



Flat-Rolled Steel

Pre-Painted Steel Sheet and Coil

Thickness 0.18-1.00mm	Paint thickness max. 30µm (only one layer)
Width 900-1300mm	Paint type PVDF (fluorocarbon), HDP (high weather resistance polyester)
Coil inner diameter Ø508/Ø610mm	Production capacity 5 production lines, 3,000,000 tonnes of processed steel per year
Coil weight generally, <5t, max. 10t	Minimum order quantity 20 tonnes
Standard TDC51D+Z, CGCC (JIS G3312), EN10169	
Coating structure two-coat two-bake (2/2), two-coat one-bake (2/1)	

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Pre-painted steel coils use a galvanized steel base, enhanced with an organic coating that significantly boosts its corrosion resistance. This additional layer not only protects the steel from environmental damage but also increases its durability, making it suitable for a variety of demanding applications. Polyester is the most commonly used coating, offering a great balance between cost and performance. For more specific requirements, we provide fluorocarbon coatings, which excel in weather resistance, and high-durability polyester, perfect for long-term outdoor use or harsh conditions. Pre-painted steel is widely used in construction, home appliances, and transportation, combining functionality with aesthetic appeal.

Our Range of Pre-Painted Steel Coils

- Our pre-painted steel production process offers flexibility to meet our customer needs. Depending on the application, we can apply single-coat single-bake, double-coat single-bake, or double-coat double-bake processes to achieve the desired finish and durability.
- Regarding the color options, we offer a wide range to suit various design and functional requirements. Popular choices include ocean blue, light gray, orange, ivory, brick red, and pearl white, among others. We also offer customized color matching based on international standards, ensuring every product meets the exact specifications of our clients.

Specifications & Grades

Specifications of Pre-Painted Steel				
Pre-Painted Steel Sheet	Nominal thickness	0.18-1.00mm	Nominal width	800-1250mm
Pre-Painted Steel Coil	Inner diameter	508mm or 610mm		
Thickness	Standard weight < 5 tons; customizable upon request			
	Complies with enterprise standards			
Coating Type	Tailored production is available to meet unique client needs			
	Standard: polyester topcoat, epoxy primer, and back coat			
Substrate	Customized coatings are available upon request			
	Standard: hot-dip galvanized steel			
Coating Structure	Customized options available for special requirements			
	2/1	The single-layer back coating offers moderate corrosion resistance and adhesion, but its scratch resistance is relatively low. Suitable for sandwich panels.		
	2/2	The double-layer back coating provides better corrosion resistance, scratch resistance, and formability. It is commonly applied to single-layer profiled sheets but has weak adhesion, which makes it unsuitable for sandwich panels.		

Tolerances of Dimensions			
Width Tolerance	Nominal Width	Normal Accuracy PWA	Advanced Accuracy PWB
	≤1200	0.5	0.2
	>1200-1250	0.6	0.2
Thickness Tolerance	We prioritize delivering products that meet strict tolerance controls to protect customer satisfaction. If there are specific requirements, these should be clarified during the order process to ensure we meet your expectations.		
	Our thickness tolerances are more precise than national standards, typically within ±0.03mm. For certain coil sections, particularly the first or last 30 meters, slight variations may occur, which are consistent with standard industry practices.		

Grades of Pre-Painted Steel		
European Standard	Japanese Standard	Usage
TDC51+Z	SGCC	Pre-painted steel for general use
TDC52+Z	SGCD	Pre-painted steel for drawing
TS280GD+Z	SGC340	Pre-painted steel for structural purpose
TS350GD+Z	SGC400	Pre-painted steel for structural purpose

Surface Coating Performance	
Solvent Resistance	MEK rubbing test ≥ 100 times
Color Difference	ΔE < 1.0 (same batch products)
Hardness	Pencil hardness test >F
Elasticity	T-bend test ≤3T Reverse impact test ≥5J
Durability	Neutral salt spray test ≥480 hours

Mechanical Properties

Pre-Painted Steel Compliant with National / European Standards				
Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation A80 (%)	
			Nominal Width ≤0.7mm	Nominal Thickness >0.7mm
TDC51D+Z, TDC51D+ZA	—	270-500	≥20	≥22
TDC52D+Z, TDC52D+ZA	140-300	270-420	≥24	≥26
TS250GD+Z, TS250GD+ZA	≥250	≥330	≥17	≥19
TS280GD+Z, TS280GD+ZA	≥280	≥360	≥16	≥18
TS320GD+Z, TS320GD+ZA	≥320	≥390	≥15	≥17

Pre-Painted Steel Compliant with Japanese Standard				
Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation A50 (%)	
			Nominal Thickness (mm)	
TDC51D+Z, TDC51D+ZA	—	270-500	≥20	≥22
TDC52D+Z, TDC52D+ZA	140-300	270-420	≥24	≥26

Notes:
a. Testing is carried out in accordance with relevant industry standards to ensure consistent quality and performance.
b. Over time, the mechanical properties of steel sheets and coils may degrade due to aging. This can lead to increased yield and tensile strength, reduced elongation after fracture, and diminished formability, sometimes resulting in stretch strain marks. To maintain optimal performance, it is recommended to use the materials as soon as possible after delivery.

Applications

- Construction**
Pre-painted steel sheets and coils are a good choice for both outdoor and indoor construction projects. Outdoors, it's commonly used in factory buildings, agricultural storage, prefabricated housing components, corrugated roofing, and rainwater systems such as gutters. It's also ideal for balconies, kiosks, and roller shutter doors. Indoors, it's frequently used in door frames, light steel structures, ceilings, and ventilation ducts, offering both durability and versatility.
- Home Appliances**
Pre-painted steel has a durability and sleek finish that make it perfect for manufacturing refrigerators, washing machines, air conditioners, microwaves, and even toasters, ensuring long-lasting performance.
- Furniture**
In the furniture industry, pre-painted steel is used for items such as radiators, lampshades, wardrobes, tables, beds, lockers, and bookshelves, offering a modern and durable solution for everyday use.
- Transportation**
It's widely used in the automotive and railway industries, particularly for interior panels, partitions, and containers. Additionally, it's used in ship compartment panels and barriers, providing excellent structural integrity.
- Other Uses**
Besides the industries mentioned above, pre-painted steel is a good choice for whiteboards, trash bins, advertising boards, clocks, control panels, weighing scales, and even photography equipment, combining function with aesthetics.

Composition and Function of Coil Coatings

Pre-painted steel relies on coil coatings to deliver both protection and visual appeal. These coatings are composed of four main components: resins, pigments, solvents, and additives. Each layer is important to enhance the steel's performance and durability. The solvent, as the volatile element, evaporates during the curing process, leaving a solid, protective film that ensures long-lasting performance.

<h3>Resins</h3> <p>Resins are the most important part of the coating, often referred to as the binder. They form the protective film on the steel surface and are fundamental in determining the coating's performance, including durability, flexibility, and resistance to weathering. Resins need to remain stable during storage, without undergoing significant physical or chemical changes. During application, resins cure quickly under the right conditions to form a solid, protective layer. Commonly used resins in coil coatings include acrylic, epoxy, polyurethane, and polyurethane. Each resin type offers different levels of protection and durability depending on the specific needs of the application, such as improved corrosion resistance or better weather performance.</p> <h3>Pigments</h3> <p>Pigments are combined with resins to provide color and opacity to the coating. However, their role is not just aesthetic. They also influence other important properties like hardness, gloss, and corrosion resistance. By adjusting the pigment-to-resin ratio, coatings can be customized to achieve the desired level of performance and appearance, balancing durability with visual appeal.</p>	<h3>Solvents</h3> <p>Solvents are an important component of liquid paints, acting as volatile substances that evaporate during the drying phase. Solvents are commonly used to adjust the viscosity of the paint, ensuring smooth application and even coverage. This substance has an important role in the production, storage, application, and film formation of paints, significantly influencing the quality and durability of the coating.</p> <h3>Additives</h3> <p>Used in small quantities, additives are capable of enhancing the coating's performance. They are designed to improve properties such as drying time, leveling, and defect prevention. Common examples include curing agents, defoamers, stabilizers, and matting agents. Each additive is carefully selected to meet the performance requirements of the coating, ensuring it functions optimally in various environments.</p>
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<h3>Types of Coatings</h3> <h4>Topcoats</h4> <p>Common topcoats include polyester, silicone-modified polyester, high-durability polyester, and polyvinylidene fluoride (PVDF). Each type of topcoat offers different levels of hardness, flexibility, and corrosion resistance. Polyester is the most widely used due to its good balance of durability, hardness, and flexibility, all at a reasonable cost. Silicone-modified polyester provides better durability and improved gloss and color retention but sacrifices some flexibility. High-durability polyester combines the advantages of standard polyester with enhanced longevity, offering excellent value. PVDF stands out for its exceptional durability and flexibility, though it has lower hardness, fewer available color options, and a higher price. How to choose the best topcoat will depend on factors such as the intended application, environmental conditions, lifespan, and processing requirements.</p> <h4>Primers</h4> <p>The primer layer is important in the coating system as it improves adhesion and provides an additional layer of protection against corrosion. Different primers offer unique benefits depending on the specific requirements of the substrate. Epoxy primers bond exceptionally well to the substrate and deliver high corrosion resistance, though they tend to be less flexible. Polyester primers, on the other hand, provide excellent flexibility and strong adhesion but offer slightly lower corrosion protection compared to epoxy. Polyurethane primers provide a well-rounded performance combining solid corrosion resistance, flexibility, and adhesion, making them a versatile choice. The selection of primer typically depends on factors such as the production process, intended use, environmental conditions, and compatibility with the topcoat. For detailed performance characteristics, consulting technical resources or industry experts is recommended to ensure the best fit for each application.</p> <h4>Coating Thickness</h4> <p>The thickness of the coating layer is closely linked to the corrosion resistance of pre-painted steel. Generally, a thicker coating offers better protection against corrosive environments. The appropriate coating thickness should be determined based on factors such as environmental conditions, expected lifespan, and durability requirements.</p> <h4>Color Consistency</h4> <p>Color variations can occur during both production and use due to factors like batch production, color depth, exposure time, and environmental conditions. To avoid misunderstandings, it's recommended that suppliers and customers agree on acceptable color variations when placing an order.</p>	<h4>Gloss Level</h4> <p>Gloss levels are typically selected based on the intended application and user preferences. For example, pre-painted steel used in construction often features medium to low gloss, while high gloss is preferred for home appliances to create a polished, attractive finish.</p> <h4>Coating Hardness</h4> <p>Hardness measures the coating's ability to resist scratches, friction, impacts, and indentations. This property is closely related to scratch resistance, wear resistance, and pressure resistance. The right level of hardness should be chosen based on the intended use, processing method, and storage or transportation conditions.</p> <h4>Flexibility and Adhesion</h4> <p>These properties are essential for ensuring the coat's adaptability during processing. They determine how well the coating can handle deformation without cracking or peeling. For applications involving high deformation or fast processing speeds, materials with high impact strength and low T-bend values are recommended to maintain performance and appearance.</p> <h4>Coating Durability</h4> <p>Coating durability refers to how well the coating performs over time, typically measured by its lifespan under real-world conditions. Several factors influence durability, including the type of coating, its thickness, and the corrosiveness of the environment. While real-world performance provides the most accurate measure, artificial aging tests are commonly used for initial evaluations. Neutral salt spray tests are among the simplest and most widely used methods to simulate aging, providing insights into corrosion resistance. Additionally, UV lamp accelerated aging tests help evaluate how coatings withstand prolonged exposure to sunlight. For environments with specific challenges, such as acid rain or high humidity, specialized artificial aging tests should be conducted. However, it's important to note that these tests cannot fully replicate actual environmental conditions.</p>
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Other Performance Features

In specific applications, pre-painted steel may need enhanced resistance to organic solvents, acids, alkalis, and pollutants. These properties are crucial for maintaining durability in demanding environments. Below are the main tests used to evaluate these performance aspects:

Acid and Alkali Resistance Test

- Test Principle**
This test involves immersing samples in solutions with specified concentrations of acids or alkalis for a set period. Once removed, the coating is evaluated for changes in color, gloss, and any signs of blistering or peeling.
- Results Analysis**
Results are assessed according to GB/T 1766 standards, including gloss loss, discoloration, blistering, and peeling. The lowest performance among parallel samples is recorded as the final result.

Neutral Salt Spray Test

- Test Principle**
This test simulates exposure to a salt-rich environment to assess the coating's corrosion resistance. Samples are placed in a neutral salt spray chamber for a specific time, after which surface conditions like blistering, rusting, and corrosion spread are examined.
- Results Analysis**
Flat samples are rated for blistering and rusting per GB/T 1766, with the worst results across parallel tests recorded. For scribed or cut samples, corrosion spread along the scribed line is measured at multiple points. The average, maximum, and minimum spread distances are calculated and documented.

Atmospheric Exposure Test

- Test Principle**
Samples are exposed to outdoor conditions to evaluate the coating's durability against natural elements such as UV rays, rain, and temperature fluctuations. The test measures how well the coating maintains its properties over time, including gloss, color, and physical integrity.
- Results Analysis**
1. Flat samples are evaluated for indicators such as gloss retention, color stability, chalking, blistering, rusting, and cracking. The worst-performing sample from the test batch determines the final outcome, ensuring a comprehensive understanding of the coating's durability.
2. Stressed or damaged samples, including areas subjected to T-bends, impacts, scribing, riveting, and folding, are assessed for issues like blistering, rusting, and the spread of edge corrosion. Again, the most severe result across the batch is used as the benchmark.
3. Performance under natural atmospheric conditions can also be evaluated through reports provided by certified outdoor exposure facilities. These reports offer valuable insights into the coating's long-term behavior in specific environments.

Storage and Transportation Guidelines

Storage Guidelines

Maintaining the quality of pre-painted steel requires proper storage. Here are some practices to ensure the pre-painted steel remains in optimal condition:

- Keep the pre-painted steel in a dry, ventilated indoor space to prevent issues caused by moisture or temperature changes. Outdoor storage or areas with frequent condensation should be avoided.
- Store materials in a clean environment, free from exposure to corrosive agents that could compromise their integrity.
- Use a flat, sturdy surface with adequate load-bearing capacity to support the products. Avoid direct contact with the ground by placing coils on rubber mats, wooden supports, or racks. Ensure the locking buckles of horizontal coils face upward.
- To prevent damage, avoid stacking steel coils. If stacking sheets, limit the layers and place heavier bundles at the bottom.
- Over time, mechanical properties such as pencil hardness, T-bend values, and impact resistance may degrade. To maintain performance, it is recommended to process the material promptly.
- Ensure sufficient space for lifting equipment to safely move the products without risk of damage.
- Arrange storage areas strategically for easy access, reducing unnecessary handling and movement.

Transportation Guidelines

To ensure the quality of pre-painted steel during transportation requires careful handling and adherence to specific procedures. Below are some recommendations to keep in mind:

- Always transport products in their original packaging. Do not remove or modify the protective materials provided at the factory, as they are designed to safeguard the product during transit. To avoid surface damage, place rubber pads between lifting tools and the product. Whenever possible, use specialized lifting equipment for added safety.
- Prepare the vehicle properly before loading. Clean the truck bed thoroughly, and line it with rubber mats or similar protective materials. Ensure the sides of the vehicle are also padded to prevent any packaging from being dented or scratched.
- Vertically packaged steel coils must remain upright during transportation and unloading to prevent deformation and ensure product stability.
- Secure all items firmly to prevent movement or rolling during transit, which could cause damage or even accidents. Proper securing also minimizes the risk of unexpected impacts.
- When unloading steel sheets, avoid dragging them across surfaces. The sharp edges or burrs from cutting can scratch or damage the layers underneath. Always lift sheets carefully and handle them gently, ensuring they don't come into contact with hard or abrasive surfaces.