

PRE-PAINTED STEEL TECHNICAL BULLETINS



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For more information or other questions not addressed by these bulletins please contact Steelscape's Technical Service Department or your Steelscape Account Manager

PPB1 - Do Not Mix Paint & Mill Applied Coating Systems (Batch Sensitive)

1.0 Introduction:

Due to the chemical and physical variability within certain paint systems and slight process equipment changes from one production run to another, there are some products whose appearance may not be the same from order to order. This technical bulletin describes those items Steelscape does not guarantee as reproducible and guidelines for avoiding mixed orders on jobsites.

1.1 Metallic/Mica Paints:

The metallic/mica family of paints is inherently variable in appearance due to not only the physical shape of the pigment particles but also their behavior during the application process. The individual pigment particles are flat in nature allowing for light to reflect off of them at various angles. They are also typically larger in size than non-metallic pigments. The specific orientation of these pigment particles affects how the final paint system appears visually to the human eye.

The exact size and orientation of these pigment particles cannot be completely controlled during the paint manufacturing process, thus each paint batch of metallic/mica paint, even though the same color may have a slight visual difference.

When the paint is applied during the coil coating process, the final directional orientation of these pigments cannot be controlled. This results in slight visual variations from one production run to another, even if the same batch of paint is used. This phenomenon is also responsible for the slight color shift observed when viewing a metallic/mica painted panel in the coil rolling direction versus perpendicular to coil rolling direction. Steelscape does not accept responsibility for material appearance when the architectural design requires panels to be offset (i.e. perpendicular) from adjoining panels, resulting in visual differential in color and or reflectivity.

It is important that the end user does not rotate panels in the cases of symmetrical roll form patterns to avoid obvious color and light differential within the structure. The use of directional arrow branding on the bottom side of metallic material is highly recommended.

1.2 Printcoat Paint Systems (including Steelscape Prints®):

Printcoat paint systems consist of a base coat of color and then a pattern of a different color over the top, which allows two colors to be visible on the finished product. Order to order variability in this process originates from several sources.

Print Roll Speed:

The patterned roll used to create the print effect must be moving as close to the same speed at the coil strip during production. Although every measure is taken to align these two speeds there are slight differences from one production run to another which may result in slight pattern differences.

Paint Viscosity:

The viscosity of the paint being used for the print portion of the order will vary slightly from order to order and paint batch to paint batch. The viscosity of the paint on the print roll will affect the look of the final pattern; often resulting in a “lighter” or “heavier” pattern.

Print Roll Pressure:

In order for the pattern to transfer from the print roll to the coil strip pressure is applied between the two. The amount of pressure controls the amount of paint film applied to the strip as well as the look of the pattern. This pressure will fluctuate slightly between production runs resulting in slightly different pattern appearances.

1.3 Vintage® and Eternal Collection™:

The Vintage and Eternal Collection coatings are inherently variable in appearance due to the coatings' composition and application process. The make-up of these specialized coatings, while guaranteed within an approved color range, cannot be completely controlled during the paint manufacturing process. In addition, these coatings are semi-transparent and final appearance is influenced by the substrate surface, which can also vary between batches. As such, each coating batch may have a slight visual difference.

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These slight visual variations from one production run to another can occur even if the same batch of the coating is used. This phenomenon is also responsible for the slight color shift observed when viewing a coated panel in the coil rolling direction versus perpendicular to coil rolling direction "flop".

Steelscape does not accept responsibility for material appearance when the architectural design requires panels to be offset (i.e. perpendicular) from adjoining panels, resulting in visual differential in color and or reflectivity.

1.4 Rawhide, Natural Matte® & Textured Paint Systems:

The chemistry and ingredients that create the textured appearance can vary between paint batches. In addition, the look and density of the textured surface is influenced by slight changes in the application process and film thickness. For these reasons care should be taken not to mix batches of Rawhide, Natural Matte or other textured paint systems.

1.5 Visual Only Paint Colors:

The color of some paint systems cannot be measured electronically due to pigmentation or gloss. These are often very bright, saturated colors or very high gloss paint systems. Metallics, micas and other special effect pigments would also be included in this category. When a color cannot be measured electronically against a standard it is assessed visually by a person using a color light booth. This human factor along with the nature of the paint formulation can result in batch to batch color variation and batches should not be mixed on jobsites.

1.6 ReziBond®, ZINCALUME® Plus, TruZinc® Plus, & Other Mill Applied Resins & Coatings:

Resins and coating systems applied on the metallic coating mill have inherent batch to batch variability for several reasons. The application process on the mill has limitations that can result in a wider range of coating weights and film thicknesses as compared to a paint line, this in turn can result in color and flow variation between production batches. Mill applied systems are not color controlled. The majority of mill applied coatings and resins are either transparent or semi-transparent, and

are therefore influenced by the appearance of the underlying metallic coated substrate, which can also vary between batches.

2.0 Guidelines for Avoiding Mixed Orders on Jobs:

Inventory and order size are critical for ensuring that mixed batches of variable painted and/or coated product do not get used at a jobsite. If the paint system or specialized coating is a standard or stock item, order large quantities at a time; this will allow for fewer batches in inventory and reduce the risk of mixed orders on a job.

If the item is a custom color or print requiring established minimum linear feet, order slightly more linear feet than the job requires. This will allow any damaged or defective material to be replaced from the same production run.

If it is absolutely necessary to use more than one order of a metallic/mica, printcoat or specialized coating on a job compare the different available batches carefully; some batches may be a better match than others.

Also, using different batches on trim, accessories or on separated portions of a building may not be visually objectionable.

If a project cannot be completed without ordering additional material, it is imperative that Steelscape be notified of the situation and told which previous order needs to be matched. Although Steelscape will not guarantee a match on metallics/ micas, print-coats or specialized coatings, every effort will be made to duplicate the desired color as closely as possible.

Steelscape strongly recommends the use of branding, directional arrows on metallic, micas, Vintage, Eternal Collection and TruGuard coated coils.

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PPB2 - Pressure Mottling

Pressure Mottling:

As defined by the National Coil Coaters Association, “Pressure Mottle” is ‘an uneven pattern, often seen as glossy spots, which is usually caused by pressure within a painted coil.

The cause of mottling is from direct pressure within the coil where the gloss controlling components of a paint system are suppressed or “flattened”. The act of this “flattening” will result in the reflectivity or gloss to be randomly suppressed. Visually this will result in a “blotchy” appearance on the painted surface where areas of the paint appear dull, versus shiny.

The pressure used in recoiling material after painting as well as the types of components used to suppress the natural gloss of the pigmentation within the paint system will vary, resulting in the occasional “mottling” of the finished product. The gloss suppressing components are typically pressed down within the surface of the paint. Due to this pressure the gloss components are flattened and in essence blanket the natural reflectivity of the pigments underneath.

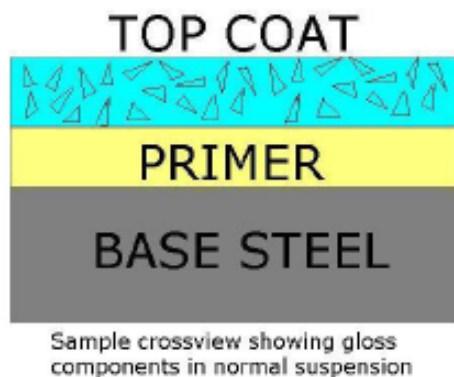


Figure 1



Figure 2

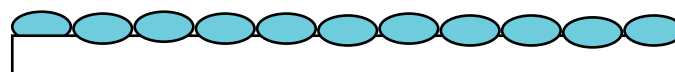
As seen in the diagrams above, the gloss components in Figure 1 are under normal suspension within the topcoat and the direction is random throughout. But when excessive pressure is applied to the painted surface in conjunction with higher recoiling temperatures, the gloss components are suppressed or flattened within the topcoat as seen in Figure 2. Only the components closest to the surface are affected and this results in the variance in gloss across the strip.

The greater the difference in gloss between the backer coat and top coat the more pronounced the mottling. This is due to the surface roughness differences at a micro level between low gloss and high gloss paints. The “suppression” of the gloss components is more exaggerated than if the both surfaces have the same surface structure.

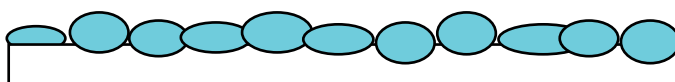
Medium/High Gloss Paint Surface:



The surface is relatively smooth and even which results in a medium or high gloss appearance.



The surface is rough and bumpy which results in a low gloss appearance.



After being subjected to tension within the coil the low gloss surface is deformed resulting in mottle.

When the material is formed and installed, the exposure to the heat of the sun will make these components “spring” back to their original positions within the topcoat, giving the even appearance and uniform gloss across the strip.

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Pressure mottling within coil wraps before exposure to heat. A linear appearance in the rolling direction is typical.



Pressure mottling (bottom) and after application of heat (top).

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PPB3 - Wet Stack Storage

Overview:

This document is intended to provide guidance for the prevention of storage corrosion of bare and pre-painted building panels and accessory items.

Introduction:

Building panels when properly installed, offer a long service life and under normal service conditions provide excellent corrosion resistance. However, building panels are subject to premature corrosion failures prior to installation if they are not handled and stored properly on the job site.

Excessive storage periods, or poor storage conditions, often result in water intrusion into panel bundles. Prolonged exposure of bundled panels to wet conditions can cause paint blistering and substrate corrosion. Wet Stack Corrosion can manifest itself in as little as 2-4 weeks.

Proper storage of panels must be considered as improper storage can result in costly consequences including material reordering and job site delay. This bulletin depicts wet stack storage issues and prevention methods for pre-painted metal.

This issue can also arise on bare and resin coated metal, and the storage considerations published in this bulletin also apply to these products.



Close up image of severe "Wet Stack Corrosion". Note smooth, normal surface in upper right corner.

Wet stack corrosion can also occur in coils. Coils should be stored to minimize exposure to moisture, large temperature swings, and used in a timely manner. Wet stack corrosion will nullify all warranties on the applied paint as well as any substrate warranty. Refer to suppliers terms of sale or claims policy for more information.



Note that when scratched, the primer has been compromised as well as the presence of Zinc Oxide (white rust).

Environmental and Service Conditions:

When water or water vapor is present along the sides of a panel bundle, it may penetrate between the panels by capillary action, leading to corrosion. Improper precautions during transport can also lead to water accumulation between the panels. Ambient humidity and temperature cycles will also promote water intrusion into stored panel bundles through condensation. Finally, rain and snow are other potential sources of water that can cause storage corrosion of pre-painted panels.

Two other important factors contribute to the corrosion of stored pre-painted panels; temperature, and exposure time.

Storage corrosion can be prevented by:

- Reducing site storage time
- Decreasing water contact
- Moderating temperature extremes

Other environmental factors may accelerate storage corrosion. This includes the presence of aggressive soluble chemicals such as sulfur and chlorine compounds often found in polluted atmospheres, road salt contaminants, and marine environments.

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For additional information on ZINCALUME oxidation see **Technical Bulletin ZTB10 "Preventing Transportation and Storage Corrosion"** and for more details on TruZinc Steel corrosion see [Galv Info Note 3.2](#)

Job Site Storage:

Proper storage limits the collection of water from rain, snow, and condensation on the panel surfaces. Under roof storage is always preferred. However, prolonged storage will increase the likelihood of storage corrosion for both finished panels and pre-painted coil.

If panel bundles must be stored outdoors, several precautions must be taken to prevent storage corrosion. The panel bundles should be stored in a level area out of the way of other construction activities to minimize the number of bundle movements required at the job site.

If the bundles are stored on the ground, a plastic ground cover must be put down under the bundle to minimize condensation of water from the ground onto the panels. The bundles must then be raised off the plastic ground cover to avoid contact with water puddles and to allow for air circulation around the bundle to promote drying of condensed water.

Wet, uncured, or pretreated lumber should not come into contact with the panel bundles. The panels must be stored on an angle to promote drainage of water off the bundle. Sufficient support must be provided to the raised and angled bundles to avoid excessive bowing, which may result in low spots that could hold water.



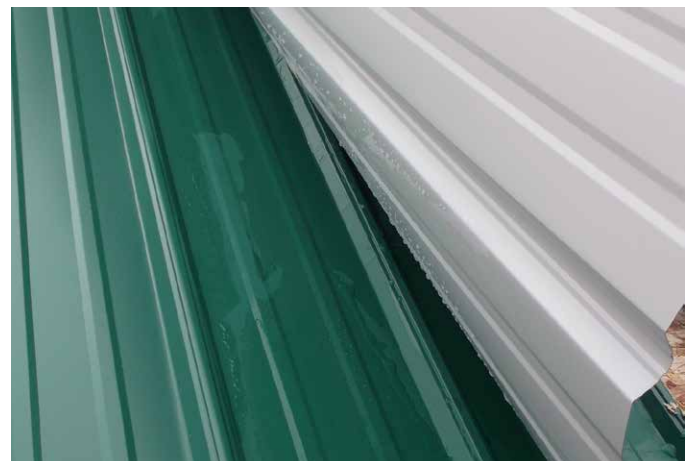
Improper Storage - Insufficient support in the center of long panels allow "Bowing" or "Sagging" that traps water in the center of the panel length.

The bundle must be completely sheltered with a loose-fitting waterproof tarp to protect the bundle from rain or snow moisture while allowing for air circulation and drying of condensed water. A loose-fitting tarp also shadows the bundle from direct sunlight and will moderate temperature extremes.

It is important not to snugly cover panels with a tarp when on the ground. Tightly covered panels can create a humidity chamber that can accelerate corrosion. Tightly covering pre-painted panels restrict airflow and trap moisture in the ground under the tarp.



Improper Storage - By snugly fitting a tarp directly on the ground.



This method traps moisture underneath. After just 3 months covered in the manner above, the panel bundle is opened to reveal that moisture has made its way into the layers of sheets.

Outside Storage Best Practice:

The National Coil Coaters Association (NCCA) developed a best-practice storage method for pre-painted, bundled panels. This bulletin can be found at [CLICK HERE FOR LINK to NCCA BULLETIN](#)

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The following steps outline the methodology recommended by the NCCA.

Step 1 – Preparing the Bundle:

The pre-painted bundle should be placed on a tarp to prevent ground moisture from being a factor. The bundle should then be placed on top in a sloping position. This allows any moisture that may already be present to gravitate out.



Bundle placed in a sloping position to gravitate moisture out.

Step 2 – Placing Spacers:

Place dunnage or material scraps of dimensional lumber on the bundle's cover sheet or tarp. This is to keep the top tarp from resting directly on the panels. This will increase air flow and will allow moisture to escape. Rolling the edges of the bottom tarp up and cutting a hole in the lowest area of the bottom tarp will allow water to escape.



Scrap material used to keep tarp from resting directly on bundle.



Tarp edges rolled up and hole cut in lowest area of tarp to allow water to escape.

Step 3 – Tarp Placement:

Roll the top tarp over the stack allowing enough tarp to stretch out at least 12 inches from any edge of the panel stack.



Tarp rolled over stack with a minimum of 12" overlap on all sides.

Step 4 – Securing the Tarp:

While using stakes and elastic straps, pull the top tarp tight enough to keep the edge off the ground, creating air flow under the bundle.



Tarp secured to ground tightly with elastic stakes, allowing for airflow under the bundle.

Additional Guidance:

The condition of the tarps and paper wrapping of stored bundles should be inspected daily for damage, puddles, or snow accumulation. Damage to packaging or tarps must be repaired and snow or water accumulation must be removed. If water is present in the panel bundles, the panels must be separated and wiped dry with a clean, soft cloth and stacked with a space between each panel, so that air circulation can complete the drying process.

PPB4 - Natural Matte® Installation

Finish Overview:

The Natural Matte® is an ultra-low gloss silicon-modified polyester (SMP) paint system. This unique finish features a micro-wrinkle texture that dissipates light and achieves unprecedented low levels of gloss and sheen. Natural Matte offers good resistance to damage, but due to its unique texture, hard-forming or abrasion may visibly mar the painted surface. Natural Matte requires additional care during handling and installation, and the application of a specialty protective film.

Installation and Handling:

-  Apply the appropriate strippable film to the exposed metal surface. Strippable film should remain on the metal surface during transportation, manufacture, and installation.
-  Handle the product with care to avoid damage or marring. Avoid dragging the exposed painted surface across other surfaces. Always handle the painted surface with clean, dry, cut-resistant gloves.
-  Avoid carrying unsecured stacks or bundles of sheets or panels, as this may result in metal-to-metal abrasion.
-  Ensure coils, sheets, or formed panels are secured and packaged appropriately during transportation.
-  Avoid walking on the painted surface where possible. Minimize foot traffic by establishing walkways and traffic lanes on the roof surface. Ensure that those walking on the roof area use clean, non-marking, soft-soled footwear.
-  Avoid cutting or trimming roof panels directly over the painted metal roof surface. Small metal filings may get lodged in footwear or trapped on the painted surface leading to unintentional scratching.
-  Check machine settings and clearances to ensure they are within factory spec to avoid excessive machine marring.
-  Be aware of the sharp metal edges of trim pieces and the potential for metal-to-metal abrasion during installation. Tips to avoid damage include ensuring the trim is supported appropriately during fastening.



Use appropriate metal-specific snips, shears, and drill bits, to ensure accurate trimming and fastener penetration.



Minimize field storage of Natural Matte and store material in a dry, well-ventilated area and away from traffic.

Strippable Film:



The recommended film for Natural Matte is Pregis 21UV71C or Novacel 9138.



Other strippable films may fail to provide sufficient adhesion to the textured finish resulting in adhesion issues during product handling, transport, or installation.



The strippable film should not remain on the painted metal surface for more than 60 days.



Extreme environmental conditions, such as severe temperature changes or extreme heat or cold, may impact strippable film adhesion.

Removing Dirt and Minor Scuffs:



Clean dirt marks and minor scuffs with warm water and a lint free cloth.



Due to the unique texture of the factory-applied finish, touch-up paint will not replicate Natural Matte and should be used sparingly and not relied upon in highly visible areas.

Contact:



For inquiries or assistance identifying a suitable provider of strippable film, please contact us at (888) 553-5521, or submit a request via Ask Steelscape.