

# Coating 101

INSPIRE ME

Valspar is always excited to provide education on the world of coatings. Here are a few facts to get you started. Want to learn even more, check out our Continuing Education programs. Program information can be found on the last page.

## What is Coating?

Coating is comprised of four principal ingredients: resin, pigment, solvent and additives. The percentage of each item can change depending on the coatings final application and color. Below is an example of one of the many combinations.



15%

**Pigments:** provide color, hiding and chemical resistance.

35%

**Resin:** the binder holding the pigment to the substrate and weather resistance.

50%

**Solvents:** the vehicle by which the solids are transported to the substrate.

**Additives:** Any number of chemicals added to the coating, usually in small amounts to bring special effects to the coating.

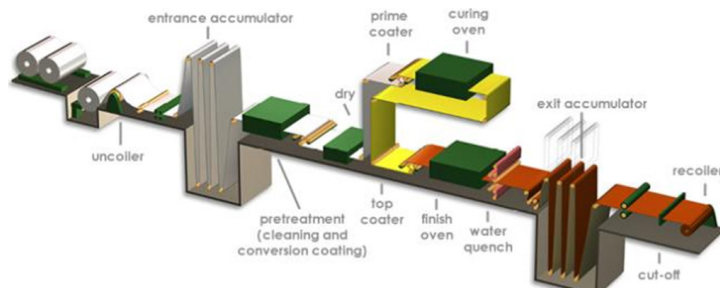
## Coating Process

### Two types of coating applications

Valspar is the leader in coil and extrusion coatings. Both are protective coatings that are applied in an automated process.

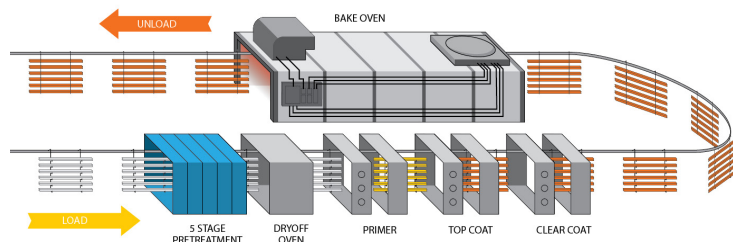
### Coil: Continuous Coil

Coil coating are applied to coil formed metal sheets by a continuous, automated process that can happen at up to 700 feet per minute. Coil is unwound, cleaned, treated, primed, painted and baked before being recoiled for shipment.



### Extrusion: Horizontal or Vertical Lines

Extrusion coatings are applied in a manufacturing process that consists of cleaning and pretreating aluminum preformed extrusions, through a spray process, and then thermally curing the coating to set the system.



# Coated Product Applications



## AAMA 2605

High-Rise Monumental/High-End Residential

- Curtain Wall
- Wall Panels - extrusion & coil
- Window, Door Frames
- Store Fronts
- Roofing Panels - coil

## AAMA 2604

High-End Commercial/Condominium

- Curtain Wall
- Wall Panels - extrusion & coil
- Window, Door Frames
- Store Fronts
- Roofing Panels - coil

## AAMA 2603

Commercial/Industrial/Residential

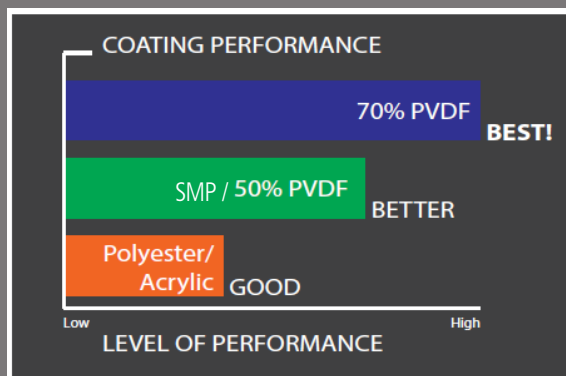
- Interior extrusions & panels
- Window & Door Frames
- Wall Panels - coil
- Roof Panels - coil

## No limit to the number of applications:

Without coating services, metal products would have a very different look. Metal Building components is just one industry segment for coated metal coils or extrusions; Appliance, HVAC, Lighting Fixtures, Office Furniture, Transportation, Garage Doors, and Interior ceiling and wall panels are additional segments that have coated metal products.

## Resin Types

The primary function of resin is to act as the binder in a paint formulation by binding all of the components together. It is the source for a coatings' durability and physical properties. It increases the physical strength and chemical resistance of the coating film, and allows for the curing process to occur while paint is drying.



## Pigments

One key ingredient can make or break a coating and that is pigments, which provide the coatings color and function. The pigment component in any formulation can either enhance or degrade the overall performance of the protective color coating.

Pigments are added to paint to provide color and can be blended to create a desired color to suite the aesthetics of an application.

### Organic Pigments:

Natural, very bright appearance, but have a low resistance to fade. Poor weathering.

### Inorganic (ceramic) Pigment:

Made of metal oxides and mixed metal oxides that have high resistance to fade. Excellent weathering.





# Coating Performance

Exposure to the sun (UV light), moisture and humidity, high temperatures and temperature fluctuations can lead to color changes, chalking, blistering, corrosion and many other physical factors to the protective metal coating.

## Test, test and test again.

There are two key approaches to weather testing: long term natural exterior weather exposure and laboratory accelerated weathering. Each of these testing approaches verifies performance, application, weathering and appearance of our sample panels.

Tests and evaluations are performed to appropriate industry association standards by Valspar technical experts.

## Natural Exposure

Exterior weather exposure (natural weathering) involves placing sample panels on inclined open racks orientated at the sun, usually at a 45 degree angle in a southerly direction. This angle ensures full UV exposure.

## Accelerated Testing

Special environmental cabinets and instruments are used to speed up the weathering process and measure its effects under extreme conditions.

## Testing Standards

### What is ASTM?

ASTM International, formerly known as the American Society for Testing and Materials (ASTM), is a globally recognized leader in the development and delivery of international voluntary consensus standards. ASTM standards help level the playing field so that businesses of all sizes can better compete in the global economy. \*\*[www.astm.org](http://www.astm.org)

### What is AAMA?

American Architectural Manufacturers Association (AAMA) stands as a strong advocate for manufacturers and professionals in the fenestration industry and dedicated to the promotion of quality window, door, curtain wall, storefront and skylight products. They work to improve product, material and component performance standards. \*\*[www.aamanet.org](http://www.aamanet.org)

### Other Associations

We're in good company when it comes to our Green Agenda. Because when you're a proud member of the following organizations, sustainability becomes top priority; Energy Star, USGBC (U.S. Green Building Council) and LEED and CRRC (Cool Roof Rating Council).

## Coating Failures

### Gloss Retention

Gloss has been defined as the ability to reflect without any scattering of light. Direct UV exposure can degrade the top coat luster.

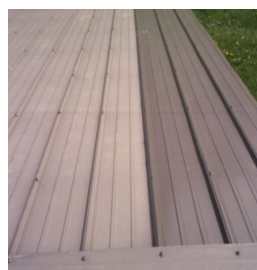
### Chalking

Chalking is caused by degradation of the resin system at the surface of the finish due, predominantly, to exposure to ultraviolet (UV) rays. As the resin system breaks down, resin particles take on a white appearance and imbedded pigment particles lose their adhesion to the film.



### Fading

Fading is caused by UV and hydrolytic degradation of the resin system. If organic pigments are present in the color they may also be degraded. This is calculated using Delta (dE) values - a single number that represents the distance between two colors.





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- Color Matters: The relationship between color and pigments in architectural coatings
- High Performance Coating Systems for Metal Roofing
- Talking Color: New and traditional architectural coatings bring life to the built environment

\* AIA programs are found under Insight Center then select Education.



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