



PRECISION COATINGS INC.

Metallic and Iridescent Finishes in Architecture

Precision Coatings metallic and iridescent performance coating systems provide special optical effect finishes that go well beyond standard architectural paints. In using these high-performance coatings, consideration should be given to the surface preparation, equipment and applicator skills required to optimize application and performance of the coating system. The following process description is designed to assist the commercial coatings contractor in assessing the time and costs that should be considered when estimating the application and material costs of applying special effects coatings.

The application of metallic and iridescent finishes on architectural structures in a field application is a multi-step process requiring a well thought out procedure, good application skills, ultra-violet resistant primers, specialty application equipment, consistent air supply and an expectation of a production rate that is a fraction of the rate typically used in the application of most opaque architectural paint products. Metallic and iridescent finishes are translucent or clear resin systems with three-dimensional pigments that layout in a pattern that is dependent on the application technique employed by the applicator, the consistency of the air supply and steady flow of pigment through the gun.

Geometry of Substrate and Mock-Ups

Before the application of any coating, the geometry of the substrate must be considered. Difficult shapes, angles and hard to reach areas that pose a problem for the applicator to keep the gun perpendicular to the surface must be assessed. A plan should be developed to work with the geometry and a mock-up should be provided so all parties have the same level of expectation for appearance. Consideration should also be given to not coating areas with metallics or iridescent finishes that will not be able to provide the desired special effects.

Primers and Base Coats

Metallic and iridescent coatings are translucent. As a result, in exterior applications, ultraviolet light will penetrate through the coating to the primer. It is essential, therefore, that the primer or the base coat be able to hold up to ultra-violet light. DTM 1300, DTM 1400 and DTM 3000 are all designed to resist long-term exposure to ultraviolet light. Conventional epoxies and alkyds should never be used for exterior applications under metallic and iridescent coatings unless an ultra-violet "blocking" coat is used as an intermediate coat. The primer or the base coat should be applied over the entire substrate to achieve a consistent background color for the finish coats. The color of the primer or base coat should be selected to enhance the finish coat given that the finish coat is somewhat translucent. A gray primer is an excellent background for a silver metallic finish.

Air Supply

The constant flow of air in terms of volume and pressure is essential for the successful application of metallic and iridescent coatings. The metallic flakes (aluminum) and iridescent chips (mica) layout in the resin system dependent on the way the coating is applied to the substrate. Inadequate air volume or inconsistent air pressure will result in the misalignment of the pattern resulting in a splotchy appearance.

Application Equipment

Gravity Feed HVLP / Conventional HVLP Pressure / HVLP Turbine Sprayer

In the automotive refinish market where most manual applied metallics and iridescent coatings are used, the **gravity feed HVLP gun** is the choice of applicators. The gravity feed gun delivers the metallic and iridescent pigments in an even and consistent manner as long as the cup remains primarily upright. The advantage of the gravity feed gun is that the consistency of the metallic dispersion in the application stream helps to eliminate pigment striping that can be experienced with conventional HVLP pressure pot systems and HVLP turbine sprayers. This is not to say that metallic and iridescent coatings cannot be applied effectively with a **conventional HVLP pressure pot system** or a **HVLP turbine sprayer**, but the use of such equipment can make the desired finish more difficult to attain.

Fine Finish Air-Assist Airless

Some good success has been noted by applicators using air assist airless fine finish equipment. This type of equipment has proven to deliver metallic and iridescent pigments fairly evenly.

Roller application – requires special consideration

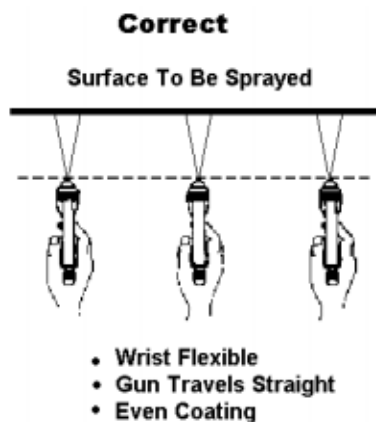
Some projects have been roller applied successfully (*Please contact your Precision technical sales representative for recommendations*). The success of a roller application depends on the substrate and the size of the area being coated. The level of expectation for the appearance of the rolled metallic or iridescent finish should be less than the comparable spray application.

Airless - not recommended

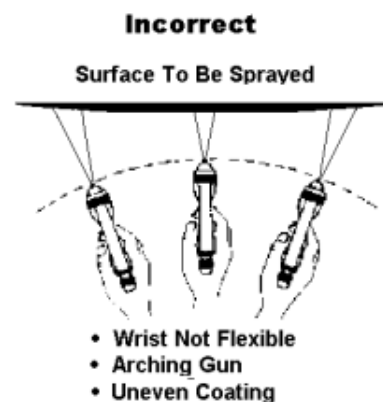
Commonly used architectural airless and industrial airless equipment are *not recommended* for the application of metallic or iridescent coatings.

The Applicator

The most important component of a successful application of a coating system is the applicator. A skilled applicator who understands the detail and precision required to successfully apply a metallic or iridescent three dimensional coating system is more an artist than a painter. Success depends on staying in front of your work, keeping the gun perpendicular to the surface, moving into or away from the work to achieve the proper dispersion of the metallic flakes or iridescent chips in the coating film while maintaining proper orientation of the pigment.



Application of metallic and iridescent pigments is impacted by distance from the substrate. The closer the gun is to the substrate, the more the pigment will bury in the resin system resulting in a darker and sometimes a deeper appearance. The further away the gun is from the substrate the more the pigment will lie on the top of the coating resulting in a brighter appearance. The same material applied by the same applicator the same day



at different distances from the substrate can substantially change the color and appearance from the same gallon of metallic or iridescent coating.

Coating Process

Substrate and Surface Preparation

Carbon steel substrates should be cleaned and degreased prior to surface preparation. Substrates may be slightly corroded but all loose corrosion must be removed. Dependent on the corrosion protection required, an SSPC-SP6 shop cleaning, SSPC-SP10 near white metal cleaning or an SSPC-SP3 power tool clean are the traditional levels of cleanliness recommended for commercial atmospheric areas. If an SSPC-SP3 is utilized it is highly recommended that the prepared carbon steel be cleaned and treated with Precision Metal Conditioner 02150 (*see data sheet for instructions*).

Aluminum substrates and anodized aluminum substrates should be abraded with a minimum 180 grit aluminum oxide abrasive paper utilizing a power tool or hand tool cleaning. It is further recommended that the prepared aluminum be cleaned with Precision Metal Conditioner 02150 (*see data sheet for instructions*).

Galvaneal (Paintloc type) systems should be cleaned and degreased. Cleaning can be done with Precision Metal Conditioner 02150 (*see data sheet for instructions*) or an exempt solvent such as acetone.

Stainless steel should be cleaned and degreased and must be abraded with a power tool clean utilizing 180 grit abrasive paper. The prepared and solvent cleaned surface should then be coated with a surface tolerant epoxy designed to be applied over stainless steel such as Amerlock 2 VOC.

Previously coated polyurethane and epoxy surfaces that are tightly adhering should be cleaned and degreased. The coating should be tested for compatibility with the Precision Coatings DTM primers and finish coats. The existing coating should be abraded with a hand or power tool cleaning utilizing 180 grit aluminum oxide paper.

Single component alkyds and acrylic primers and finishes that are tightly adhering should be cleaned and degreased. The coating should be tested for compatibility with the Precision Coatings DTM primers and finish coats. The existing coating should be abraded with a hand or power tool cleaning utilizing 180 grit aluminum oxide paper.

Fluorinated polymer (Kynar, Duranar type) systems that are tightly adhering should be cleaned and degreased. The existing coating should be abraded with a hand or power tool cleaning utilizing 180 grit aluminum oxide paper.

For recommendations on other substrates, please contact your Precision Coatings technical representative.

Primer Selection

Carbon steel commercial moderate	DTM 1300
Carbon steel corrosive environment	DTM Organic Zinc Rich Primer / DTM 1300 intermediate coat
Aluminum and anodized aluminum	DTM 1300
Galvaneal	DTM 1300
Stainless steel	Amerlock 2 VOC / DTM 1300
Urethane and epoxy	DTM 1300
Single component	DTM 1300
Fluorinated polymer	DTM 1300

**DTM 1300 must be lightly abraded after 72 hours of cure to be top coated.*

Finish Coat Process

Precision PC3V100 Metallic or Iridescent color

Tack Coat

The tack coat is a light coat that is applied to the surface to promote adhesion of successive coats. This coat covers the surface but does not fully wet out the substrate as the coating will have a light, uneven and transparent appearance.

Wet Coat One

The first wet coat is applied over the tack coat approximately 10 to 20 minutes after the application of the tack coat. This coat wets out the surface and presents an even appearance however the coating can still appear to be transparent.

Wet Coat Two

The second wet coat is usually the final coat and is applied 10 to 20 minutes following the application of the first wet coat. This coat should wet out the surface, present an even appearance and with the exception of very few colors, should provide complete coverage and hide.

Exotic Effect Iridescent Systems

What are described as “Exotic” iridescent systems that take advantage of different colors of mica pigments applied in three to five wet coat systems are available from Precision Coatings, Inc. Such systems utilize specialty mica pigments and are considered a special order.

Clear Coats (Optional)

Precision Coatings clear coats are not required due to the high performance resin systems used in the PC3 metallic, iridescent and color coats. If a clear coat is desired to add depth of image or for cutting and buffing, the clear coat(s) can be applied over the color coats after waiting twenty minutes, or allowing the initial application to cure eight hours.

**PC3 must be lightly abraded after 24 hours of cure to be top coated.*

Cut and Buff (Optional)

Recommended cutting and buffing finish procedure for Precision Coating’s clear coat gloss finishes:

1. Abrade the clear coat with 1500 grit wet abrasive paper.
2. Utilizing an electric buffing wheel with a wool pad, apply 3M Perfect-It™ Rubbing Compound, buff clear PC3v100.
3. Utilizing an electric buffing wheel with a wool pad, apply 3M Perfect-It™ Machine Polish, polish clear PC3v100.
4. Utilizing an electric buffing wheel with a foam polishing pad, apply 3M Perfect-It™ Ultra-Fine Machine Polish, polish clear PC3v100.