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SECC (Steel Electrolytic Cold Commercial)

Description

SECC is an electrogalvanized steel sheet based on a SPCC cold-rolled steel substrate. It cannot be strengthened by heat treatment and relies on a thin electroplated zinc coating (3–12 μm) for corrosion protection. Its primary advantages include exceptional surface quality (smooth finish, spangle-free), superior paintability (suitable for direct painting), and formability that retains the substrate characteristics. Consequently, SECC is ideally suited for home appliances, electronic enclosures, and automotive interior components where high aesthetic standards and coating performance are critical. Compared with hot-dip galvanized steel sheets, SECC has a thinner coating and lower corrosion resistance, but offers a smoother surface, better formability, and higher cost. During application, attention must be paid to welding process control (due to zinc vapor issues) and to avoid long-term outdoor exposure.

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SECC Electrogalvanized Steel Sheet Material Data Sheet

1. Chemical Composition (%)

Elements	C	Mn	P	S	Alta	Si	Note
Content	≤0.10~0.15	≤0.50~0.60	≤0.035~0.05	≤0.025~0.035	≥0.020	≤0.05	Low-carbon steel with excellent formability

Feature: The chemical composition of the substrate is equivalent to that of SPCC. The low carbon content ensures high ductility.

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2. Physical Properties

Performance parameters	Value	Unit	Note
Density	7.85	g/cm³	Substrate density (the influence of the extremely thin coating is negligible)
Melting range	1480~1526	°C	Substrate melting point
Elastic modulus	200~215	GPa	Tensile state
Poisson's ratio	0.29	—	Typical Value
Coefficient of Thermal Expansion	11.2~13.8	$\times 10^{-6}$/°C	20~100°C
Thermal conductivity	25~93	W/(m·K)	Change with temperature
Resistivity	$1.43\sim1.74\times10^{-7}$	Ω·m	20°C
Coating thickness	3~20	μm	Typically 5-10 μm per side
Coating weight	10~90	g/m²	Typically 20-40g/m² per side

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3. Mechanical Properties (by Thickness)

Thickness range (mm)	Tensile strength Rm (MPa)	Yield strength Rp0.2 (MPa)	Elongation A (%)	Hardness HRB	Note
0.4≤t<0.6	≥270~340	≥205	≥34	50~70	Reference value
0.6≤t<1.0	≥270~340	≥205	≥36	50~70	Common specifications
1.0≤t<1.6	≥270~340	≥205	≥37	50~70	For structural parts
1.6≤t<2.5	≥270~340	≥205	≥38	50~70	For stiffeners
t≥2.5	≥270~340	≥205	≥39	50~70	Thick plate

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4. Process Performance

Environmental condition	Corrosion resistance	Description	Core characteristics	Typical applications
Interior environment	10–20 years without rust formation	Dry Environments: The zinc coating provides effective sacrificial anode protection	High surface quality, excellent paintability	Ideal for home appliance housings (e.g., refrigerators, washing machines, and air conditioner panels)
Humid environment	3~5 years	Painting recommended for use in high-humidity environments	Fingerprint resistant, aesthetic appeal	Computer chassis, monitor backplate, telecommunication equipment panel
Slat spray test	Time to white rust formation	Positively correlated with coating weight, approx. 48–96 hours per 20 g/m²	Excellent formability	Automotive interior panels, instrument panels, fuel filler caps
Outdoor exposure	Not recommended	Insufficient corrosion resistance, hot-dip galvanized steel sheets recommended	High dimensional accuracy	Precision stamped components, electronic enclosures, office equipment parts

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			Eco-friendly & lead-free	Fully compliant with RoHS Directives, the preferred choice for export products
			Moderate cost	Office furniture, architectural interiors, lighting fixtures

Key feature: The zinc coating protects the steel substrate through a sacrificial anode mechanism. This ensures that red rust is prevented even at localized scratches.