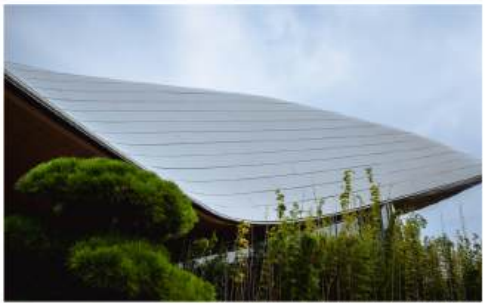
PE & HDP & SMP & PVDF Coil Coatings: Which is best for your Metal Roof or Metal Siding?

Choosing the right coil coating is the key to ensuring your metal roof and siding stay beautiful and protected for decades. From residential homes to large-scale industrial projects, the coating you select determines not only the color and gloss retention—but also how well your building resists chalking, fading, and corrosion.



In this guide, we'll explore the features of PE, HDP, SMP, and PVDF coatings—helping you understand their differences and choose the one that best suits your project's needs.

POLYVINYLIDENE FLUORIDE (PVDF):

PVDF coated aluminum coil is a type of aluminum coil that is coated with polyvinylidene fluoride (PVDF) coating. This type of coating offers a range of advantages over other types of coatings, which makes it a popular choice for many applications. Here are some of the advantages of PVDF coated aluminum coil.

ADVANTAGES OF PVDF COATING:

Durability

PVDF coating is highly durable and can withstand harsh weather conditions, including extreme temperatures, UV radiation, and moisture. This characteristic makes it ideal for use in outdoor applications, such as roofing, cladding, and facades.

Gloss Ranges

Gloss ranges refer to the sheen or glossiness of a paint finish. Metal coatings come in a range of gloss options ideal for different applications. Most PVDF formulas use a standard gloss level.

Resistance to fading

PVDF coating is resistant to fading, ensuring that the aluminum coil maintains its color and appearance over time. This characteristic makes it a preferred choice for applications where color retention is crucial, such as building exteriors and signage.

Chemical resistance

PVDF coating is resistant to many chemicals, including acids, alkalis, and solvents. This characteristic makes it suitable for use in industrial applications, such as chemical processing plants, where the environment can be highly corrosive.

Environmental friendliness

PVDF coating is easy to clean and maintain, requiring only mild soap and water. This characteristic makes it suitable for use in areas where hygiene is important, such as hospitals, laboratories, and food processing facilities.

Versatility

PVDF coated aluminum coils can be used in a wide range of applications, including roofing, wall cladding, facades, ceilings, gutters, and signage. This characteristic makes it a versatile choice for architects, designers, and builders who seek a material that can meet various design and performance requirements.

Applications of PVDF coated PPAL:

- Interior and exterior building decoration (roofing panels, ceilings, curtain walls).
- Appliance panels (refrigerator, air conditioner housings)
- Billboards, doors and roller shutters.
- Color-coated aluminum coils are used for outdoor reading boxes, mailboxes, decorative panels, etc.

TECHNICAL PARAMETERS

Item	Specification
Coating thickness	25-30 μm
Pencil hardness	≥H
Flexibility (T-bend)	≤2T (No cracks)
Impact resistance	≥ 50 kg·cm
Salt spray resistance	≥2000 hours
Warranty	20-30 years

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PE COATING:

PE (Polyester) coating is a popular choice for color-coated aluminum coils due to its cost-effectiveness and aesthetic appeal. The PE coating is made from a polymer resin that provides a smooth, glossy finish, which makes it ideal for interior applications or projects where long-term exposure to the elements is not a primary concern.

ADVANTAGES OF PE COATING:

Cost-Effective

PE-coated aluminum coils are more affordable compared to PVDF-coated options, making them a great choice for budget-conscious projects.

Excellent Color Performance

PE coatings offer a wide range of colors that maintain their vibrancy, especially in interior applications.

Good Durability

While it may not have the same longevity as PVDF, PE still provides good protection against corrosion, especially in mild to moderate weather conditions.

Ideal for Indoor Use

Due to its lower resistance to harsh weather conditions, PE-coated aluminum is commonly used in indoor ceilings, wall panels, and decorative applications.

Under the same conditions over 10 years,
PVDF coating performs better

Applications of PE coated PPAL:

- Interior and exterior building decoration (roofing panels, ceilings, curtain walls).
- Appliance panels (refrigerator, air conditioner housings)
- Billboards, doors and windows, roller shutters.
- Color-coated aluminum coils are used for outdoor reading boxes, mailboxes, decorative panels, etc.

TECHNICAL PARAMETERS

Item	Specification
Coating thickness (front)	15-25 μm
Gloss	30-90 GU (customizable)
Pencil hardness	≥H
Flexibility (T-bend)	≤2T, No cracks
Impact resistance	≥ 50 kg·cm
Salt spray resistance	≥500 hours

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HIGH DURABLE POLYESTER (HDP) TOPCOAT:

HDP coating is an advanced version of polyester coating, formulated with modified resins and weather-resistant pigments. It offers excellent UV resistance, long-term color retention, and provides a balanced performance and cost level between PE and PVDF coatings.

ADVANTAGES OF HDP COATING:

Superior Weather Resistance

Outstanding durability up to 10–15 years outdoors, resistant to fading and chalking even under harsh climates.

Excellent Color Retention

Enhanced UV stability ensures vivid colors and gloss for years.

Great Formability

High flexibility allows easy bending, forming, and punching without cracking.

Enhanced Corrosion Resistance

Provides reliable protection against moisture, acid rain, and salt spray.

Cost-Effective Mid-to-High Option

Offers PVDF-like durability at a more affordable cost.

Aesthetic & Versatile Appearance

Available in multiple gloss and texture options for premium visual appeal.

Applications of HDP coated PPAL:

- Sandwich Panel
- Metal Roof Panel
- Aluminium Composite Panel or Sheet

TECHNICAL PARAMETERS

Item	Specification
Level of UV resistance	RUV3-4
Level of corrosion resistance	RC3-4
Coating thickness - topcoat (μm)	20-30μm
Flexibility (max. T-bend)	⩽ 2T
Adhesion (cross-cut test)	⩾3B
Impact test (J)	> 9
Mek test	> 100 times
Pencil Hardness	⩾H

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SILICONE MODIFIED POLYESTER COATING:

SMP coating is a silicone-modified polyester system that combines the excellent adhesion of polyester with the superior weather resistance of silicone resin. It offers a balanced solution of durability, appearance, and affordability, making it ideal for medium to long-term outdoor applications.

ADVANTAGES OF SMP COATING:

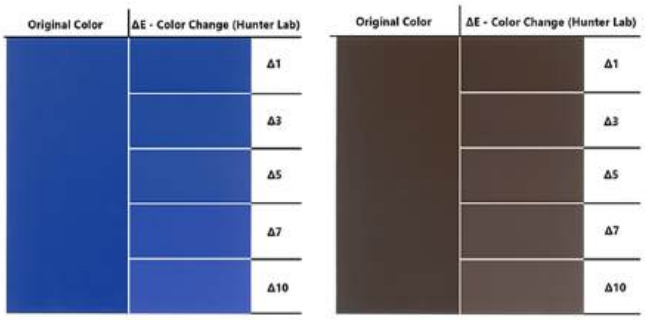
- Superior weatherability
- Best resistance yet to chalking, fading and scratching
- Exceptional color and gloss retention
- Outstanding color consistency
- Proven durability

Applications of SMP coated PPAL :

- Agricultural and industrial metal building components
- Commercial and residential metal roofing
- Metal wall panels
- Pre-engineered metal building systems

TECHNICAL PARAMETERS

Item	Specification
Coating thickness	20-25μm
Pencil hardness	⩾H
Flexibility (T-bend)	⩽3T (No cracks)
Impact resistance	⩾ 50 kg·cm
Salt spray resistance	⩾800 hours
Warranty	10-15 years



WHEN SHOULD YOU CHOOSE AN SMP PAINT SYSTEM?

1.If other paint systems are out of your price range or budget.

While some projects are better suited for other paint finishes, SMP is an affordable option to consider for more restrictive project budgets.

2.If you're choosing an earth tone color that isn't vivid or too bright.

The lighter or earthier the SMP paint color is, the better it will look over time. So, if you're installing a color like Regal White, Ash Gray, or Sandstone, SMP might be a good choice for you.

3.If you're installing a wall panel profile.

SMP are commonly used for wall panel systems because the chalking and fading numbers are the same for SMP vertical (wall) panels as PVDF horizontal (roof) panels. This makes it a great option that will hold up well in vertical siding applications.

4.If you want your system to have a textured finish.

Textured finishes look better with an SMP coating.

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PROPERTY	PE	SMP	HDP	PVDF
Cost Efficiency	★★★★☆	★★☆☆☆	★★★☆☆	★★☆☆☆
UV Resistance	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Corrosion Resistance	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Service Life (Years)	5–8	10-15	10-15	20-30+
Application Environment	Indoor/Light	Industrial/Roofing	Urban/Normal	Harsh/Coastal

No single coating fits all—but the right one makes all the difference. Whether you need cost-effective protection, long-term durability, or premium architectural performance, we can provide a coating system tailored to your application and environment. Let us help you find the perfect balance between beauty, performance, and longevity — for a metal roof and wall that stand the test of time.

Hanchen Metal attaches great importance to the purchase of paint and the selection of paint suppliers. According to the ASTM standards, we put forward physical performance requirements and long-term weather resistance requirements to paint suppliers. After long-term evaluation of exposure tests and harsh environment tests, we select reliable paint suppliers to ensure the excellent performance of Hanchen color coated aluminum coil coatings.

HANCHEN METAL YOUR TRUSTED PARTNER IN COIL COATING SOLUTIONS

With years of experience in coil coating technology, we offer high-quality products and professional technical support to meet the diverse needs of global customers.