

Aluminum Citings

Anodizing 101

What to Expect from Anodized Metals

by John B. McClatchey Jr.



I've been hearing about anodizing as long as I've been alive. My grandfather started our company in 1946. Back then, anodized aluminum was cutting-edge. Not many people knew what it was used for and even fewer people knew how it was done. In my youth, when I would hear my father talk about anodizing, I actually thought it was the process that made glass reflective. If only it were that easy.

Most of you know what anodized metal looks like. For most glass and glazing contractors it is a flat or satin finished piece of aluminum in either a satin clear (silver), a shade of satin bronze (light, medium and dark) or a satin black finish. Anodized aluminum is created by dipping mill-finished aluminum in a series of specific chemicals at a certain temperature for a certain amount of time and passing a certain amount of electrical current through it. But for architectural aluminum, it doesn't matter as much to the glazing contractor how anodizing occurs, but rather what to expect.

Expect Color Variances

Since I grew up working at my family's aluminum finishing plant I have learned many lessons. I have learned that stray cats in Atlanta tend to breed around anodizing facilities, I have learned that a family business can be both a challenge and a reward and I have learned that we are all at the mercy of our metal. Let me take this opportunity to state one thing first and foremost about anodizing: expect color variation. It may be one out of 100 pieces, it may be one or two pieces or, occasionally, uniformity can even be achieved against the odds.

Here is Why

Aluminum has many different elements in it. Just as with any metal, there are different alloys. Our company, for example, uses two aluminum alloys when it comes to anodizing. We use 5005 alloy for sheet and we use 6063 for extrusions. These alloys are anodizing quality. This does not mean that they are the same, however. Again, it is a fact: there will be color variation.

The first and most common variation arises from the fact that different batches of metal will anodize differently. If we have metal from a customer who wants us to anodize his metal as well as SAF's, or wants us to anodize to match their material that is already anodized, expect color variation. Metals are made of different materials. Because of the number of variables involved in anodizing, the slightest difference in what constitutes a particular alloy of aluminum can cause a different appearance.

Problems May Arise

To many architects variation is a problem. These days a uniform finish is often desired. If an owner/architect/general contractor wants a uniform finish, they should choose paint and not anodizing. Painting is more costly, but anodizing offers a more natural depth of color than paint.

The other problem, although less frequently, arises when glazing contractors want uniformity while confronting different alloys, usually while attempting to match anodized sheet to anodized extrusions. Though a batch of metal for a particular alloy has different slightly alloying constituents, different alloys have even greater differences. The majority of anodizing quality extrusions is 6063 alloy. The majority of anodizing quality sheets are composed of 5005 alloy. The clear and dark anodized aluminum for both are relatively well defined. No matter if it is 6063 or 5005, clear and dark bronze anodized material will have less variation (will be more likely to match). When compared, 5005 light and medium bronze and 6063 light and medium bronze can vary radically. Again, this is because the elements in the alloys are very different. Light and medium bronze are affected by these differences. Compared to 6063 medium and light bronze extrusions, medium and light bronze sheet can come out with a green or gray tint. The key factor is having an anodizer that can take a target sample and use that target to match. The industry is lucky that technology is available to define how close a batch of anodized material comes to its target.

Anodizing provides a natural finish at a much more reasonable price. The most important consideration is that all parties involved must realize that the natural appearance will also have some variation. Educating yourself and others when it comes to an anodized job will save headaches, time and money. You should be able to understand and explain anodizing variations—and expect them.

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