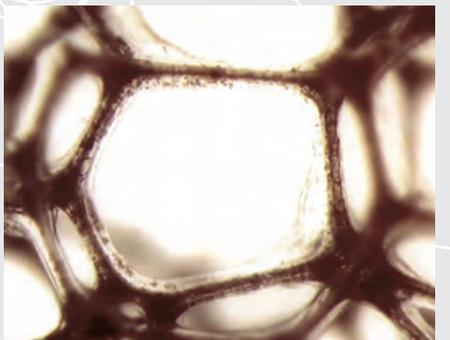
1.2 php  
REACTINT BLUE



4.0 php  
BLUE PIGMENT PASTE



Reactint Colorants



Pigment

# Why use Reactint<sup>®</sup> Colorants?

## Better Colors...Better Manufacturing and Ease of Use

- Easy clean-up  
Cold water soluble.
- No stirring or mixing necessary  
Homogeneous, polyol soluble liquids that will not settle.  
(See below)
- Easy to pump and meter  
Low viscosity and high surface tension make Reactint Colorants easy to use in color systems at room temperature.
- Reduced equipment wear  
Unlike pigments, these liquid colorants are non-abrasive and will not damage pumps, nozzles, tank linings, etc.
- Versatile  
The same Reactint Colorants can be used in both polyether and polyester urethane systems.
- Consistent product  
Milliken operates ISO 9001 and 14001 certified production facilities at the highest standards of operational excellence, to produce consistent, first quality products for each shipment to our customers.
- Less space required  
Keep only 5 primary colors in inventory to produce all other colors.



# Why use Reactint<sup>®</sup> Colorants?

## Better Colors...Better Service and Support

- **Rapid delivery**  
Worldwide inventory of primary colors.
- **Fast and efficient color matching**  
Rapid matching and delivery of custom blends by Milliken's color labs allow you to respond quickly to your customers' unique color requests.
- **Color delivery system expertise**  
Milliken's personnel have years of experience implementing efficient Reactint color dosing systems, and are available to assist you.
- **Experienced global sales coverage**  
Milliken's global sales force is comprised of experienced chemists and chemical engineers.
- **Global technical support**  
Technical Service and Applications laboratories at Regional Headquarters in Spartanburg, USA; Gent, Belgium; Singapore; Shanghai; Pune, India; Mexico City, Mexico; & Sao Paulo, Brazil.
- **A wide range of analytical capabilities to meet your needs** including GC/MS; Headspace Analysis; GC Olfactory Analysis; and UV Exposure Testing.



## Product Offering

### Better Colors...Better Choices for You

- **Primary Colors**  
Blue, Red, Yellow, Violet, Orange  
Create virtually any shade with these five primary colors.
- **Custom blends**  
Our in-house color matching service can provide a custom blend to meet your specific needs.  
Let us develop a color just for you.
- **Standard black blends**  
Several different black options to meet your individual requirements.



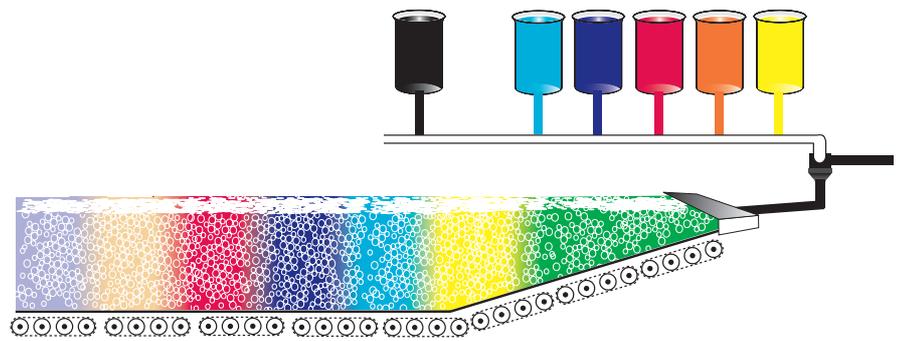
# Color Dosing Options

## Color Metering Systems

Reactint Colorants can be used in various types of color system designs to meet your needs.

### Reactint® Blend-on-the-Fly System

With only a few tanks of Reactint primary colors, a wide range of colors can be produced automatically while pouring slabstock foam.



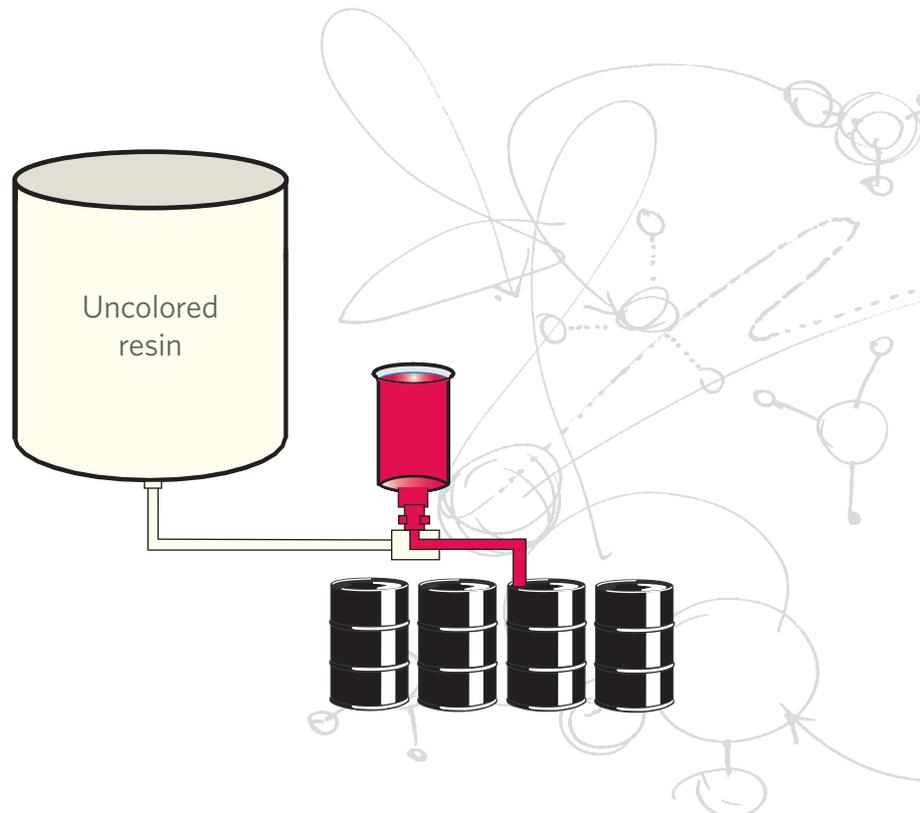
### Batch Dosing System

Provides a convenient and precise way to dispense color for manual batch processes.



### Reactint In-Line Dosing System

Color can be introduced into the polyol side of a polyurethane system downstream in the manufacturing process.



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