

9. Purlins

Horizontal steel member commonly used to support roof structures.

- 9.1 Plain Channels
- 9.2 Lipped Channels
- 9.3 C-Purlin
- 9.4 Z-Purlin

Purlins

Standard specifications

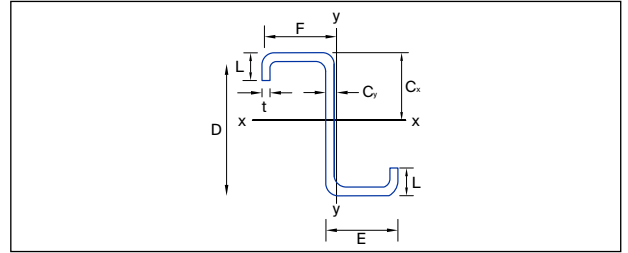
Material	Yield strength N/mm ²	Tensile strength N/mm ²	Min. Elongation	Min. Charpy V-notch.	Dimensions & Tolerances
<i>JIS 3350</i>					<i>JIS 3350</i>
SSC400	245	400-540	17-21%	-	
<i>AS 1397</i>					<i>AS 1365</i>
G250	250	320	22%	-	
G300	300	340	18%	-	
G350	350	420	14%	-	
G450	450	480	9%	-	
<i>EN 10346</i>					<i>EN 10162</i>
S220GD	220	300	20%	-	
S250GD	250	330	19%	-	
S280GD	280	360	18%	-	
S320GD	320	390	17%	-	
S350GD	350	420	16%	-	
S390GD	390	460	16%	-	
S420GD	420	480	15%	-	
S450GD	450	510	14%	-	

High-Tensile Galvanised C and Z Purlins

Mechanical properties/tolerances

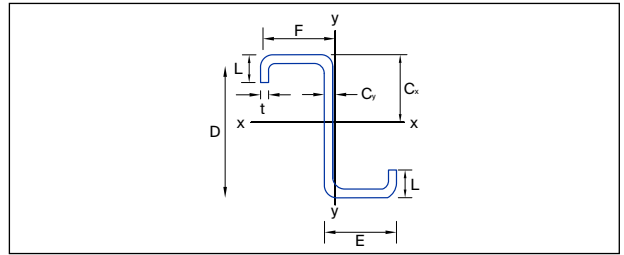
Steel grade	Base steel	Mechanical properties			Tolerances				Zinc
	Thickness	Yield strength	Tensile strength	Minimum elongation	Depth	Flange width	Length	Hole Centres	coating
ASTM A446, Grade E (mod.) & AS 1397 G450	1.6mm, 2.0mm and 2.5 mm	min. 450 N/mm ²	min. 510 N/mm ²	10%	±1mm	±2mm	±3mm	±1.5mm	min. 275g/m ² coating

9.4 Z-Purlin



Designation		Thickness	Web	Flange 1	Flange 2	Lip	Area of Section	Moment of Inertia		Section Modulus	Radius of Gyration	
Size Number	Mass per Metre	t	D	E	F	L	A	I_x	I_y	Z_y		α
mm	kg/m	mm	mm	mm	mm	mm	cm ²	cm ⁴	cm ⁴	cm ³	mm	(°)
Z10010	1.78	1.0	102	53	49	12.5	2.16	45.1	4.37	1.55	14.2	27.6
Z10012	2.10	1.2	102	53	49	12.5	2.58	53.6	5.16	1.84	14.2	27.5
Z10015	2.62	1.5	102	53	49	13.5	3.23	66.8	6.52	2.32	14.2	27.8
Z10019	3.29	1.9	102	53	49	14.5	4.09	84.0	8.29	2.94	14.2	28.1
Z15012	2.89	1.2	152	65	61	15.5	3.54	147	1.15	3.14	18.1	21.8
Z15015	3.59	1.5	152	65	61	16.5	4.43	184	1.45	3.96	18.1	22.0
Z15019	4.51	1.9	152	65	61	17.5	5.61	232	1.84	5.02	18.1	22.1
Z15024	5.70	2.4	152	66	60	19.5	7.12	292	2.38	6.38	18.3	22.5
Z20015	4.49	1.5	203	79	74	15.5	5.55	389	2.55	5.53	21.4	18.5
Z20019	5.74	1.9	203	79	74	18.5	7.13	502	3.42	7.45	21.9	19.1
Z20024	7.24	2.4	203	79	73	21.5	9.07	636	4.43	9.64	22.1	19.4
Z25019	6.50	1.9	254	79	74	18.0	8.08	808	3.81	7.82	21.7	14.0
Z25024	8.16	2.4	254	79	73	21.0	10.30	1020	4.93	10.2	21.9	14.3
Z30024	10.09	2.4	300	100	93	27.0	12.60	1830	1.01	16.8	28.3	16.0
Z30030	12.76	3.0	300	100	93	31.0	16.00	2310	1.32	21.9	28.7	16.3
Z35030	15.23	3.0	350	129	121	30.0	19.10	3920	2.49	32.8	36.1	17.8

Specification JIS G 3350/ EN 10162



Designation		Moment of Inertia		Product of Moment Inertia	Section Modulus		Radius of Gyration		Torsion Constant	Warping Constant	Section Modulus in Bending	Area in Compression
Size Number	Mass per Metre	I_x	I_y	I_{xy}	Z_x	Z_y	r_x	r_y	J	I _w	Z _{xe}	Ae
mm	kg/m	cm ⁴	cm ⁴	cm ⁴	cm ³	cm ³	mm	mm	mm ⁴	cm ⁶	cm ³	mm ²
Z10010	1.78	36.4	13.1	16.8	7.0	2.56	41.1	24.7	71.9	215	5.3	113
Z10012	2.10	43.2	15.5	19.8	8.3	3.02	41.0	24.5	124	253	6.7	153
Z10015	2.62	53.7	19.7	24.9	10.3	3.84	40.8	24.7	242	321	8.8	217
Z10019	3.29	67.3	25.0	31.4	13.0	4.92	40.6	24.7	492	409	12.4	329
Z15012	2.89	128	30.3	46.9	16.7	4.78	60.3	29.3	170	1160	11.9	169
Z15015	3.59	160	38.3	58.8	20.8	6.06	60.1	29.4	332	1460	17.2	248
Z15019	4.51	201	48.7	74.4	26.1	7.73	59.9	29.5	675	1860	22.4	347
Z15024	5.70	253	63.2	95.0	32.6	10.0	59.6	29.8	1370	2410	31.4	535
Z20015	4.49	353	62.1	109	34.3	8.05	79.7	33.4	416	4260	23.8	248
Z20019	5.74	452	84.3	145	43.9	11.0	79.6	34.4	858	5830	36.4	378
Z20024	7.24	570	110	186	55.3	14.4	79.3	34.8	1740	7630	48.4	546
Z25019	6.50	762	83.3	181	59.3	10.8	97.1	32.1	972	9480	45.7	379
Z25024	8.16	964	108	233	74.9	14.2	96.9	32.5	1970	12400	66.0	547
Z30024	10.09	1700	232	457	112	23.8	116	42.8	2430	36600	89.9	628
Z30030	12.76	2130	304	588	140	31.4	116	43.6	4790	48200	125	908
Z35030	15.23	3580	593	1070	202	47.2	137	55.7	5730	124000	159	940