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SPCC (Steel Plate Cold Commercial)

Description

SPCC is the most widely used commercial-grade cold-rolled carbon steel sheet. It cannot be strengthened by heat treatment; its properties are controlled through cold rolling and annealing processes. Its greatest advantages are excellent cold formability (elongation ≥34%), high-precision dimensional control, and superior surface quality, making it suitable for various stamping, deep drawing, and coating/plating processes. As a base substrate, it can be further processed into high-value-added products such as electrogalvanized steel, hot-dip galvanized steel, and pre-painted (color-coated) steel sheets, and is widely used in the automotive, home appliance, electronics, and construction industries. Compared to hot-rolled steel SPHC, SPCC offers superior surface finish and dimensional accuracy, but at a relatively higher cost.

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SPCC Cold Rolled Steel Sheet Material Data Sheet

1. Chemical Composition (%)

Elements	C	Mn	P	S	Alta	Si	Note
Content	≤0.12 ~0.15	≤0.60	≤0.045 ~0.10	≤0.025 ~0.05	≥0.020	≤0.05	Low-carbon steel with excellent formability

Feature: Low carbon content (⩽ 0.15%) ensures high ductility and superior cold-forming performance.

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2. Physical Properties

Performance parameters	Value	Unit	Note
Density	7.8~7.85	g/cm³	Standard steel density
Melting range	1480~1526	°C	Solidus–Liquidus range
Elastic modulus	200~215	GPa	Tensile state
Poisson's ratio	0.29	—	
Shear modulus	82	GPa	
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
Specific heat capacity	465	J/(kg·K)	
Resistivity	1.43~1.74× 10^{-7}	Ω·m	20°C
Curie temperature	770	°C	Ferromagnetic transformation
Surface finish	Bright / Matte	—	Bright (B) / Matte (D) finish optional

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3. Mechanical Properties (by Tempering)

Tempering	Tensile strength Rm (MPa)	Elongation A (%)	Hardness HRB	Feature description
Annealed state (O)	270~410	≥34	50~70	Fully softened, offering the best formability
1/8 hard (8)	270~390	≥30	60~75	Slight work hardening
1/4 hard (4)	270~410	≥28	65~80	Lightly strengthened
1/2 hard (2)	270~430	≥24	70~85	Half-hard, balanced strength and formability
Full hard (1)	270~450	≥18	80~90	Hard temper, high strength
Full hard (C)	≥270	≥32~39	85 HRB / 170 HV	Cold-rolled hard coil (work-hardened condition)

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4. Process Performance

Items	Performance classification	Description
Cold formability	★★★★★ Excellent	Suitable for deep drawing, bending, and stamping—ideal for manufacturing complex-shaped components
Weldability	★★★★☆ Good	Suitable for resistance welding, arc welding, and laser welding
Machinability	★★★☆☆ Moderate	Moderate machinability, requiring sharp cutting tools due to low carbon content
Surface quality	★★★★★ Excellent	High surface finish and high dimensional accuracyC:\Users\XS\Desktop\终稿审批\asia.en 版本\Sheet Metal\钢 \quot;http:\mp.weixin.qq.com\s? biz=MzI2NTAxNzU3OQ==&mid=2247537621&idx=1&sn=0849194182a788c08134ce8fcc0a398e&quot
Coating performance	★★★★★ Excellent	The preferred material for electrogalvanized (EG), hot-dip galvanized (GI), and color-coated substrate (PPGI)C:\Users\XS\Desktop\终稿审批\asia.en 版本\Sheet Metal\钢 \quot;https:\baike.baidu.com\item\SPCC Cold-Rolled Coil\6034068&quot
Heat treatment	—	Not heat-treatable, softening only achieved by annealing or hardened by cold working

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5. Characteristics and Applications

Core characteristics	Typical applications
High surface quality with excellent smoothness and finish	Household appliance housings, automotive interior panels, furniture facing sheets
High dimensional accuracy	Precision stamped components, electronic enclosures, office equipment parts
Excellent cold formability	Deep-drawn containers, fuel tanks, lampshades, brackets
Excellent coating and plating performance	Electrogalvanized steel (EG), hot-dip galvanized steel (GI), color-coated substrate (PPGI)
Good weldability	Automotive body panels, structural components, tubing and pipe fittings
Cost-effective	Bicycle parts, hardware products, building panels