

The base metals for prepainted steel coils mainly consist of hot dipped galvanised (HDG) and hot-dipped (HD) Al-Zn coated steel.

The prepainted steel coils are mainly provided for various commercial purposes covering architectural construction, electrical household appliances, transportation, etc.

At present, Baosteel has three large-scale double coating-double-baking production lines of prepainted steel with a yearly output of 0.55 million tons.

HDG coated base material

	Mechanical properties			
	YS Rp _{0.2} MPa	TS R _m MPa	El % min L ₀ = 80mm, b = 20mm thickness	
			≤ 0.7 mm	> 0.7 mm
DC51D+Z	–	270-500	20	24
DC52D+Z	140-300	270-420	24	26
DC53D+Z	140-260	270-380	28	30
S280GD+Z	≥ 280	≥ 360	16	18
S350GD+Z	≥ 350	≥ 420	14	16
S550GD+Z	≥ 550	≥ 560	–	3

Cross-breaking specimens of elongation test.
Yield strength is Rp_{0.2} when yield is not apparent.

HD Al-Zn coated base material

	Mechanical properties			
	YS Rp _{0.2} MPa	TS R _m MPa	El % min L ₀ = 80mm, b = 20mm thickness	
			≤ 0.7 mm	> 0.7 mm
DC51D+AZ	–	< 500	22	24
DC52D+AZ	< 300	< 420	24	26
S250GD+AZ	≥ 250	≥ 320	22	22
S300GD+AZ	≥ 300	≥ 340	18	18
S550GD+AZ	≥ 550	≥ 570	–	–

Yield strength is Rp_{0.2} when yield is not apparent.

Category of primer

The category of the primer includes epoxy, polyester, acrylic acid, polyurethane, etc. In general, the primer is chosen in accordance with the usage, environment condition, processing stage and finish coat. The film thickness of the primer is usually 5~7 μm.

- **Epoxy primer**

The epoxy primer has a strong adhesion to the base metal and good properties in water-proof, alkali-proof and chemical resistance, which is the original primer for the coiled steel, having a poorer flexibility than that of other primers.

- **Polyester primer**
The primer has strong adhesion to the base metal and excellent flexibility, which is relatively sensitive to damp environment and has a chemical resistance poorer than that of epoxy primer.
- **Water-soluble acrylic acid primer**
The primer of this kind has strong adhesion, excellent flexibility, lower organic solvent and low-temperature curing.
- **Polyurethane primer**
The primer of this kind has excellent chemical resistance, durability and flexibility.

Performance of coating film

Category	Thickness (μm)	Pencil hardness	60° specular glossiness of coating			180° bend		Impact (j)	Saltfog resistance (h)
			Low	Moderate	High	Thickness <0.75 mm thickness of material for door or window ≤80 mm			
						A level	B level		
PE	≥ 20	≥ F	< 40	40~70	> 70	≤ 5T	≤ 3T	≥ 9	≥ 500
SMP	≥ 20	≥ F	< 40	40~70	> 70	≤ 5T	≤ 3T	≥ 9	
HDP	≥ 20	≥ HB	< 40	40~70	–	≤ 5T	≤ 3T	≥ 9	≥ 1000
PVDF	≥ 20	≥ HB	< 40	40~70	–	≤ 5T	≤ 3T	≥ 9	≥ 1000

If the thickness >0.75 mm (thickness of steel materials for door and window >0,80 mm), the steel coil should be curved by 90°.

Category of finish coats

The finish coats of prepainted steel sheets can be classified into groups: polyester, silicon modified polyesters, high-durability polyester, polyvinylidene fluoride, etc.

- **PE Polyester**
The finish coat of this kind has strong adhesive force, a variety of colours, wide scope of properties in formation and durability outdoors and moderate chemical resistance.
- **SMP Silicon modified polyesters**
The membrane of the finish coat of this kind has excellent rigidity, abrasion resistance, thermal resistance, good outside durability, chalking resistance, high retention of colour and luster and ordinary flexibility.
- **HDP High-durability polyester**
The finish coat of this kind has excellent retention of colour, resistance of ultra-violet radiation, strong outdoors durability, chalking resistance, strong adhesion to the base metal and plenty of colours.
- **PVDF Polyvinylidene fluoride**
The finish coat of this kind features in its excellent retention of colour, resistance of ultra-violet radiation, outdoors durability, chalking resistance, resistance to solvent, formability and good dirt resistance.

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