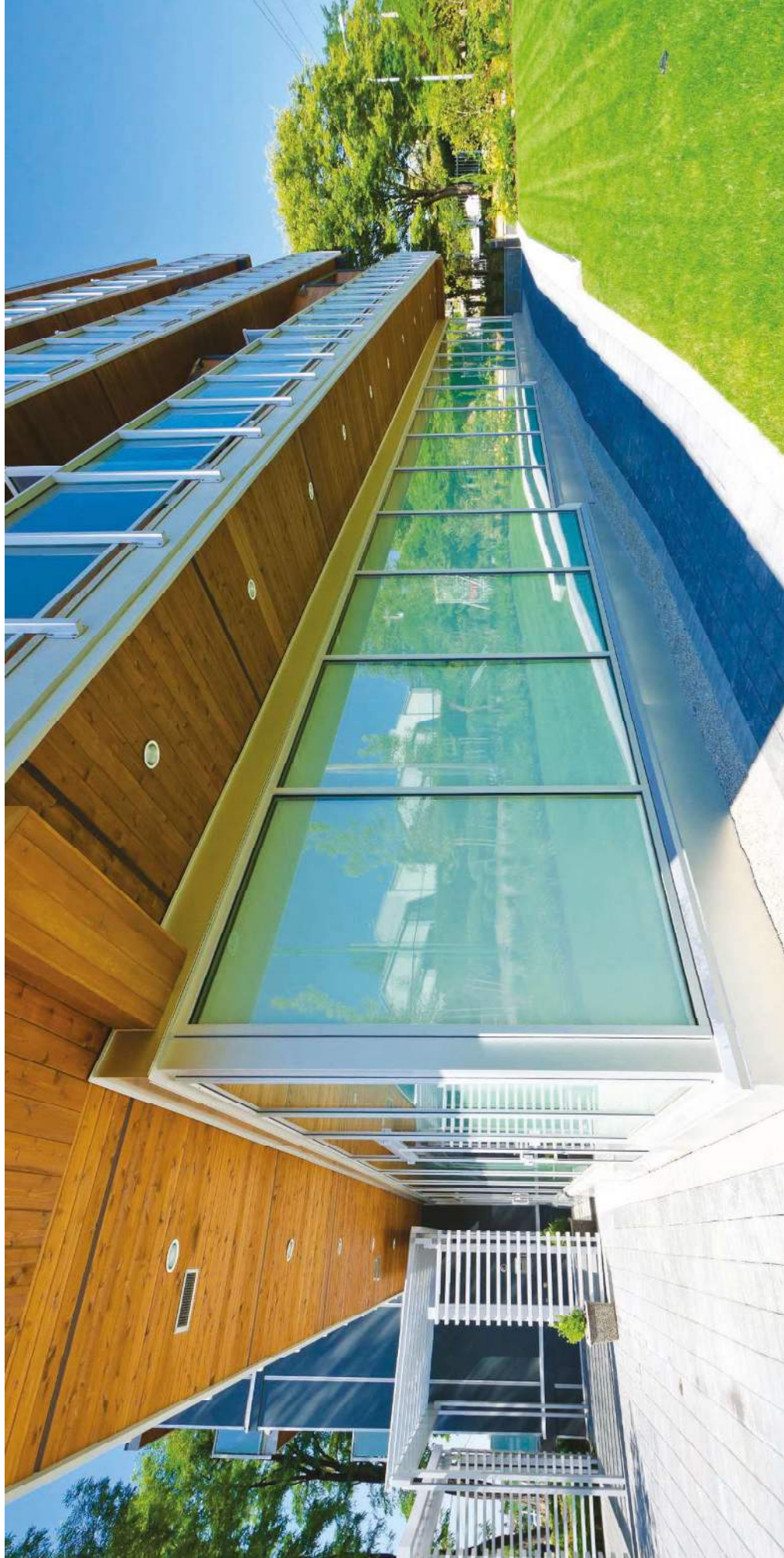


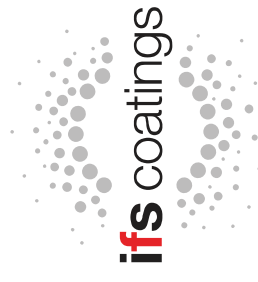
The Architect's Guide to Powder Coatings



EVERYTHING YOU NEED TO KNOW

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Are All Powder Coatings Created Equal?

The simple answer is no.

Powder coatings are used on so many different products, from facades to furniture, cookers to computers, wheels to windows, bikes to buildings and refrigerators to railings.

Even though it's all called 'powder coating', that's really quite a generic term, as there are many different types of powder coating. This is why it can be used on so many different things. The formulation chemistry behind each different type of powder is designed to deliver very different kinds of performance, so within the term "powder coating" there are many different product types.

Both refrigerators and curtain wall are 'powder coated'. But we're not going to put the same type of powder coating on a fridge, as we are on the exterior of a building and give it a 20 year color and gloss warranty. Both products use powder coatings, but they're powders that are designed to do very different things.

It's like comparing a kids first bike with training wheels to a world class Tour de France winning bicycle. They're both bikes but...

In terms of the powder itself, regardless of chemistry or product type, it pretty much looks the same in its raw form.

The application process is basically the same – at least the theory behind it is – and in architectural applications it delivers a tough, thermosetting finish that offers and improved environmental footprint over equivalent performance liquid paint.

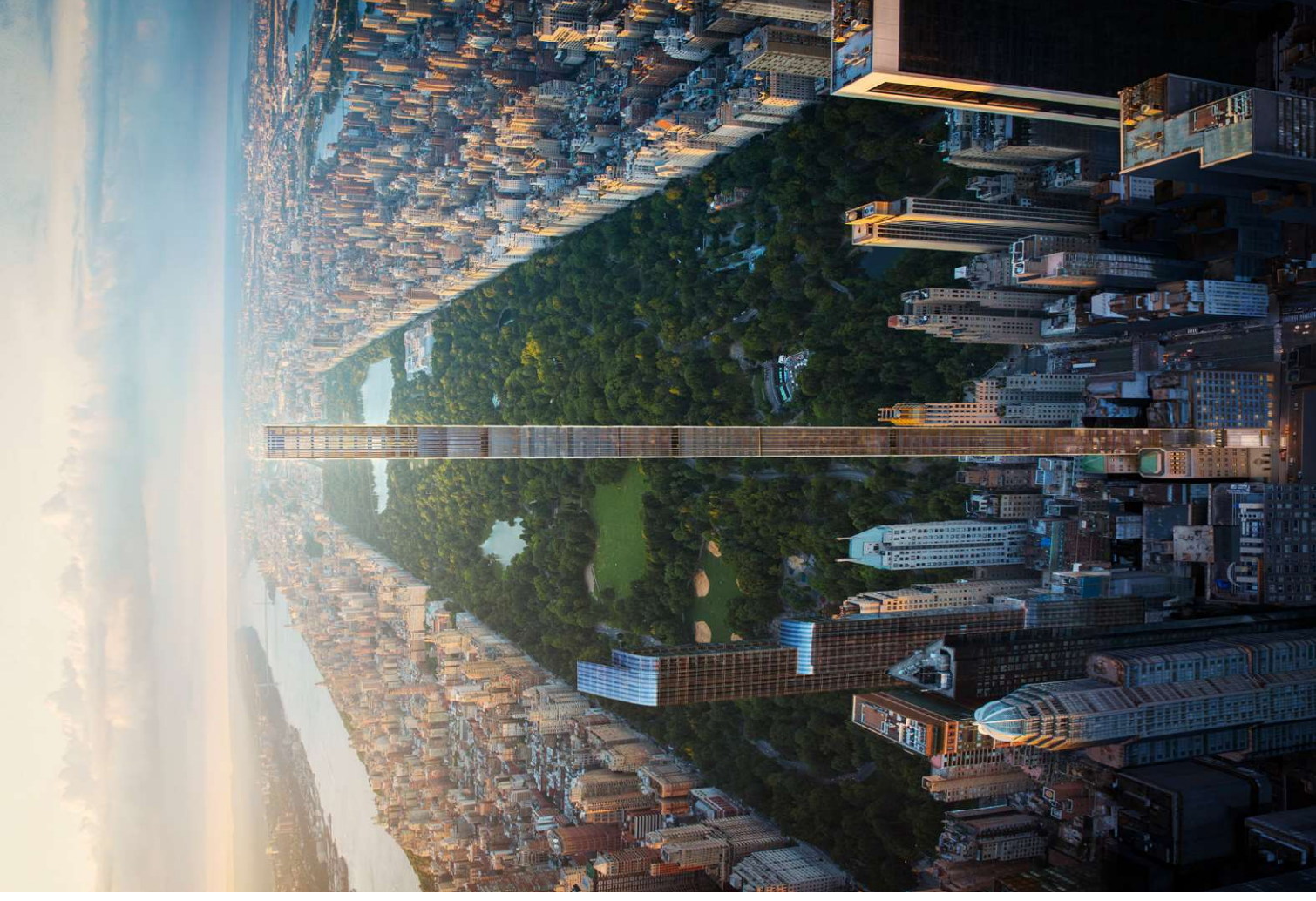


There are many different powder product types, based on different chemistries – polyesters, fluoropolymers, hybrids, acrylics, epoxies, urethanes and more – and performance is where they differ. Powder coatings for architectural applications are usually created in 3 different product types:

Superior Performance, Fluoropolymer Powders

Fluoropolymer powders are exterior grade powders that are used on things like curtain wall, building façade, fenestration, etc. Fluoropolymer powder coatings will meet and exceed the performance requirements of AAMA 2605, usually come with a 20 year color and gloss warranty on aluminum when applied by a registered applicator, and deliver the same or better performance as a 70% PVDF liquid paint. The **IFS 100% FEVE Fluoropolymer** is called **IFS 500FP**.

111 57th, NYC. This beautiful skyscraper's façade is coated with IFS 500FP, the superior performance Fluoropolymer powder from IFS.



High Performance Super Durable Powders

These powders are often used as the exterior coating on commercial storefront, low-rise buildings, windows, doors, etc. and often on monumental or high value buildings as a very high quality interior coating (delivering significantly better color and gloss retention than a standard polyester coating for a very small increase in price). **Super Durable powder coatings** will meet and exceed the performance requirements of AAMA 2604, usually come with a 10 year color and gloss warranty on aluminum when applied by a registered applicator and come in an enormous range of colors and effects. The **IFS Super Durable powder** is called **IFS 400SD**

*IFS 400SD, the high quality
super durable powder from IFS is
used on commercial storefront.*



Standard Polyester Powders

Standard polyesters are generally used on interior applications that do not require extensive weathering capability or occasionally on low value exterior applications where long term weathering is not as important. Polyester powder coatings will meet and exceed the performance requirements of AAMA 2603 and are perfect for interiors especially where unusual colors and effects may be required. They are great value for money and can also have additional functionality, like improved scratch resistance, added. The **IFS Standard Polyester** is called **IFS 300SP**.

As you can see, all of these architectural grade powders meet and exceed the **AAMA coating specifications**. Liquid

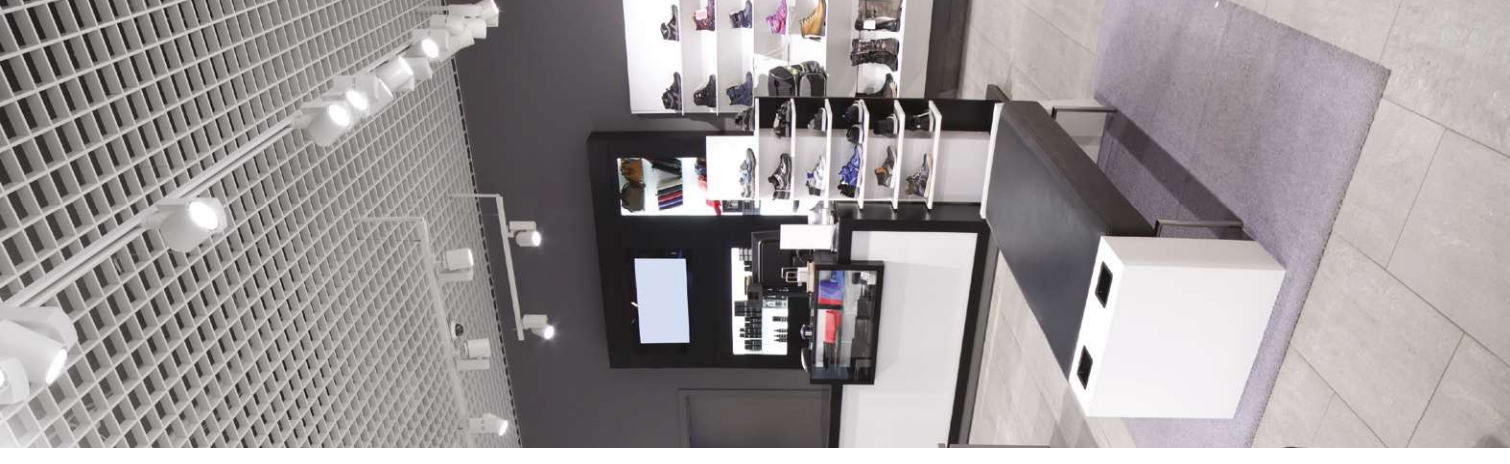


performance paints, including 70% PVDF paint, meet these same AAMA specifications.

There are examples of these beautiful, quality finishes all over the world in the Americas, Europe (in fact 80% of all performance coatings in Europe are powder coatings due to stricter environmental regulations), Asia and the Middle East.

Powder coatings always deliver an improved environmental footprint over liquid performance paints. Make sure you choose the right product type for your architectural application - they will deliver the highest levels of exterior performance, color consistency and protection available.

For more information on architectural grade performance powder coatings, please contact flevin@ifscoatings.com



Powders and Performance Coatings Specifications - Meeting the FGIA/AAMA Coatings Specs

Talk to anyone in the North American performance coatings industry and they will probably start talking about the AAMA coating specifications pretty quickly!

So what are the AAMA specs and why do coatings experts talk about them so much?

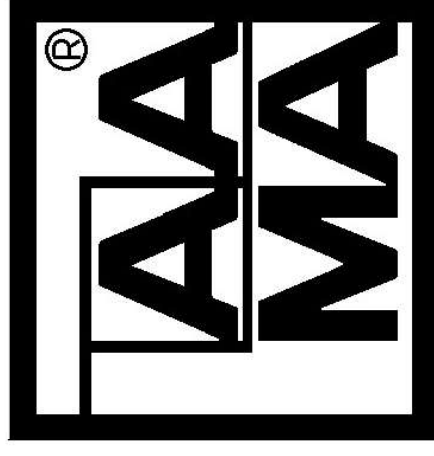
AAMA was an acronym for the American Architectural Manufacturers Association. They changed the association name to the Fenestration and Glazing Industry Alliance (FGIA), but everyone still refers to the coating specs as the AAMA coating specifications. These specs are voluntary specifications - testing and performance requirements - for many different aspects of architectural manufacturing, including coatings.

It's probably important to point out here that these three coatings specs are for all coatings! For many years liquid coatings have talked about the AAMA coating specs and so people often incorrectly associate the specs with liquid coatings only. In fact the specs are for all performance coatings, and so they apply to both liquid paint and architectural grade powders.

Anodized is not included in these particular specifications, as anodizing changes the substrate itself, so it is referred to as a 'finish' and there are separate AAMA specifications for anodizing (e.g. AAMA 611).

So what are the AAMA specifications all about and why are they important to specifiers, architects and designers? Simply put, they will give you a very good idea of the performance capability of the coating. Each spec requires chemical, mechanical and weathering testing to be done, and lays out minimum performance requirements for each test.

As you move up through the coating specifications, the tests become longer and stricter. So what type of tests are we talking about? Some of the most important tests AAMA requires are in the below table. There are actually more than 20 tests in total, but these are some of the most telling. Check out the test and how it varies between the various AAMA specifications.



	AAMA 2603	AAMA 2604	AAMA 2605
Chemical Resistance	SAME		
Humidity Resistance	1500 hrs Few blisters	3000 hrs Blisters size 8	4000hrs Blisters size 8
Salt Spray Resistance	1000 hrs 1-2mm creepage Blisters size 8	1500 hrs 1-2mm creepage Blisters size 8	2000 hrs 1-2mm creepage Blisters size 8
Florida Exposure	1 year	5 years	10 years
Color retention	"Slight change"	Delta E <5	Delta E <5
Gloss Retention	"Slight change"	Minimum 30%	Minimum 50%

As you can see, as you move up through the specifications, tests like corrosion and weathering require more and more from the coating.

One important thing to note is the salt spray testing. This is an aggressive cyclical test – ASTM G85.

So which powder products will meet these coating specifications?

Making sure you get the right product performance for your application is important.

Here's what you should expect:

AAMA 2603

IFS 300SP is the **IFS Standard Polyester** that will meet and exceed the performance requirements of AAMA 2603. As the weathering requirements of AAMA 2603 allow a "slight change" in the color and gloss (not very specific!), we normally recommend these powders for interior uses where weathering or exterior conditions are not really a factor. They do sometimes get used on low value exterior parts – items like fixtures, railings etc. – but for general purposes, regard them as a good all round interior grade powder!



AAMA 2604

IFS 400SD is the **IFS Super Durable Polyester** that will meet and exceed the performance requirements of AAMA 2604. The testing requirements, including weathering, are much stricter than the 2603 requirements, with exact performance parameters. For this reason, super durables are regarded as good exterior grade powders, that are often used on windows, doors, and especially on applications like commercial storefront. In recent years, Super Durables have also been used on the interiors of high value projects, as they offer ten times the color and gloss retention of a standard polyester, for a very small increase in price.

Super durables come with a 10 year warranty when applied by a registered applicator to aluminum – great for storefront where the chance of the same store being in place in 20 years is unsure, but a robust 10 year performance is ideal.

AAMA 2605

IFS 500FP is the **IFS 100% FEVE based Fluoropolymer** that will meet and

exceed the performance requirements of AAMA 2605. The testing requirements are stricter than the 2604 performance requirements, with weathering testing being double that of the 2604 spec. For this reason, Fluoropolymers are regarded as an excellent superior performance exterior grade powder. They are almost always used solely on exterior applications and are used on curtain wall and façade, windows, doors etc., on monumental buildings, high value residential, stadiums, malls, hospitals, government buildings and more. Fluoropolymers come with a 20 year color and gloss warranty when applied by a registered applicator to aluminum. If you want a liquid comparison – think 70% PVDF paint!

In actual fact, the AAMA specifications are a great way to specify any architectural performance coating – no matter whether it's powder or liquid, stating the AAMA spec level gives you an absolute minimum that must be met, and stops a contractor from simply getting any “powder coating” or “paint” in the right color, regardless of performance.



Fluoropolymer Coatings -

Understanding Superior Performance, Exterior Fluoropolymer Coatings

Fluoropolymer coatings are the gold standard for superior performance, exterior coating protection in North America. A quick look at the levels of weatherability, durability and aesthetic appeal offered by Fluoropolymers make it easy to see why.

Fluoropolymer protection is actually available in both liquid and powder formulations. Ever heard of 70% liquid PVDF paint? That's a Fluoropolymer paint that uses 70% PVDF Fluoropolymer resin.

There are also superior performance Fluoropolymer powder coatings that also use a Fluoropolymer resin. The only difference is it's a FEVE Fluoropolymer, rather than PVDF Fluoropolymer. FEVE Fluoropolymer powder coatings use 100% FEVE resin in the formulation. 100% FEVE Fluoropolymer powder coatings – IFS 500FP is just one superior

The DSNY, in NYC features IFS 500FP, a superior performance fluoropolymer powder system on the external louvers by Construction Specialties that cover the building façade.

performance FEVE based Fluoropolymer powder used on curtain wall, window wall, façade, windows and doors – achieve the same or better performance than 70% PVDF but in a single coat!

Turn to our chapter on the differences between PVDF and FEVE for more info.

In North America, for a long time, superior performance coatings on

aluminum were known as two, three or sometimes even four coat liquid PVDF Fluoropolymer paint systems. This liquid Fluoropolymer system meets and exceeds AAMA 2605, comes with great warranties on aluminum when applied by a registered applicator and is available in solid colors and metallic/mica effects.



*Folsom Street, in San Francisco,
features IFS 500FP coated windows by
Thermal Windows*

Equivalent (or better) superior performance powder Fluoropolymer systems for aluminum meet and exceed AAMA 2605, come with great warranties on aluminum when applied by a registered applicator and are available in solid colors, metallic/mica effects and even some textures. What's more they also come with significantly improved environmental credentials.

Understanding AAMA 2605 Performance

We all want superior performance protection, durability and beautiful aesthetics from our exterior coatings. The building has to look great – it's an integral part of the design and what the eye sees almost immediately after shape and form.

The building also needs to retain those good looks for many years, and this is what superior performance coatings are designed to do. AAMA 2605 has long been held as the gold standard for performance coatings applied to exterior applications.

It's important to note AAMA 2605 is a "coatings" standard. This means



whether the coating is liquid or powder, if the coating can meet or exceed the performance requirements laid out in the specification, then the coating is an AAMA 2605 coating.

Corrosion resistance, humidity resistance, chemical resistance and impact resistance are just some of the ASTM tests that AAMA 2605 coatings are put through. As well as strict chemical and mechanical testing – and the thermosetting properties of FEVE based Fluoropolymer powders mean far superior scratch resistance and a significant reduction in susceptibility to dirt and mildew – weathering is a significant part of the AAMA 2605 performance requirements. The ability to retain color and gloss to within specific

parameters over time is incredibly important for Fluoropolymer coatings (see the chapter on AAMA for details).

Everyone knows and expects liquid coatings to meet this standard and with those expectations come assumptions regarding warranty, number of coats and color options. What many people do not realize is that 100% FEVE based Fluoropolymer powder coatings will actually meet and exceed the performance requirements outlined in the AAMA 2605 spec, and in many tests will outperform traditional liquid PVDF finishes. And they come with those same warranties, color options and require fewer coats.

*Both towers at 33 Park feature
IFS 500FP on the facade*

Superior performance powder coatings go way beyond the performance requirements outlined in AAMA 2605, which is why they come with great warranties when applied to aluminum by a registered applicator. So far so good – world class protection and performance in the bag. It's easy to see why architects like SHoP, Handel and SOM are specifying superior performance powder on curtain wall projects. But what else? Let's look at the environmental advantages powder coatings can bring to a project.

Can powders deliver an improved environmental footprint?

Superior performance, 100% FEVE based Fluoropolymer powder coatings will meet and exceed the performance requirements of AAMA 2605, and boast improved environmental credentials over equivalent liquid paints. A bonus when working to live up to the sustainable design commitment your practice purports to have made.

The list of environmental grievances that these solvent born, liquid



PVDF paints bring to your project is worrying. Chrome pretreatment and chrome based primer? Check. We all know the effect chrome has on the environment and people (remember Erin Brockovitch?), and in the US, liquid PVDF paints generally go over chrome based pretreatment and use a chrome based primer as the first coat.

Toxic sludge/waste, which becomes toxic landfill that has to be specially disposed of? Check.

Solvents and VOCs escaping into the environment? Check. Liquid PVDF paints need a thermal oxidizer to manage solvent emissions.

Two, three or four coat options requiring significant energy usage and a disappointing carbon footprint? Check again.

So can superior performance powder coatings really deliver incredible world class protection, colors, warranties AND be a more environmentally responsible choice? See for yourself. Let's look at those environmental problems again from a FEVE powder perspective...

Chrome pretreatment and chrome based primer? Nope, not necessary with performance powder. Chrome pretreatment is not a necessity and we never use chrome based primer.

Toxic sludge, which becomes toxic landfill that has to be specially disposed of? Nope, not produced in application, so let's reduce the toxic landfill we create as a by product of building beautiful structures.

Solvents and VOCs escaping into the environment? Nope, performance powders have zero solvents which means negligible VOCs.

Two, three or four coat options requiring significant energy usage and a disappointing carbon footprint? Nope, FEVE based Fluoropolymers are a single coat application, with higher film thickness in one coat to offer protection, and a superior chemical structure and manufacturing process that removes the need for primer coats or clear coats.

This is all pretty impressive, so is there anything to certify it? Absolutely. IFS Coatings has Environmental Product

Declarations (EPDs) for each of our architectural grade powders.

It's easy to see why superior performance FEVE Fluoropolymer powders are fast becoming the sustainable architects coating of choice. World class color and gloss retention, superior mechanical and chemical performance, excellent warranties and a huge improvement on environmental credentials. Definitely worth adding to the spec.



PVDF and FEVE Resin Based Powder Coatings

What's the Difference?

Powder coatings are not as familiar to us here in the US as in the rest of the world, so sometimes there can be some confusion. This seems to be especially so when it comes to the different resin used in the two types of architectural grade powder available, and the number of coats required. Read on for a basic guide to AAMA 2605 Fluoropolymer powder coatings.

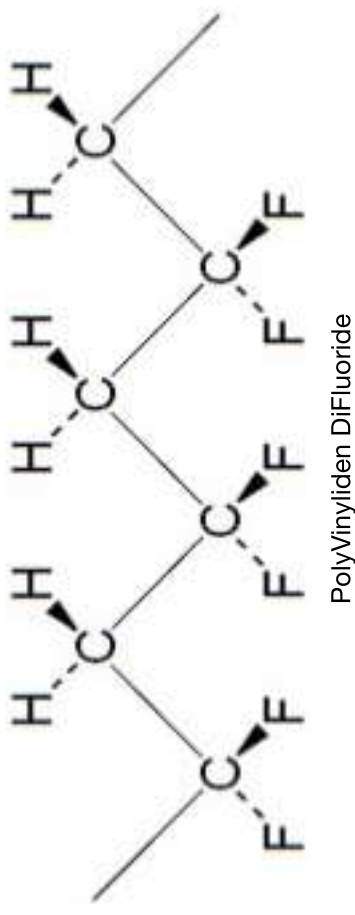
Architectural coatings that meet and exceed the performance requirements of AAMA 2605 can be based around two different types of resin.

FEVE resin (fluoroethylene vinyl ether)

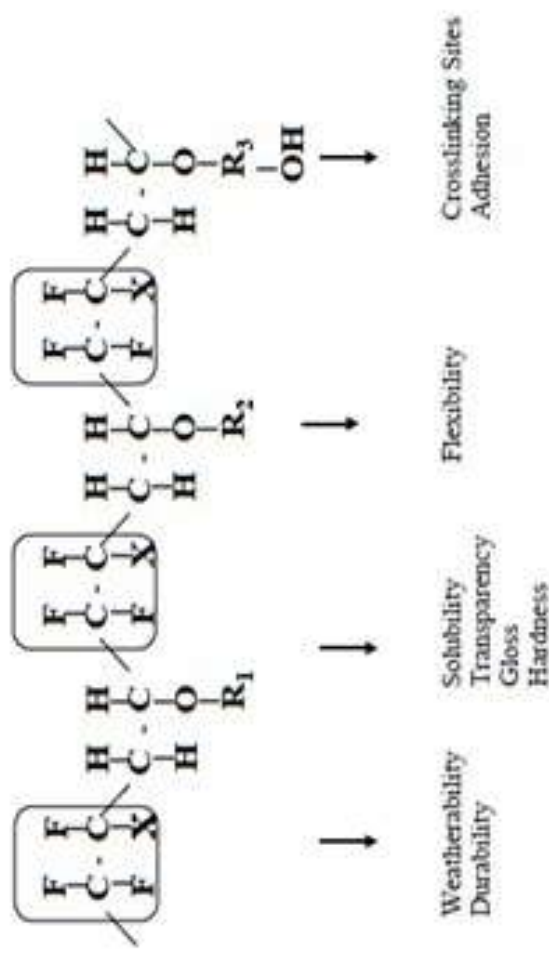
PVDF (polyvinylidene difluoride) resin.

Most of us have heard about the PVDF resins in traditional liquid paints. These 70% PVDF liquid systems are usually 2+ coats on aluminum. This might be a primer plus top coat, or primer, plus top coat, plus clear coat etc. PVDF resin based powder coatings are also available, and these powders are also minimum 2 coat systems. FEVE resins are used in many architectural grade powder coatings and due to their unique resin make-up and the way powder is made, the 100% FEVE Fluoropolymer systems are usually 1 coat systems on aluminum.

This is what the PVDF resin chemical structure looks like -



This is what the FEVE resin structure looks like -



Ultra-weatherability, durability, and chemical resistance are derived from the distinctive alternating fluorinated units. The FEVE resins are usually reacted with aliphatic isocyanates to form crosslinked FEVE coatings. 100% FEVE based fluoropolymer coatings take advantage of the carbon/fluorine bond, which is extremely difficult to break. Carbon-fluorine bonds can absorb much greater amounts of UV energy and will keep this energy from affecting the weaker bonds/linkages in the FEVE resin polymer structure.

So what are the differences and similarities between FEVE and PVDF resins?

Both FEVE and PVDF resin based coatings are factory applied finishes, requiring a spray and bake application process. Both will meet and exceed the performance requirements of AAMA 2605. For this reason the same type

of warranty is also available when applied to architectural aluminum by a registered applicator and both are available in solid and metallic or mica finishes. However there are some differences and this can be where confusion sets in.

Thermoset vs. thermoplastic

PVDF systems are thermoplastic. FEVE systems are thermoset. The Thermoplastic PVDF resin will “remelt” under high temperatures and pressures while the FEVE resin is a thermoset system that will not “remelt” once it is correctly cured. These thermosetting properties also give the FEVE coatings superior toughness and scratch and mar resistance.

Number of coats

PVDF based powders, just like their liquid PVDF counterparts, must be a minimum of 2 coats. A powder primer coat is

required to add protection and work with the top coat to give the desired levels of adhesion and UV protection.

FEVE based powders are single coat applications when applied to aluminum. The unique Fluorine-Carbon bond and thermosetting properties of the FEVE resin means the same (or better) levels of durability and protection are executed in a single coat. No primer coat is required.

Color and gloss

Both PVDF based systems and FEVE resin based powders retain their color and gloss extremely well and will meet and exceed the weathering performance requirements of AAMA 2605. However with FEVE based powder coatings a wider range of finishes are available.



The PVDF resins are much more limited in the range of gloss they can achieve as the PVDF resin acts like a matting agent. Because the Carbon Fluorine bond is part of the resin system in FEVE based systems there is no matting effect.

Manufacturers of PVDF based powders will tell you that this is the superior coating and will have data to prove it. Manufacturers of FEVE resin based powders will tell you that this is the superior coating and will also have data to prove it. The truth, as always, is somewhere in between. Most major companies now use FEVE resin in their powder coatings to meet and exceed the performance requirements of AAMA 2605 for the reasons outlined above.

At IFS Coatings we use FEVE based resins. We believe there are many, many more examples of FEVE resin based powder coatings out there than PVDF powder projects, and they have been shown to be successful time after time after time.

From a sustainability perspective, we know that FEVE resin based powders

are a better choice. For design professionals that claim to practice sustainable design, making the switch to powder should be a no brainer. Not only are there no solvents, which means negligible VOCs, less product and less energy is used in the application process and chrome can be completely removed from the process. Unlike PVDF based products which in the US, generally have chrome based pretreatment. FEVE resin based powders will perform on top of both chrome and non-chrome pretreatments.

Navigating the world of architectural coatings and the various options out there can be tricky. We are here to help you, provide data you need, answer your questions and give you advice whenever you need it. Don't hesitate to ask.

*Talk to your
IFS architectural specification expert*
E: flevin@ifscoatings.com.
T: 520.345.7513.



Super Hero, Superman, Supergirl Super Durable?

Super Size – When to use a Super Durable Powder Coating

Tough, durable, strong and steadfast are common traits associated with all manner of super heroes, but they're also commonly associated with super durable powder coatings too.

High performance, Super Durable Polyester powder coatings are actually designed to have super hero qualities – well at least when you compare them with a standard polyester powder coating!

Used regularly on exterior applications like commercial store front, windows, doors and low rise curtain wall, super durables are also often the choice for interior applications where conditions are extreme or stressful, or it's a

high profile project where the added weathering, on the inside of a window frame for example, is a definite bonus. Check out 111 57th in Manhattan, NY and 9th and Lenora in Seattle, WA

as prime examples of where a high performance Fluoropolymer was used on the exterior and a super durable polyester was used on the interior.



The Sooner Center features IFS 400SD a hard working Super Durable Powder



*111 57th, NYC features IFS 400SD on the
interior curtain wall*

Marvelous performance

Super Durable Polyesters will meet and exceed the performance requirements of the popular AAMA 2604 coating specification. This includes holding color to within 5DE over 5 years of continuous Florida weathering testing, 1500 hours of salt spray testing, 3000 hours of humidity testing and performing to very high levels in ASTM chemical tests - Super Durable Powders are certainly "Super". Though the AAMA weathering test is a five year test, when applied by a registered applicator to architectural aluminum, IFS 400SD, the IFS superior super durable architectural option actually comes with a ten year warranty on exterior aluminum applications to hold color and gloss to within the same AAMA 2604 parameters.

With this in mind, it's easy to see why Super Durables are the obvious choice for many applications in commercial, residential, retail, mixed use and more.

Where else can Super Durables pack a punch worthy of a super hero?

When it comes to their environmental credentials, super durable powders take home the cape, the shield and the batmobile. Especially when you compare them with their more dastardly high performance liquid paint competitors. IFS 400SD will deliver all the incredible environmental benefits that powder

coatings are known for, including no solvents therefore negligible VOCs, no chrome primer required, no toxic waste/landfill created during manufacture or application, improved carbon footprint compared to liquid paints and a manufacturer's Environmental Product Declaration available. That's green to hulk-like proportions. In a good way!

Talking of green, Super Durables are available in a vast array of colors and special effects, including solid colors, metallic/ mica shades, textures and many special effects such as veins and even clear coats. In fact, the color, gloss and special effect range is significantly better than a Fluoropolymer powder (or liquid!), as some of these special effects can affect weathering capability in a Fluoropolymer. The icing on the cake? They are also extremely competitively priced and offer excellent value for money.

Though they don't have the extended weathering of a superior performance Fluoropolymer powder coating, which meet and exceed AAMA 2605, Super Durables certainly pack a protective punch. Applied at 2-3 mils they also offer excellent film thickness and protection from the elements.

Super Durables certainly have their place in the high performance architectural coating world – no cape needed.

*For more information
contact flevin@ifscoatings.com*



Powder for Interiors

There's an awful lot of talk about performance powders for exterior architectural applications, but what about interiors?

Powder coatings are used in many different interior applications and deliver an awesome performance punch!

Which product type should I use?

First things first. As always, the most important thing to decide on is product type. So often designers and architects choose color without specifying the product type/chemistry, and this can lead to performance and budget issues – neither good! So, what powders are good for interior applications?

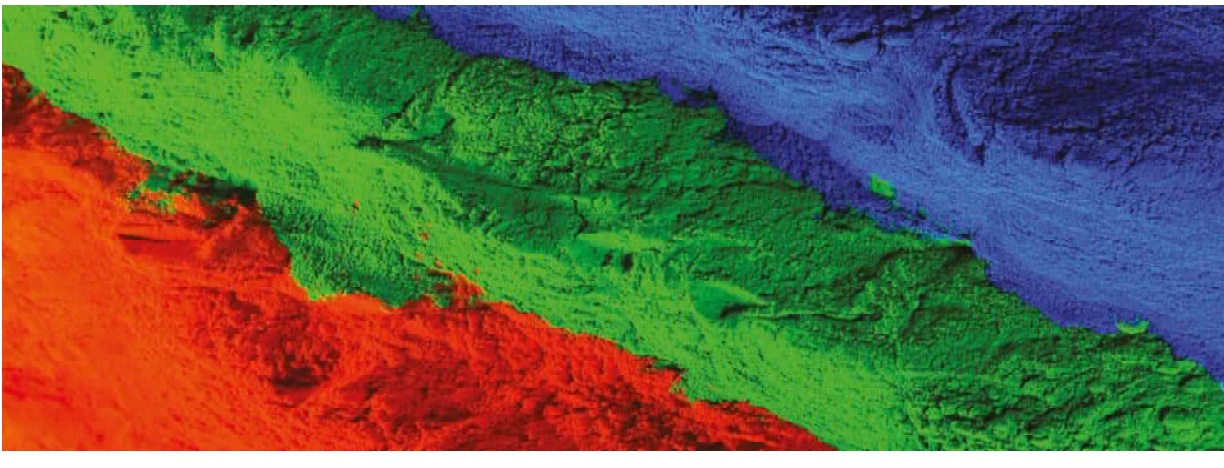
For most interior applications, a standard polyester powder coating is a great option. Many interior applications don't require the same levels of performance in terms of weathering (retaining color and gloss) or corrosion prevention, as the harsh exterior elements like UV resistance and salt or humidity don't come into play. IFS 300SP standard polyesters will meet and exceed the performance requirements of AAMA 2603, making them an excellent interior option for most applications.

For some interior applications, like interior façade, the interior side of a thermally broken window or commercial storefront in a mall, a more robust product in terms of weathering performance is desired. This is where a super durable polyester makes an excellent choice. IFS 400SD, the IFS super durable product range, will meet and exceed the performance requirements of AAMA 2604, thus delivering improved color and gloss retention and corrosion protection when compared with a standard polyester.

Where are powders used in interior applications?

The answer to this question could be an extensive list, however the easiest way to describe it is anywhere there's metal!

Common uses range from structural applications like interior façade or inside of thermal break on windows, practical applications like trim, lighting, display units, racking and shelving and to decorate applications like furniture, accessories and point of sale stands. The options are endless!



Can powders deliver protection for all those different applications?

As well as looking great, these thermosetting powder coatings deliver a tough, hard and scratch resistance protective film – especially when compared with a liquid paint. Read on to discover what else is possible... Perfect for hospitals, pharmacies, schools, gyms and more, anti-microbial additives can be added to interior powder coatings. The great thing about these is they remain anti-microbial for the life of the powder coating – as long as the powder is present, it retains its anti-microbial properties.

Additional scratch and mar

Powder coatings have superior scratch and mar resistance, especially when compared with liquid paints. However some applications need all the help they can get – protection from people, bags, keys, phones... the list goes on. We can make powder even more scratch resistance with simple additives - the results are impressive.

Anti-graffiti

Unwanted graffiti can be a pain in the proverbial to deal with. Powder coatings can be made with an anti-graffiti additive included to make it easier to remove unwanted graffiti when it happens.

Electrostatic Dissipative coatings

Protecting extensive IT investment is important so even items like server cabinets can benefit from interior powder coating with electrostatic dissipative qualities built in.

So many special performance qualities can be added to powders – from fingerprint resistance to additional rub protection perfect for racking and shelving. Talk to your IFS rep if you need something additional for your application.



Color and clears – decorating with interior powder coatings

No exterior exposure means a significantly reduced weathering requirement, and that's great news for the sheer number of colors and effects available in interior quality powders! Certain special effects require techniques to achieve the specific look, which can reduce the weatherability of the powder. For interiors, weatherability is not really a big consideration, so the freedom you have in choosing colors and special effects is endless!

Choose from color collections like RALs, Pantones, ANSI and Federal Standards as well as special effects like sparkles with mica and metallic, textures, river textures, veins, wrinkles, transluents, wood effect and more. The challenge with color in this e-book is that it's so hard to effectively show color on screen. Just think how different a color can look when you tilt your laptop screen or your mobile one way or the other – and that's before we realize that no one's screen is color calibrated. Add into that the problems of accurately showing

beautiful metallic or mica effects on screen, and we always recommend you ask for a free color sample or color cards to make your choice. With over 76,000 colors in our database you have so much to choose from so don't hesitate to reach out and let us know what we need and we'll get those samples out to you!

If you can't find what you need from the thousands of colors we have, or need a match to a specific color, we custom color match free for design professionals. Simply send us the sample to match to and we will do the rest.

Choosing powder coatings for interior applications has never been easier! If you have questions, need assistance, want a color sample or free color match started for you – just let us know!



Can I Get the Colors I Need in Powder Coating?

The simple answer is yes! Powder coatings are available in a huge array of colors and special effects – at IFS we have over 76,000 colors in our database – so there is plenty to choose from. However there are some important things to consider - check out our tips on choosing colors in powder coating...

First things first: the most important thing to know in any color decision is to choose your powder type first! “Powder coating” is a generic term, but as we know, there are different grades of architectural powder, some suited to exterior and some to interior. We don’t want to put an interior grade on the exterior as it will fade quickly – it’s not designed to go outside. So make sure you know the product type you want first and then check if your color is available in that product.



Solid colors

You may hear the term ‘solid color’ tossed around in the coatings industry. Don’t worry, it’s not referring to their actual state, it simply refers to the fact that it is a simple shade – no special effect added.

As well as standard architectural colors such as white, black, grey, silver, bronze etc. (the IFS architectural color card features actual powder coated chips, so you can see exactly what the powder will look like. Ask for your free copy), there are many color standards out there – RAL, Pantone, BSI – to name but a few. Most of these colors are available in powder coating technology.

There are hundreds of RAL colors (check out the IFS RAL series) as well as Federal Standards, ANSI and even Pantones. A note to mention when considering Pantone colors; not all Pantone colors are possible in powder technology. Pantone is ink on gloss paper, and we are producing powder for metal. So with certain Pantone shades we can achieve the color but not the intensity, or the intensity is there but the color is slightly

off. Fortunately it’s not true of all Pantone colors, so simply ask your powder rep and they will let you know.

The full spectrum is available in most powder technologies, including elegant

blacks and whites, inviting browns, greys, silvers and bronzes, eye popping neons, warm earthy tones, soft pastels, candy colors and striking translucents.

It's worth mentioning here that not all colors are available in superior performance Fluoropolymers. Certain bright shades, like bright oranges and reds are difficult to make in this technology. That said, we are testing some of those shades in Fluoropolymer technology right now, so always check with your IFS rep for the most up to date information. The reason some shades don't weather as well is some of the pigments used in these brighter shades don't weather as well. Where they may pass the 10 year color retention test required by AAMA 2605, most companies warranty their Fluoropolymer products for 20 years, and the challenge is these brighter shades won't retain their color, to within the required performance specification, for that period of time. The good news is we don't see these super bright shades requested that often on exterior projects!

Gloss

You can also choose what level of gloss you want for your color. Gloss is measured in Gloss Units with an instrument called a gloss meter. Matte powders as low as a 5 gloss all the

way up to a super shiny 90 gloss – and everything in between – are available in Super Durable and Standard Polyester powder products. Just like with the bright colors, Fluoropolymers are not available in the extremes of gloss. A very matte or very high gloss is difficult

to achieve as these extremes can affect the weathering capability of the powder. Anything between a 20 – 75 gloss is available, so there's still plenty to choose from!



Special Effects

Metallics/micas

A few years ago an architect confidently told me that sparkle or mica effects weren't available in powder coating. Not sure where this info came from (perhaps back in the 70s?) but thankfully it's simply not true. Soft shimmers, brighter sparkles and even multi-colored metallic are all possible. Shades like anodized silver, platinum, and pewter are incredibly popular.

Remember, metallic or mica effects look different at different angles – even though most people looking at a building see them straight on! There are some limitations.

With a powder coating the metallic loading (the amount of mica or metallic) can not be as high as with some liquid paints. Super sparkly is not really on trend right now, but always check with your IFS rep for the latest info.

Textures

Whether it's super fine (think confectioner's sugar) or super heavy (think anti-skid) we

can give the powder coating texture, which adds that tactile dimension to the surface. It will come as no surprise that super heavy textures aren't available in Fluoropolymer technology (yep, you guessed it, the texture affects weathering capability) but if you are looking for a specific feel, it's amazing what can be done. We created a "terra cotta" texture in a Fluoropolymer for the curtain wall on the project shown in this picture and it looks great!

15 E 30th, designed by
Handel Architects, features a
"Terra Cotta Texture"
Fluoropolymer powder on the
curtain wall/façade.



Interior special effects

There are certain special effects that are best used for interior applications. What's also important to note is that it's really difficult to show these effects accurately on a screen, and to be honest, sometimes the name of the effect may not be what you're thinking (I personally don't think 'wrinkles' look particularly wrinkly. They are beautiful and one of my favorite special effects, just not wrinkly to me), so always ask for a free color chip to see exactly what it looks like.

Translucent powders

Translucent powders are pretty well described – when the powder cures it becomes slightly translucent, so you actually see the metal, or a printed logo, or whatever is under the powder showing through the powder coat. These have been very popular in the last few years due to the trend for a hint of natural metal showing through the color. Transluents are used in a wide range of industries, always for interior applications, and so have been created in natural metal tones and neutrals all the way through bright raspberry and teal.

Wrinkles, hammertones, multi-component effects and more

Wrinkles, despite the name hated by most of us, are a beautiful, sophisticated

powder effect used on interior

applications. Difficult to describe they are best seen in the flesh – order a free sample chip. Likewise, hammertones, multi-components and speckles can come in a range of colors and are simply best seen first hand! What's clear is that they are also add depth and interest to a piece and can help achieve a more unique effect.

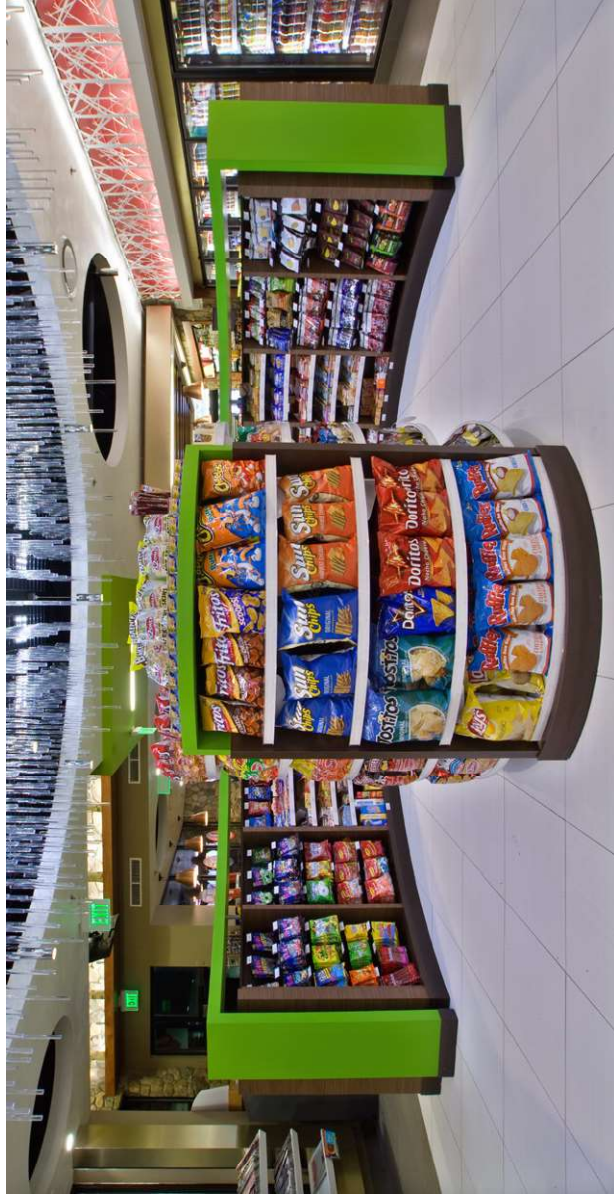
Our sister brand, Polychem powder coatings, has incredible interior grade special effect powders. Check them out at polychemcoatings.com

Woodgrain/Sublimation Powders

Imagine if you could make aluminum

look like wood, or marble or...

Powder sublimation means you can. Quite simply, the powder gives the piece the base color, and then a plastic sheet with the pattern e.g. wood grain is wrapped around the base coat and a vacuum used to suck the air out of each end so it lies flat against the powder base coat. Then it's a heat transfer. It goes into the oven and the heat transfers the ink from the sheet, into the powder base coat. It's taken out of the oven, the sheet is removed and we are left with aluminum that looks like wood, marble, rust...the best one we've seen recently is a pair of eyes printed across a set of fins!

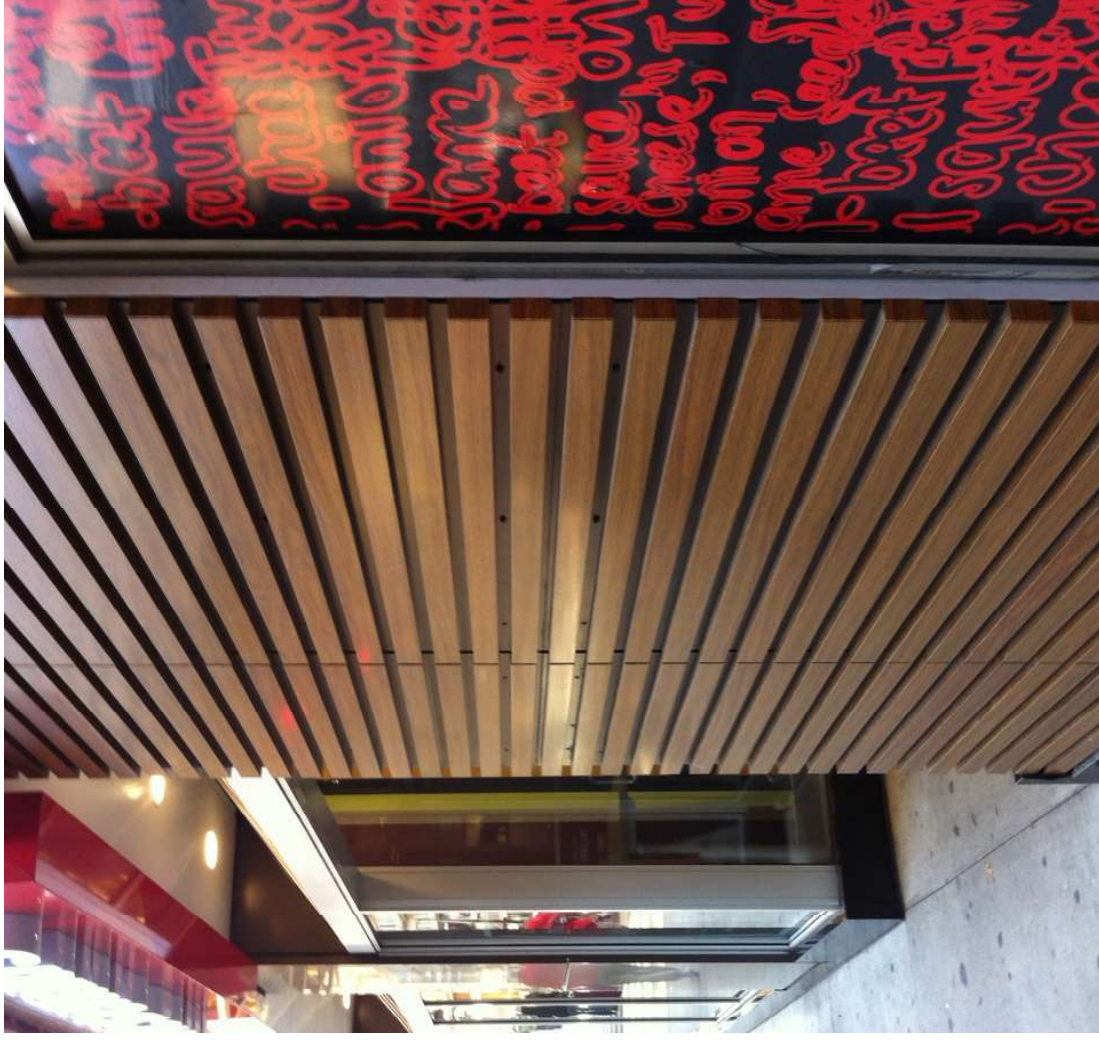


Color matching

Despite the many thousands of colors and effects available, sometimes you want a very specific shade, need to match a brand or maybe want to take a liquid paint and get it in a more environmentally responsible powder coating.

Not a problem. Color matching and color creation is what we do. You don't get to 76,000 colors by sticking to the basics! Whether it's matching interior paint colors from companies like Benjamin Moore or Sherwin Williams, creating powder that matches a fabric swatch or even matching to an item that you like (Nike once sent us a sneaker to match to, and we've matched to pennies, purses and more!), we can create a custom color for you. It's actually easier to match to something tangible – so sending in what you're looking for gives the color matching team an advantage.

There are so many colors to choose from in powder coating technology, with world class performance built in. Talk to your IFS rep about getting color samples or a free color match started today.



IFS Powder LEEDS the Way for Coatings in Smart Environmental Design

Many of us in the design world have a vague idea that powder coatings are a more sustainable coating, but what about performance powders for architectural applications. Do they walk with the same environmental footprint?

Are performance powders also a more sustainable coating choice?

By performance powders, we are referring to hard working, high quality, architectural grade powders that meet and exceed the AAMA performance requirements.

The simple answer is yes.

Performance architectural powders pack the same (or better) performance punch in terms of color and gloss retention and corrosion resistance, but without the sucker punch to the environment that a liquid high performance coating delivers.



So what exactly are the environmental advantages of performance powders when compared to equivalent liquid paints?

- **Environmental Product Declarations (EPDs)**

Not every powder coating company's powders have an EPD, but IFS 500FP, IFS 400SD and IFS 300SP all come with a manufacturers EPD. See below for more details.

- **No Solvents**

There are no solvents and therefore negligible Volatile Organic Compounds (VOCs) in powder coatings. This is a huge sustainability advantage for projects, especially when used over large areas such as building envelope.

- **Single coat**

Powder coatings achieve the same or better levels of chemical, mechanical and weathering performance than liquid coatings, but in a single coat.

This also means there is a significant energy saving. Single coat powder coating applications cure at lower temperatures than liquid paints, and there is no thermal oxidizer running to remove the solvent, so the energy footprint is much improved.

- **Reclaim and reuse**

Any over spray can be reclaimed and reused or recycled, unlike liquid paints where overspray is lost.

- **No chrome required**

IFS powder coatings can be used over non-chrome pretreatment on aluminum and still meet and exceed the AAMA performance requirements. In the US, liquid PVDF paints usually require chrome pretreatment to achieve a warranty.

- **IFS powder coatings never require a chrome based primer when used on aluminum.**

In fact most of the time no primer – chrome or otherwise – is required



on aluminum. We usually only recommend a primer for use on steel. Even when a primer is used, it's certainly never a chrome based primer.

- **Lower carbon dioxide emissions**

In a life cycle analysis (DSM study), powder coatings were shown to have both lower VOC and lower carbon dioxide emissions than liquid coatings.

- **No Hazardous Waste**

Unlike liquid paint, with powder there is no toxic hazardous waste generated during the application process. Toxic waste becomes toxic landfill.

If these great reasons aren't enough, add to the fact that powder is also tough, chemical and corrosion resistant (in line with AAMA tests), it weathers extremely well, which reduces the need for replacement products, and it is also much more scratch resistance meaning fewer replacements or touch up during construction. There's a reason GCs like working with powder!

But what about official Environmental credentials?

All IFS Architectural powders each come with a manufacturer's Environmental Product Declaration (EPD) and our interior grade powders come with Health Product Declarations (HPDs). IFS is also a long time member of Mindful Materials.

Check out the chart on page 30 that comes from one of our customer's EPD. The extrude aluminum, and then offer it painted, powder coated or anodized, so

had to compare all 3 finishes as part of their EPD.

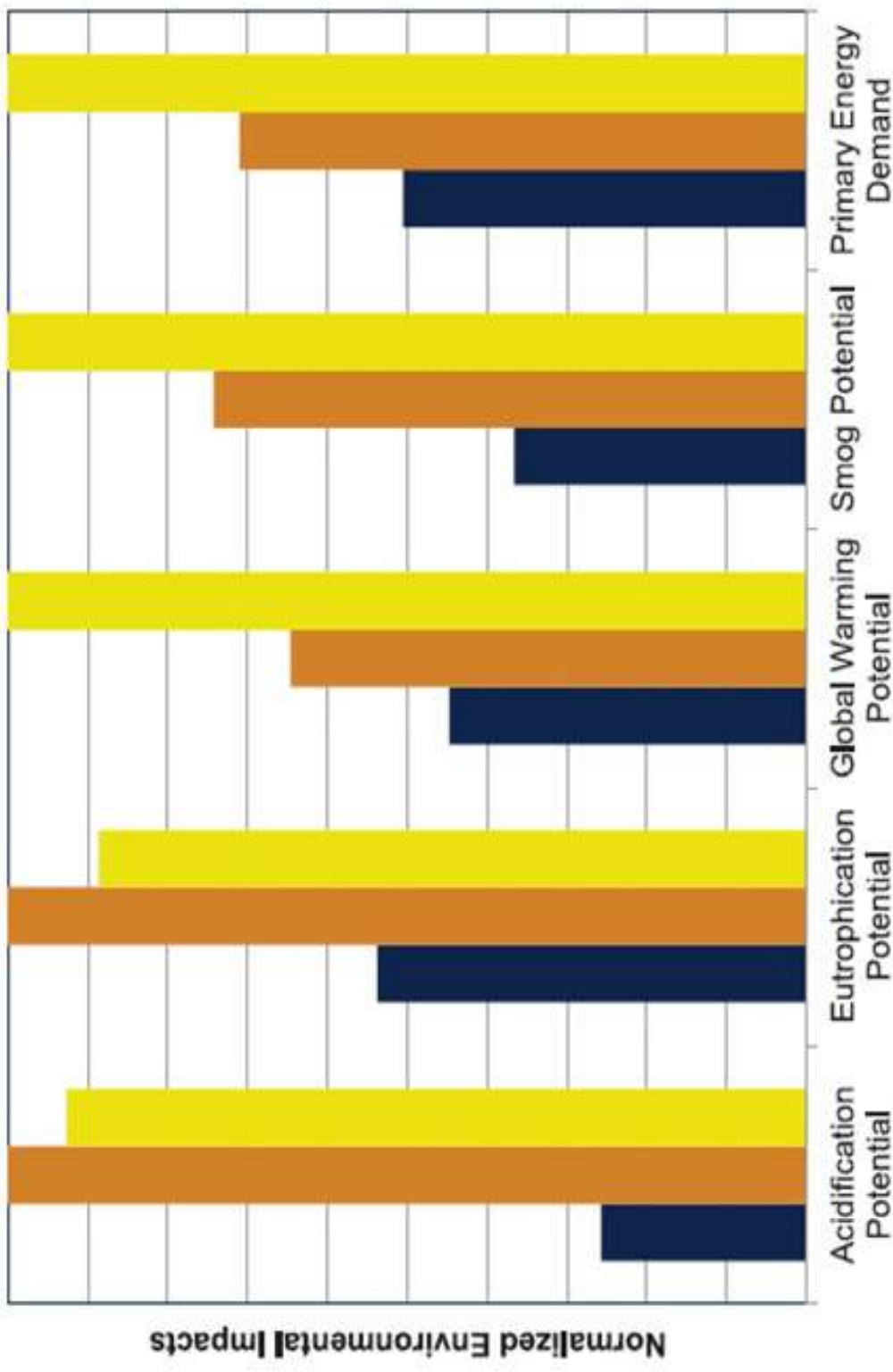
In every category powder coating delivers a better environmental footprint than the two competing finishes. The results speak for themselves.

Building another layer of sustainability into your specs and onto your projects has never been easier with performance powder coatings. So many architects are switching to performance powder. For so many years we've talked about sustainable design – now let's walk the walk. Choose performance powder coatings.



Overall LCA Results - Gate-to-Gate

Comparison of finishing techniques



Powder Coating
Anodizing
Painting

Steel Yourself Powder Coatings are a Performance Coating for Steel Too!

Powder Coating Steel – the do's and don'ts.

Powder coating aluminum is pretty straightforward. There are the AAMA coating specifications that outline what you can expect from any organic coating applied to aluminum, and warranties up to 20 years are supplied when applied to properly pretreated aluminum by a registered applicator. Easy.

But what about steel?

Navigating coatings for steel is simply not as clear cut, and there are often many questions. Can I use environmentally responsible powder coatings on steel? Are there limitations? Will I get a warranty? Should I spec a primer? Are their limitations on colors and effects? Check out our ten most frequently asked questions about powder coating steel and the answers you need to ensure your coated steel performs to the highest standards and looks great!



Lafayette House in NYC features powder coated steel windows.

1. Can you powder coat steel?

You've probably already guessed the answer to this one (otherwise a top "ten" would be pointless!) but yes, you can absolutely powder coat steel. Powder coatings are used on steel in a wide variety of applications from high end windows and doors to structural pieces and rebar. Outside of the architectural industry all sorts of steel applications are powder coated, many of them exterior, including aerial work platforms, cranes and trailers. Architectural grade powders for steel include performance Fluoropolymers, Super Durables and interior grade Standard Polyesters.

2. What types of steel can be powder coated?

Most types of steel can be powder coated! Some types are easier than others, and the pretreatment might vary depending on the type of steel and whether it is an exterior or interior application, but steel can be powder coated and is actually applied in the same way. It's a factory applied finish; the steel is prepped, the powder is electrostatically applied and then cured in an oven. Simple.

3. What type of preparation should be performed on the steel before powder coating?

For any exterior use, the preparation or pretreatment, of steel is incredibly important. Proper preparation and pretreatment is the first step in substrate protection and trying to prevent corrosion. To be honest, it's not as simple as the awesome pretreatment options that exist for aluminum, but good substrate prep on steel is essential. Depending on the type of steel you are using zinc, iron phosphate or zirconium pretreatment or if sandblasting is the method of prep, a white metal blast. After pretreat or blast we always recommend a powder primer is used and if corrosion is a concern, depending on the type of steel you are using, then a zinc rich powder primer is a great option.

4. Should I use a primer on steel?

For exterior applications, absolutely. For interior applications, it's not as essential in terms of weathering, but does help add a layer of protection and provides a good, smooth surface to powder coat. The good news is it's not a chrome based primer. Performance liquid coatings MUST use chrome based primer – they simply don't perform without it (and yes, it's the nasty variety – bad for people and the environment). Powder coatings never require chrome based primers.



5. Does the system require a certified steel prep or applicator?

Applying powder to steel is not a proprietary application system, and the warranty issues around steel are very different (see below). For this reason it's not required – though if you are using a fluoropolymer powder on steel, most good powder companies don't sell Fluoropolymer powders to non registered applicators.

Good substrate prep and application is so important in preventing corrosion and maintaining color and gloss over time, having a coater who knows what they are doing and has a good quality preparation, application system and oven is a no brainer.

6. Are there limitations on colors and effects?

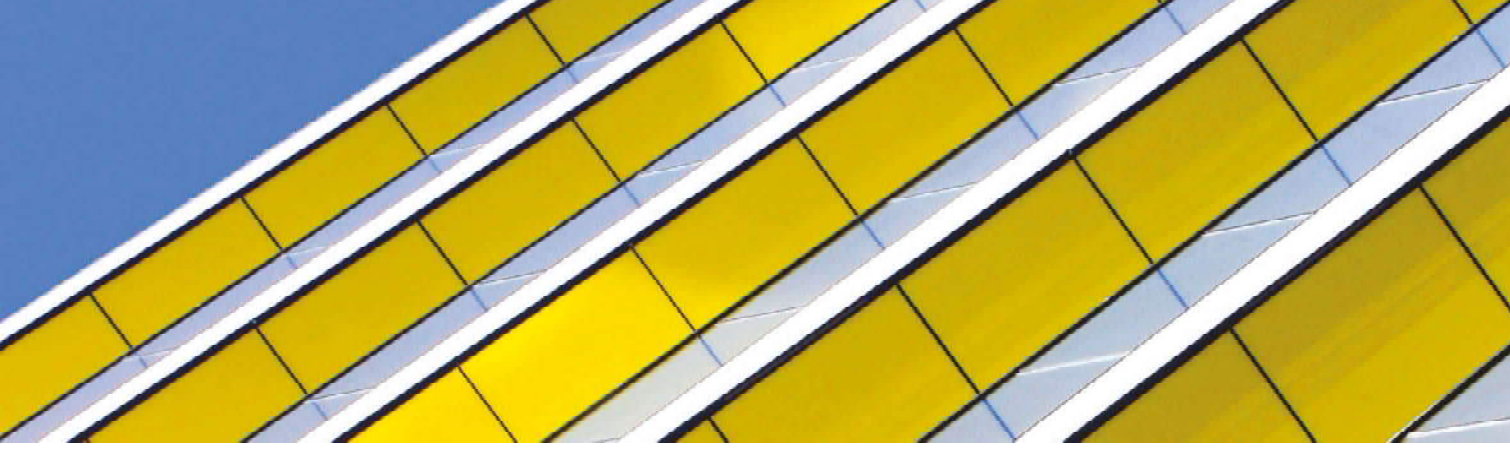
The great news here is the answer is not really! The same rules as coating aluminum apply! For exterior applications where superior performance Fluoropolymers are required, some of the brighter oranges and reds are more difficult to achieve. This is simply because the pigments that will meet the 20 year color retention requirements in these brighter shades are not available. Other than that there

is a lot of choice and mica/metallics and some textures are also available.

With Super Durables or interior grade Standard Polyester powders, the world is your oyster! There's a huge range of colors and effects available – at IFS we have over 76,000 colors in our database so there's plenty to choose from!

7. Are the environmental benefits of powder the same if applied to steel?

For the most part, yes! The benefits of the actual coating – no solvents and therefore negligible VOCs, no toxic waste created during application, no chrome required, etc. are exactly the same. Where it may differ slightly to powder coating aluminum is in the number of coats. Adding a powder primer obviously adds another layer of coating – and this may add another cure cycle which means more energy used. However IFS has developed a two coat system which uses clever formulation technology so that 2 coats of IFS powder can be applied with only one cure cycle. Talk to your IFS representative to see if this is available for your application!



8. What are the steel section size limitations?

Really the only limitation is the size of the powder coaters' oven. Many coaters working with steel parts have extremely large ovens for this reason.

9. Will I get a warranty for coating performance on steel?

The simple answer in this case, unfortunately, is no. At least not from the coating manufacturer, though the applicator may provide a warranty. The reason for this is to do with the substrate and the corrosion problems that can occur with steel, more than the coating. On aluminum, the coating is designed to deliver specified levels of salt spray and humidity resistance and will do so as long as proper pretreatment is in place. The main factor there is actually the pretreatment, not the coating. With certain types of steel, the issue of corrosion is much bigger, and so while the powder coating is exactly the same product as is applied to aluminum, the pretreatment options are not the same.

10. Can I touch up powder coatings on steel?

Yes! Just like on aluminum touch up solutions are available, with various methods of application. They are liquid solutions – imagine how difficult it would be to cure powder on site – and they work great!





Las Vegas, NV City Hall features
powder coated steel structure

What Does it Take to Apply Performance Powder?

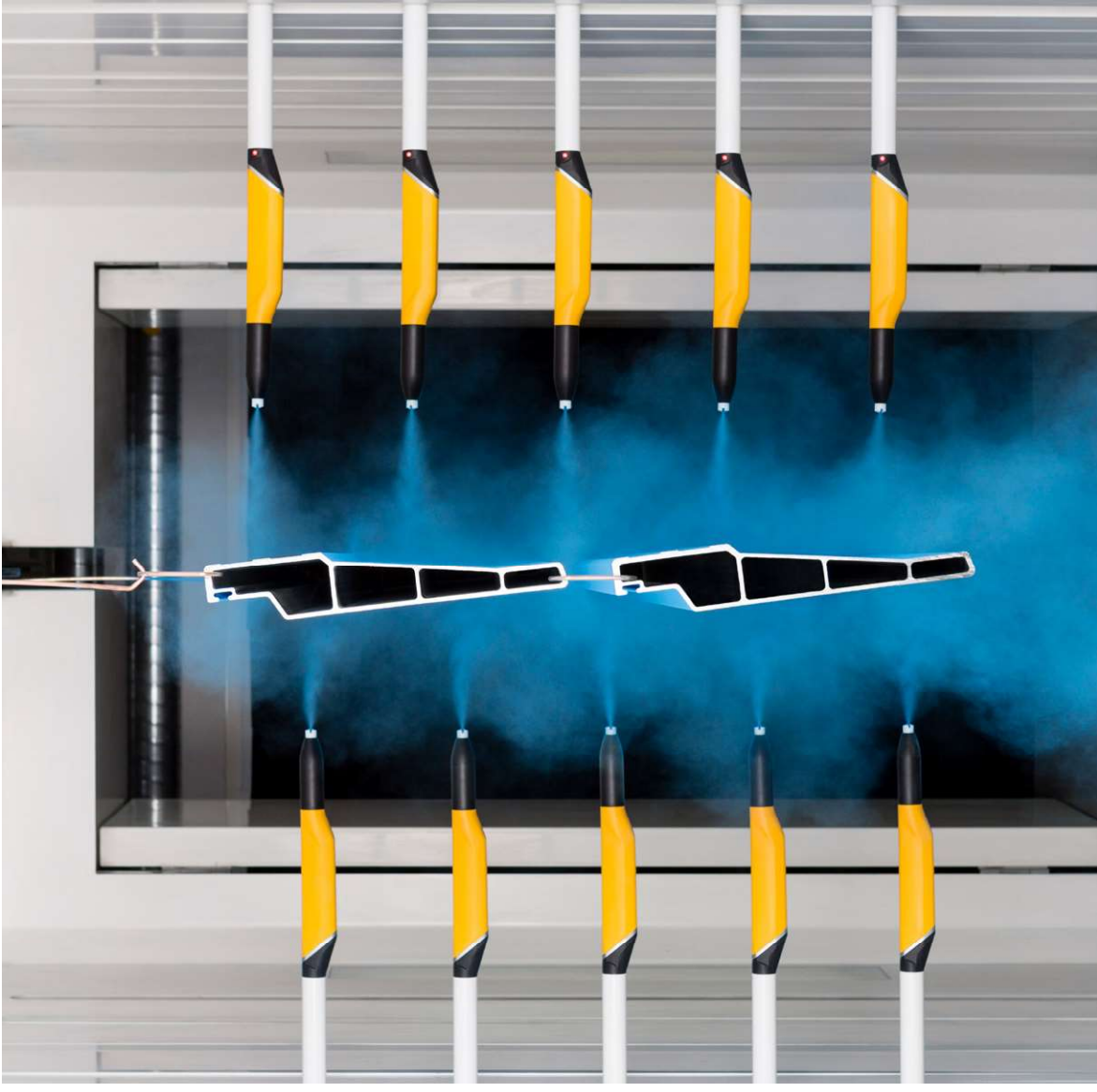
Two words.

Registered Applicators.

Actually, that's not entirely true – registered applicators are required for Fluoropolymers and for products where a warranty is required, but we'll come to that later.

Firstly, powder is a factory applied finish so must be applied by a powder coater with the right equipment. Because powders are electrostatically applied and then cured in an oven, they can't be applied on site. Of course they can be touched up if they do scratch (the great news is they don't scratch as much as liquid due to their thermosetting properties), they just get touched up with a matched liquid paint. It's just like touching up competing liquid products and there are companies making touch up solutions all over the US.

Interior grade powders, like IFS 300SP can be applied by any professional coater – whether that's a custom coater, local job shop, or whichever powder professional your contractor uses for their work. These coaters can also apply a Super Durable powder, as long as a warranty is not required.



Fluoropolymer powders like IFS 500FP (a 70% PVDF liquid equivalent) and also Super Durable powders where a warranty is required, must be applied by a registered applicator.

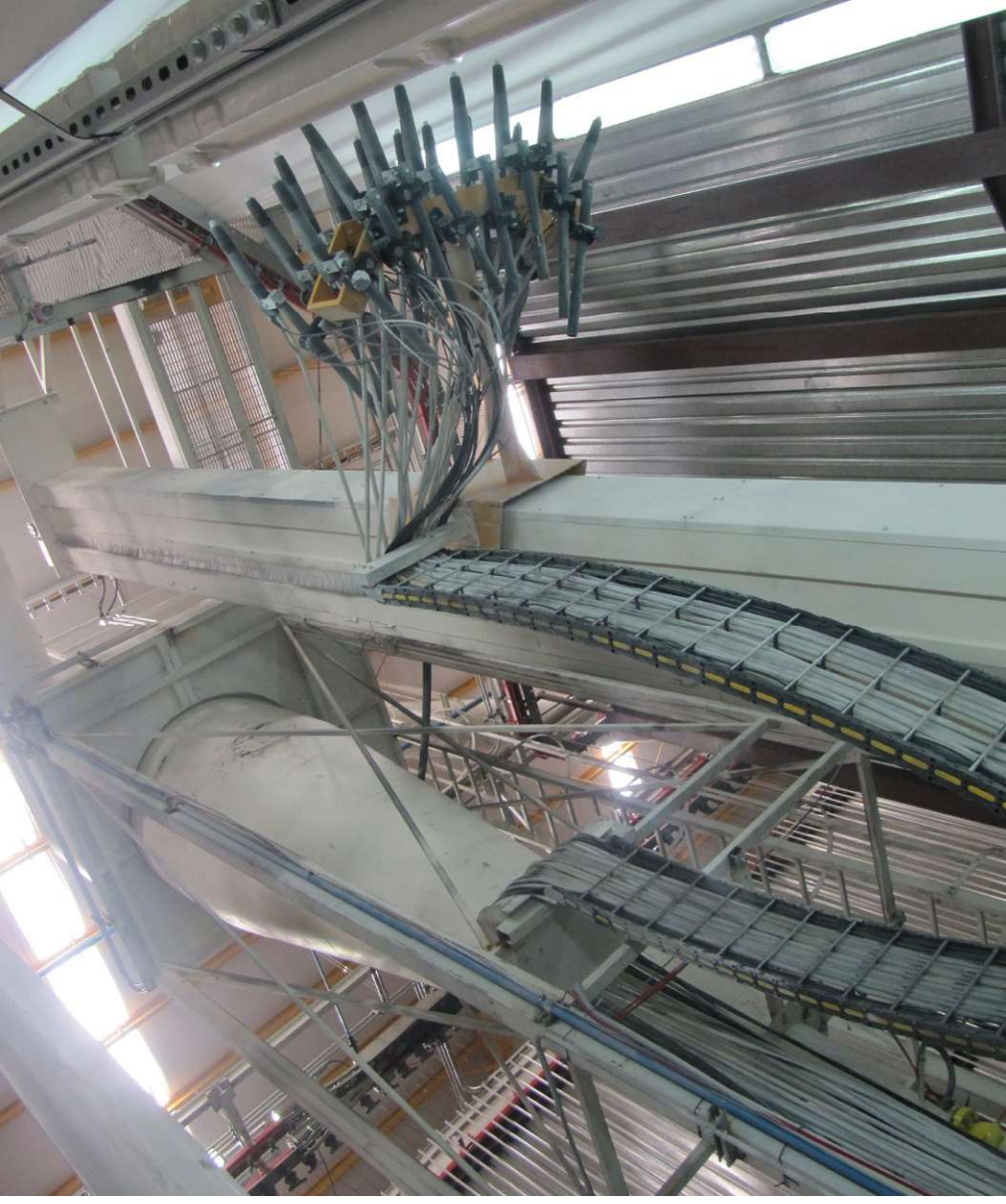
To achieve a warrantable finish, a certain level of pretreatment, application, curing and process control is required from the coater. That's why all good powder coating companies have a Registered Applicator program or similar.

To become a Registered Applicator, the coaters are visited by a technical team to assess their line for suitability. If it looks good, then we ask them to self audit and then we audit the pretreatment, application, oven, process control and quality control/testing to ensure it is up to scratch. Powder is then provided to the coater, and they are asked to pretreat and coat panels and parts. Those panels and parts are then sent to our labs and they are put through rigorous AAMA required ASTM tests. If every part passes every test, then they become a registered applicator, and then we redo the whole process every

two to three years to ensure they are maintaining standards.

Clearly this is a very expensive and time consuming process, but it's essential to ensure that the pretreatment and powders are being applied in a way that will ensure the coating will perform at its best and is worthy of the color and gloss warranty that is offered.

The good news is there are registered applicators all over the USA, with more and more coming on line every year as the popularity of powder, loved for its performance and environmental benefits that liquids simply can't deliver, increases at a rapid rate.



What's more, many companies that you already know and love are registered applicators, including window companies like Sierra Pacific, Starline and Jeld Wen, louver companies like Construction Specialties, Greenheck and Pottorff and metal fabricators like Hydro, Kawneer and Exmet. So when you're looking for exterior, performance Fluoropolymers, like IFS 500FP, with or without a warranty they must be applied by a registered applicator. Likewise if you're looking for a super durable finish with a warranty (like IFS 400SD) - popular on commercial storefront - again a registered applicator should be used.

Non-registered applicators can apply super durables where no warranty is required and also interior grade standard polyester powders. Contact us to find a registered applicator near you or your project site!



Metallic/Mica Powders

Sparkle, shimmer, glitter...the trend for coatings with that extra something isn't going anywhere. So what do you know about Metallic/Mica effect powders?

Joey Roush, one of the IFS bonding experts explains all...

To make the powder sparkle either mica, aluminum flake, or a combination of both is used. What's the difference?

Mica vs Aluminum

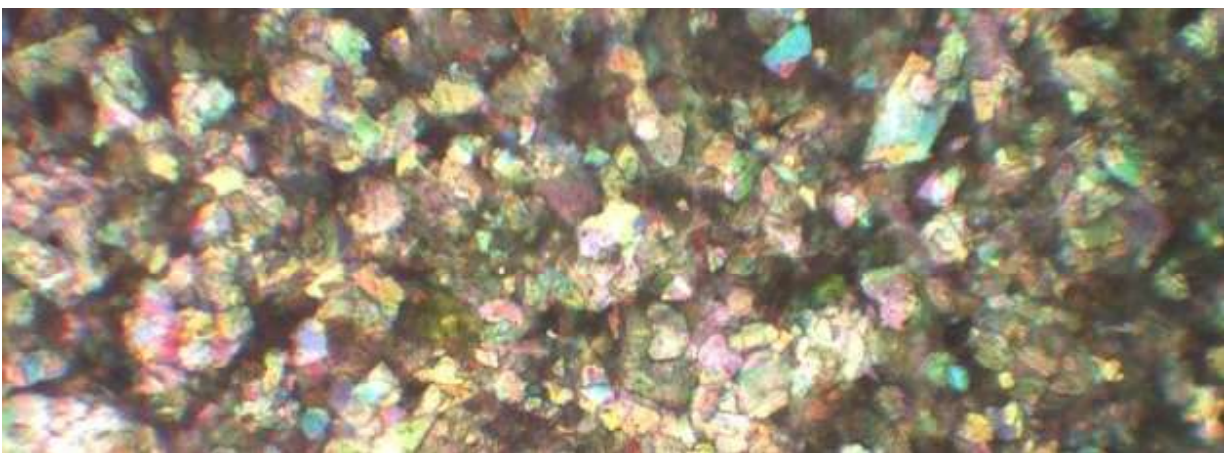
There are two main types of effect pigments used to make metallic or 'sparkle' type coatings: aluminum and mica. Mica is a type of mineral that is very thin and flaky. This mineral is then coated with various types of pigments to achieve colors ranging from pearlescent whites to rich coppers, bronzes and golds. Most of the mica pigments are transparent, which allows the base color to show through – this has a great influence on the overall color. Aluminum flakes on the other hand are fully opaque. The higher the loading of aluminum; the greater the silver appearance and the less visible the base color.

Do you only use mica or aluminum in powder coatings?

Liquid vs Powder

These effect pigments can be added to either liquid or powder coatings and they look fantastic in both. We use the pigments to create everything from a fine shimmer through to a heavier sparkle. However there are some differences in what can be achieved.

All our cards on the table - there are some limitations to what can be achieved in powder. The most significant difference between liquid and powder lies in the lower viscosity of the liquid. The lower viscosity allows for a much higher loading of effect pigment to be used while still maintaining favorable application properties. A liquid coating can have up to 25% metallic pigment loading, while most powders can only have around 5-6% loading. The left photo below shows a liquid coating under 20X magnification, while the right is of a similar shade powder. The loading and depth of the liquid is much greater than that which can be achieved in powder.



However, with trends moving away from “super sparkle” effect coatings and towards more elegant, subtle effects, performance powders can deliver the metallic effect you’re looking for and without the harsh environmental impact of a liquid coating.

How to you make a “sparkle effect” powder?

There are two ways.

First up, **dry blending**:

Dry blending is a quick and simple process where a powder coating and an effect pigment are mixed. This process is very cost effective and can be successfully utilized under certain circumstances.

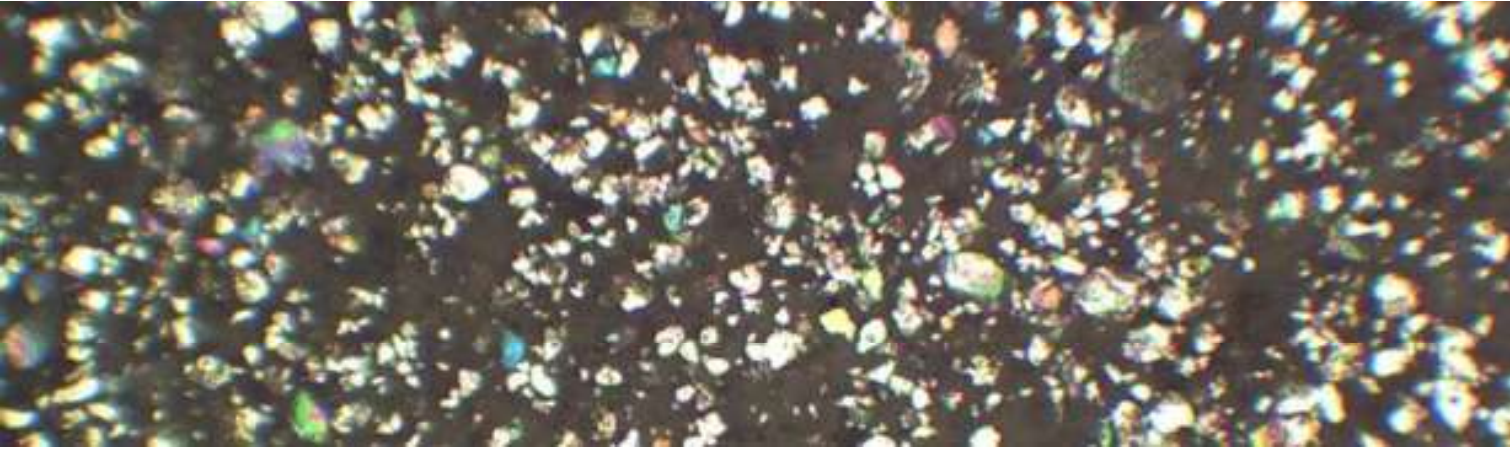
Some of the main benefits include smaller minimum order quantities and quick turn around times. However, a dry blended product is more susceptible to application issues, depending on the color and loading of the effect pigments. Powder particles and effect pigment particles react differently to the corona field during application and can give a splotchy appearance if unbonded. In fact, some colors cannot be achieved in a dry blend. For example, colors with high effect pigment loading will likely experience spitting’ during

application, which is a collection of effect pigment on the spray gun electrode that is transferred to the part. The end result is like it sounds - it will appear as a blemish on the coating.

The second, and more common process in architectural powders, is bonding.

Bonding

Bonding is a more complex process compared to dry blending. During the bonding process, a powder coating is heated using friction in a mixing vessel, to the point where the out-side of the powder becomes sticky. The effect pigment then adheres to the powder particle. A properly bonded powder will yield a much more consistent finish as compared to a dry blend. Another benefit is that the powder can also be successfully reclaimed with minimal color shift. Bonding also allows for colors with higher effect pigment loading to be successfully applied. For the architectural market, where both high levels of performance and aesthetics are required, bonded metallics are the sensible option.



What about a clear coat? With liquid paints clear coats are always used with metallic/mica coatings?

Well, simply put, with a liquid coating the clear coat is needed to help protect it from scratch and mar, and meet the AAMA performance requirements. Plus the clear coat helps protect the flakes from degradation - especially at the low films liquid have to be applied at. With powder coatings, that's not the case. The scratch and mar resistance of powder is much better due to its thermosetting properties, and the effect pigments used to conform to the AAMA specification have a specialized coating that protect them from degradation. This coating, or protection, of the effect pigment allows the system to meet the AAMA performance specifications without the use of a topcoat.

*For more information on
sparkle effect powders, or any of the
topics in our book, please contact:
flewin@ifscoatings.com*

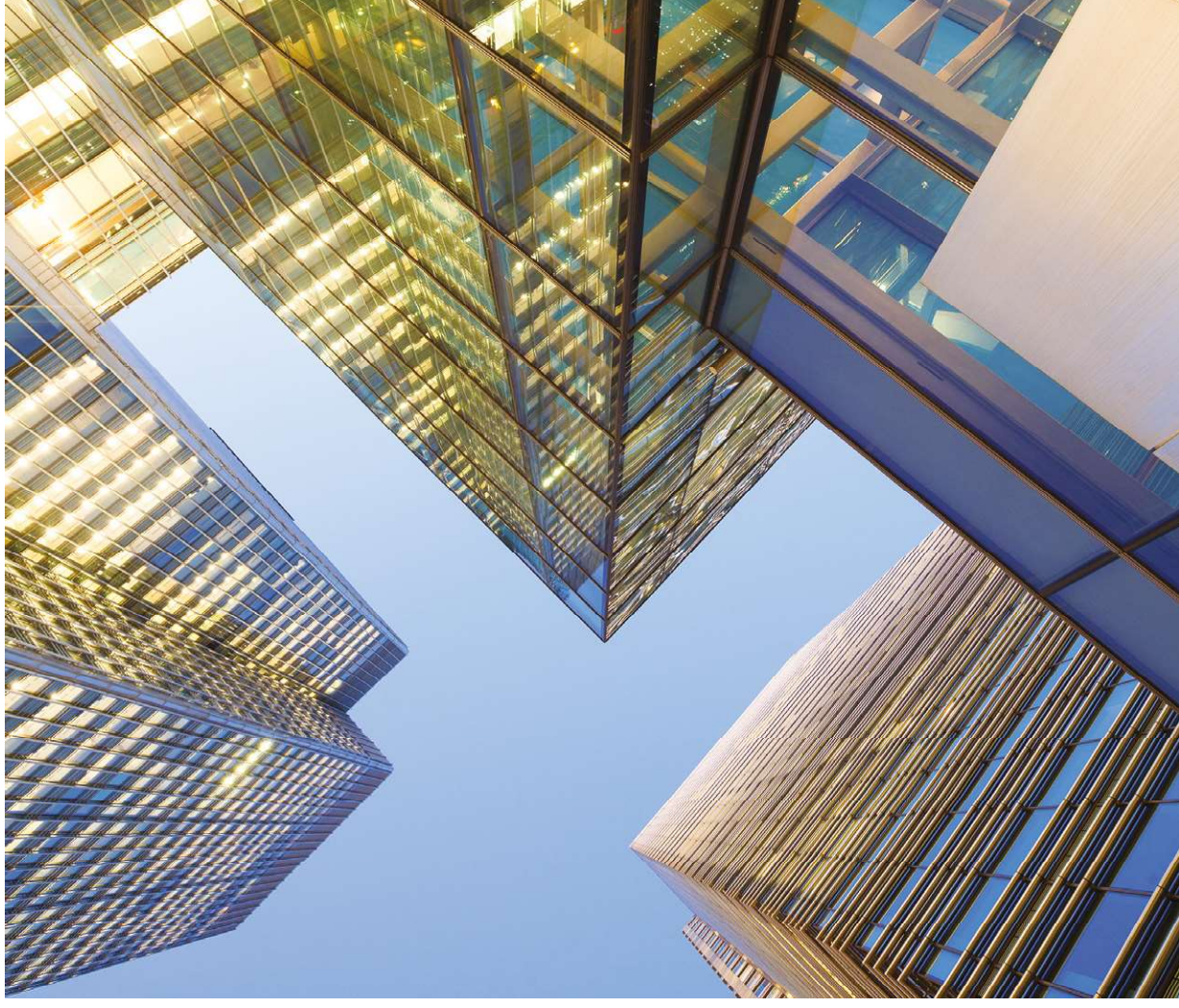


Powder Coatings and Specification Wording

It wouldn't be right to finish without including some pertinent information on specifying powder. So often the finishing spec is simply left as it has always been – with a 70% PVDF liquid finish, and the relevant liquid wording – in place. It's a great product, there's no doubt about that, but in the era of sustainable design, if you can get the same or better performance, the same warranties and the same colors and effects with an improved environmental impact, surely it's a simple decision to at least add powder into the spec. And maybe consider adding it first – above liquid paints – demanding the more sustainable product first, and accepting that if it's not available, then liquid coatings are acceptable.

With that switch come a few simple changes to the finishing spec wording, e.g. Deltak/Masterspec division 09 section 9600.

We often get calls from General Contractors asking for 3 coat powder systems (they don't exist) or asking for an incorrect product because the spec wording is liquid vocabulary rather than powder wording.



So what are the two simple things to watch out for?

1. Number of coats. On aluminum, performance powder is usually a single coat application. That includes Fluoropolymers like IFS 500FP. And yes, that includes metallic or mica finishes. Powder delivers the same or better performance and the same warranties in a single coat.

Why only one coat? There are two reasons a minimum of two coats is required with equivalent liquid paints. The first is adhesion – a chrome based primer is used to help with adhesion (primer sticks to the pretreated metal, top coat sticks to the primer, and they work to deliver the adhesion we are looking for). The second reason is the different type of Fluoropolymer resin. PVDF resin actually allows a little bit of UV light through the surface of the coating, so the chrome based primer is there to help prevent UV degradation.

Those two reasons don't exist with equivalent powder coatings. Powder is made in a very different way and the ingredients – including those that give

it good adhesion – are extruded in the product. So the powder is created with great adhesive properties – no primer needed.

Fluoropolymer powders use FEVE resin not PVDF resin (both are fluoropolymers) and FEVE does not allow UV light through the surface of the coating – so no primer is needed.

We also do not need to add a clear coat to metallic/mica effects. We use encapsulated mica/metallic which means it is encapsulated in resin (the stuff that is doing the hard work). Then we also do a process called bonding, which makes each individual particle of mica/metallic stick to a particle of powder.

So single coat on aluminum! Please make sure you revisit the numbers of coats required in the finishing section and ensure it is correct for the product you choose. So, when you see phrases like “3-coat system” you should hear an alarm in your head – that is antiquated language. Define the AAMA level and warranty requirements, and let the best system win.



2. Most good specs citing liquid PVDF exterior finishes call out for a minimum of 70% PVDF Fluoropolymer resin in the liquid coating. That should change when specifying superior performance powder coating.

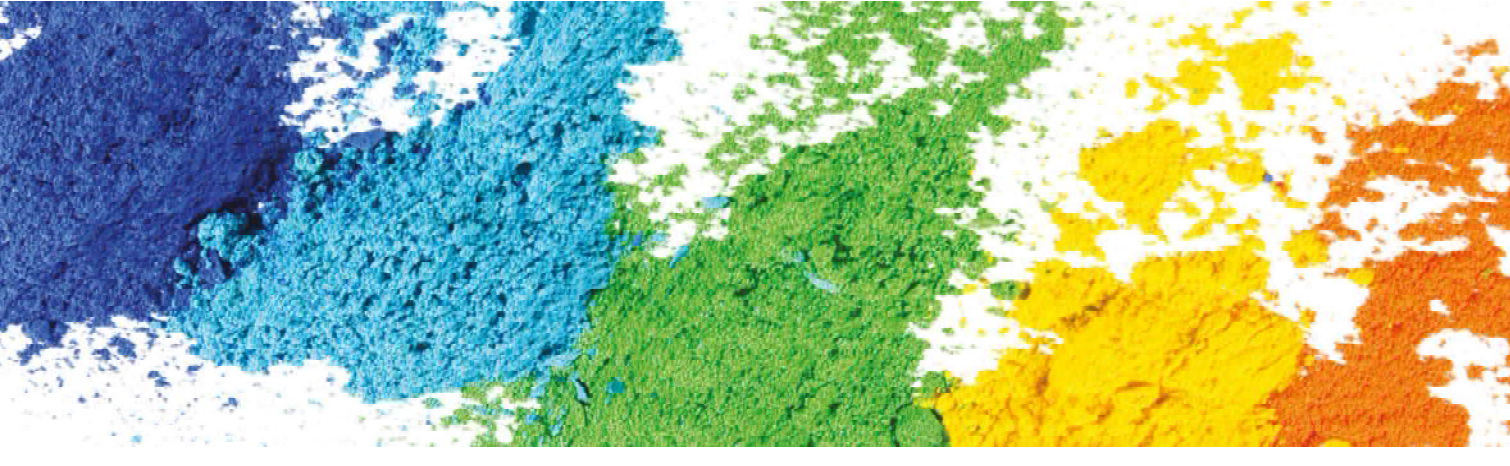
Instead of only 70% Fluoropolymer resin, the spec needs to require 100% FEVE Fluoropolymer resin. The resin is what gives the coating its durability and performance, so having 100% FEVE Fluoropolymer resin in the coating is always a good thing!

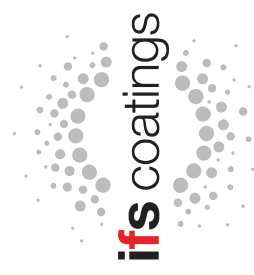
An example of good powder coating spec language would be “Superior Performance Organic FEVE Fluoropolymer Finish: Single-coat fluoropolymer finish complying with AAMA 2605 and containing 100 percent Fluoro Ethylene Vinyl Ether (FEVE) resin. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.”

We are here to help you! We can help with spec wording regardless of the coating system you choose. Make sure your spec wording is correct, make sure that your coatings manufacturer is available to any

GC to help with product order and delivery, and make sure that what you took the time to specify is actually applied to the substrate.

Our three part 050513 spec as well as just the finishing language for aluminum and steel at each AAMA level is available to download at IFSCoatings.com, however we know that everyone has their own style of specification, so contact us for help with tweaking your spec to make sure it's correct no matter what coating type you choose.





www.ifscoatings.com