



Controlling Variation in a Paint Color

Innovations and technologies in paint coatings, such as micas and metallics, have helped to create some incredible buildings. Unfortunately, matching coatings across all the building components can present difficulties in achieving a consistent color.

In most cases the visual difference in painted coatings on a building are minimal. To help minimize color-matching issues keep in mind the following:

- When selecting and approving color chip samples for your project, view them outside, under natural light, rather than in an office with artificial lighting.
- Paint chip samples should be viewed under the light source in which the finished project will be seen. The appearance of a color can also be altered by the height, angle and distance of the light source.
- The time of day and the time of year can influence the visual perception of a color. Atmospheric conditions can also alter natural light.
- Mica and metallic coatings will reflect different appearances according to nearest light and the orientation of the individual flakes within the coating. Paints containing mica or metallic pigments will show some variation in appearance caused by an extensive list of variables, some of which are uncontrollable. ([read more](#))
- Gloss and surface characteristics may vary from samples to the actual aluminum used for project, as color can appear different over different metal types and alloys.
- Sample chips are prepared in a lab, while project material will be painted in the production line. The lab and production line operating conditions are not the same; temperatures, humidity, cure process and other variables can affect the color difference.
- Color matching problems can occur when multiple coating applicators are used. Applicators have various levels of technologies and methodologies. The more enhanced the applicators technology and equipment, such as automated lines, the less risk of color variation.
- Choosing the same color in different resin systems, such as Kynar and baked enamel, doesn't always create the exact same color; and over time, the color difference will increase dramatically as each resin system weathers at a different rate. If more than one performance specification is required, match and approve colors in each resin system prior to application.

Before final color approval, obtain painted sample chips from the applicator(s).

Paint color range samples are not typical, as they would be with an anodize color sample. Most often, a standard color is selected and approved. The color difference or variance (delta E) is a measured

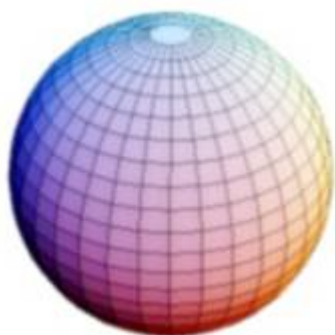
vector from that color point in the color space. The point is generally measured on a **Lab** color space scale.

A **Lab** color space is a color-opponent space with dimension L for lightness and a and b for the color-opponent dimensions. With the Lab scale:

“L” is Light to Dark

“a” is Green to Red

“b” is Blue to Yellow



Color is three dimensional (imagine a sphere) and therefore is measured from a point, rather than by a range.

Providing a color range for a single paint color would mean hundreds of combinations of ranges around that single color point. Therefore, a “standard” is produced and color variance is measured from that standard.

One exception to this rule is silver metallic paints. Because the “a” and “b” are sufficiently stable, the “L” measurement of light to dark can be used to create a range. Also, with their high degree of transparency, silver metallics are not easily measured using the Lab scale.

Contact [Linetec](#) to help effectively manage color expectations for your building projects.