

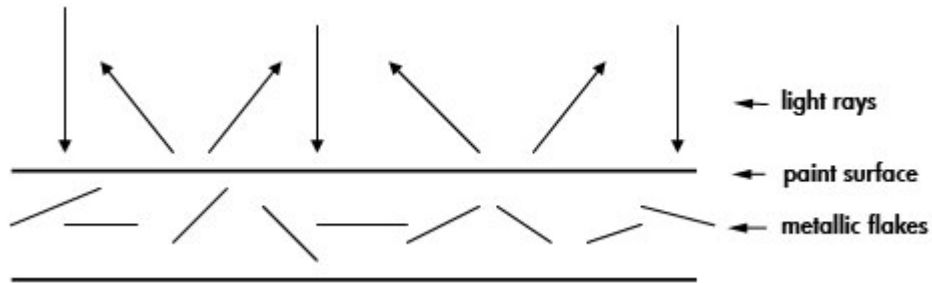
Metallic Paints

Metallic paint coatings can add a unique vibrancy and visual appeal to your project. Their lively appearance is caused by the way visible light is reflected off of the metallic flakes.

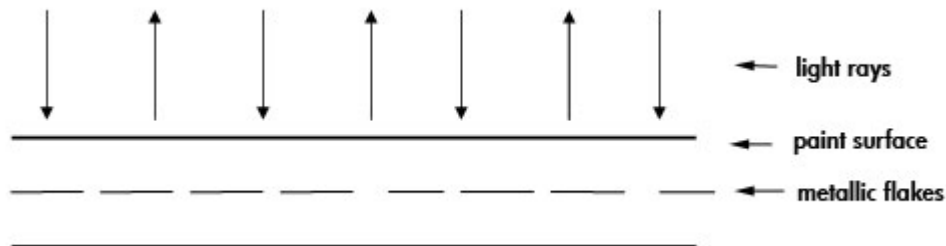
Variations in Appearance

Be aware that the same qualities creating depth and brilliance can also cause variations in appearance within a project or even within a single part. Specifically, metallics can have variations in the level of brightness, i.e. dark and light areas. The reflective property of the metallic flakes means that the same metallic painted surface will look different depending on the viewing angle, the angle of the light source (e.g. the sun), and the intensity and type of the light source. In addition, the general orientation/directionality of the metallic flakes in the paint will also affect the brightness of the color, which is the undesirable but necessary reality of metallic paints. This is sometimes referred to as the “flop of the flake”.

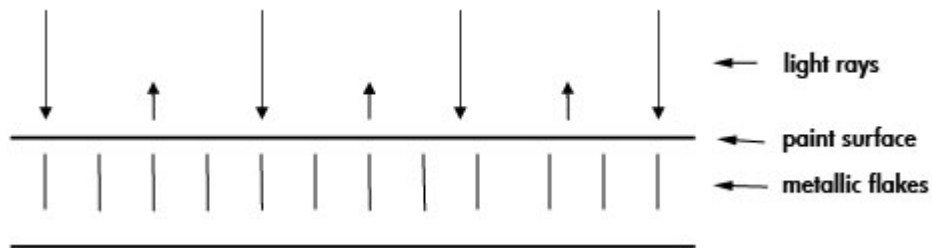
To better understand the optical dynamics of metallic paints, it is helpful to think of the flakes as tiny mirrors. The flakes that lie horizontal in the paint will reflect the most light. In an optimally applied metallic paint, the flakes all lay perfectly random. This will achieve the greatest level of “sparkle” and depth.



Now consider the two extreme alternatives. If all of the flakes in the paint lie horizontally, the surface will appear very bright and will almost appear solid rather than “sparkling”. Maximum light is reflected back to the observer. If metallic flake content is high, the surface will actually appear to be a solid color paint rather than a metallic.



In the other extreme, if all of the flakes lie vertically in the paint, very little light will be reflected back to the observer. The surface will appear dark. Less sparkle will be seen as well.



Coil-Coat & Spray Application

A consistently random flake orientation is the ideal medium. Achieving this is practical and realistic with "coil-coated" sheet stock. With a coil coating process, there are virtually no application variables involved. Part geometry – continuous flat sheet – is constant, spray distance is constant, etc. As a result, it is possible to attain a consistent random orientation of the metallic flakes, and a uniform color and brightness.

Unfortunately, a spray-application process has more variability which reduce the ability to achieve perfectly random flake orientation. These process variables include different part geometries, electrostatic/grounding effects (even if electrostatic equipment is not used), fluid pressures, paint to part distances, overlapping spray areas, and supplemental handspray to reach recessed or corner areas.

As a result, spray-application – which will be used on any aluminum parts other than flat sheet in stock colors – will often show some variation on metallic paints. Faced with this reality, the question for architects, owners, contractors and material suppliers then becomes how to manage and minimize the risk of metallic variation.

Manage and Minimize the risk of Metallic variation

Step one is to recognize jobs that have the greatest risk. Jobs that have the following design or location characteristics increase the risk of visible metallic variation:

- Bright silver metallics in particular. Your paint applicator can advise you if the particularly metallic color you have selected is a higher risk.
- Wide continuous painted surface areas. A job with lots of panels is more likely to show variation than a job with aluminum extrusions (window or curtainwall framing) or a job with panels that are separated by masonry or other materials that break the continuity of panels.
- Shaded walls. The same panel will show more variation in shaded light than it will in full sunlight.
- Large break metal panels. Fabricated/bent panels are much more likely to show variation than flat panels or sheets. The variables in the paint application process mentioned above become even larger with complex shapes and larger parts.

If your job does have these characteristics, consider the following options to reduce that risk of jobsite issues and achieve a more consistent appearance:

- Paint all material at same time, if possible. If not practical, at least paint all adjacent parts at the same time.
- Minimize the number of paint applicators on the job to give the project manager better overall control of color variations. Different paint applicators use different painting equipment, which will create differences in color, especially with metallics.
- Advise all parties (architect, owner, general contractor, glazier, etc) up-front that some degree of variation is expected. Industry standard variation is typically 2 Delta E's, and samples of 2 Delta E variation can be provided to the parties involved to show examples what that variation can look like.
- Request color sample chips from the applicator rather than the paint manufacturer. The painter's application equipment can result in a slightly different color or appearance relative to the paint manufacturer's samples produced in a lab.
- Ask your paint applicator about alternative metallic colors. Some metallic colors are more prone to showing variation than other colors, due to differences in size of flake and amount of flakes in that paint.
- Substitute a 2-coat mica flake paint rather than a 3-coat metallic flake paint. Mica flakes are far less sensitive to flake orientation dynamics, and nearly eliminates the risk of variation. However, mica based coatings do not have quite as much brilliance and depth compared to metallics.