

ALUCOBOND® PLUS

GIVING SHAPE TO GREAT IDEAS

Let's Talk Tech

Color Differential

Keeping colors consistent with ACM is vital for customer satisfaction. ALUCOBOND® PLUS is manufactured with stringent testing requirements to determine the color differential from one panel to another. With the introduction of a new, advanced, in-house paint line in 2023, the ability to create consistent color has never been more top of mind.

FIND

01

Hunter Lab

02

Delta Color Perception

03

Visual Test

04

Wrap Up



Project: 272 4th Ave
Location: Brooklyn, New York US
Architect: L+Z Architecture DPC
Fabricator: Bolton Cladding
ALUCOBOND PLUS: Oyster

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Color Differential

Hunter Lab

ALUCOBOND’s colors are produced against a master color standard. This master color standards form the baseline for the colors to be matched on the paint line. Once paint has been applied to the aluminum, a comparison is made between the newly coated aluminum and the original master standard. This is done using a Hunter Lab spectrophotometer which tests the color in absolute values in “Lab” space to define the color. (See Figure 1).

- L (Lightness): Measures lightness, from 0 (black) to 100 (white).
- a (Red/Green axis): Positive value move towards red, negative towards green.
- b (Yellow/Blue axis): Positive values move towards yellow, negative towards blue.

Figure 1

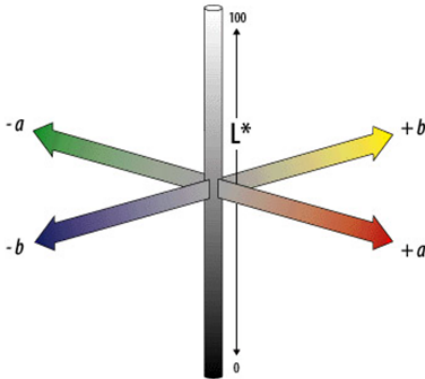
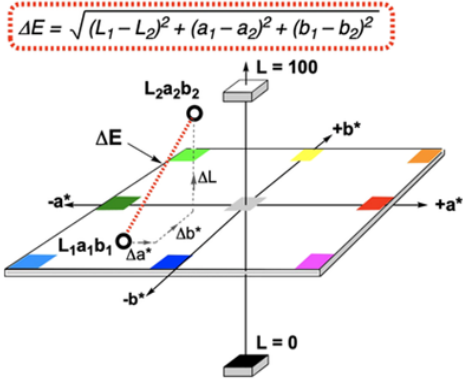


Figure 2



The Hunter Lab value is compared directly with the original master color standard and a total ΔE value is determined. This is done by using the following equation:

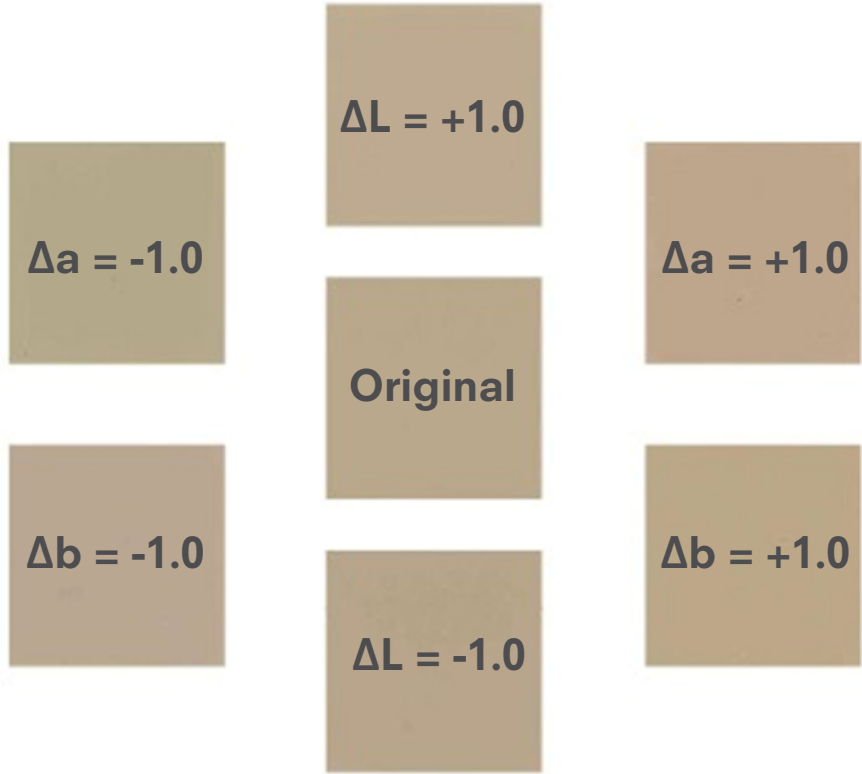
$$\Delta E = \sqrt{(L_1 - L_2)^2 + (a_1 - a_2)^2 + (b_1 - b_2)^2}$$

The closer to a ΔE is to 0, the closer the sample is to the original master color standard. (See Table 1). A ΔE of no greater than 2.0 is required and aligns to American Architectural Manufacturers Association (AAMA) 2605 “Voluntary Specifications, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.” (See Figure 2)

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Color Differential

Table 1 - Delta Color Perception



Color difference perception can vary based on digital settings and individual subjectivity. Color perception is also impacted by gloss. Gloss does not change the color of a sample it does change how we perceive the color. Higher gloss makes colors appear richer, deeper, and more vibrant, while lower gloss (matte - typically 0-10 gloss) scatters light, making colors appear lighter or softer. Pearlescent mica and metallic flakes reflect and scatter light in random patterns; therefore, exact color uniformity should not be expected. Slight color shifting should also be expected when viewing from varying angles and distances. Equipment considerations affect color and are especially critical with multiple applicators.

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Color Differential

Visual Test

Along with using the Hunter Lab spectrophotometer for measuring the production sample panels against the original master color standards, 3A Composites also performs visual tests per ALUCOBOND's Quality Program. Per AAMA 2605, sheets must be directly compared visually from 10 feet at a 90° angle. ALUCOBOND is evaluated under an even more stringent quality protocol internally before releasing each lot. Every sample is evaluated next to the original master standard from 8 feet at 30°, 60° and 90° as part of our production lot quality control. These measures ensure not only compliance with AAMA 2605 requirements, but also reinforce ALUCOBOND's commitment to exceeding industry standards; providing consistent color integrity, finish uniformity, and the highest level of quality assurance before any material reaches your jobsite.

Wrap Up

While matching colors on aluminum can be challenging, ALUCOBOND by 3A Composites has taken multiple steps to ensure color consistency by using human visual quality verification along with instrumented measurement techniques. When ordering materials, order all panels at the same time. If panels are ordered in separate batches, color is not guaranteed to be consistent. For additional technical literature on this topic, please find "[Let's Talk Tech – Finish Consistency](#)" or contact your local Sales Manager. <https://www.alucobondusa.com/contact>

Disclaimer: This Let's Talk Trends has been developed to transmit information and assist fabricators to work with ALUCOBOND® PLUS materials in the most efficient and effective manner. The data contained in this document is based on information that is, in our opinion, reliable. However, since skill, judgment, and quality of equipment and materials is involved and is beyond the control of 3A Composites USA, Inc., the information provided is without guarantee. We recommend that prospective users determine the suitability of the material and suggestions before adopting them on a commercial scale. 3A Composites USA, Inc. does not make any warranties, express or implied including merchantability and fitness for purpose, with respect to any said suggestions and product data. In no event shall 3A Composites USA, Inc. have any liability in any way related to or arising out of said suggestions and product data for direct, special, consequential or any other damages of any kind regardless whether such liability is based on breach of contract, negligence or other tort, or breach of any warranty, express or implied.