S220GD Galvanized Steel

OMEGA STEEL CO.
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1.0241 · S220GD is the lowest of the EN 10346 structural galvanized grades: guaranteed yield ≥ 220 MPa and tensile ≥ 300 MPa with 20 % elongation — the first galvanized sheet a designer can put a load calculation on. Material number 1.0241. It is used for light roll-formed profiles, framing studs, trays and roofing where the DX51D lack of a yield guarantee is not acceptable; coil and sheet 0.40–3.0 mm, Z140–Z275, to order.

1.0241 | Yield ≥ 220 MPa | Rm ≥ 300 MPa | 0.40–3.0 mm to order | Z140–Z275

S220GD is the bridge between the commodity DX51D and the purlin grades S280–S350GD: same rolling lines, same zinc, but a certificate with a yield number on it. Light-gauge steel framers and cable-tray makers order it when their calculations need a guaranteed 220 MPa and their tooling prefers a softer strip than S350GD.

CHEMICAL COMPOSITION

Element	C	Si	Mn	P	S
max. % (ladle)	0.20	0.60	1.70	0.10	0.045

Typical heat: C 0.05–0.08, Mn 0.30–0.50.

MECHANICAL PROPERTIES

Property	Requirement	Typical value	Note
Yield strength ReH / Rp0.2	≥ 220 MPa	250–300 MPa	design value fyb = 220
Tensile strength Rm	≥ 300 MPa	340–400 MPa	
Elongation A80	≥ 20 %	25–32 %	
Bend radius (180°)	0.5 × t	passes	transverse

EQUIVALENT GRADES

System	Grade	Note
EN 10147 (old)	S220GD+Z	withdrawn
ASTM A653	SS Grade 33 (230 MPa)	Structural Steel
JIS G3302	SGC340	
GB/T 2518	S220GD+Z	
EN 10346	S250GD / S280GD	upward substitutes

COATING CLASSES FOR LIGHT STRUCTURAL WORK

Class	Zinc mass (g/m², both sides)	Thickness per side (µm)	Typical life C3	Where used
Z140	140	≈ 10	6–9 years	indoor framing, ceiling grid, drywall profiles
Z200	200	≈ 14	9–13 years	canopies, carports, sheltered outdoor framing
Z275	275	≈ 20	12–18 years	exposed framing and cladding rails

Structural grades are not normally supplied below Z140 — a load-bearing profile that rusts through has failed regardless of its yield strength. At 220 MPa the sheet still roll-forms to tight radii, so the coating rarely limits the section; the limit is usually the profile depth the design needs.

STANDARDS

EN 10346:2015 — S220GD+Z, 1.0241 · EN 10143 — tolerances · EN 1993-1-3 — cold-formed design (fyb = 220 MPa) · EN 10204 3.1

Updated 22 September 2026 · figures are nominal; the mill certificate governs