



YSAGHT[®]



CEE-plus™ & ZED-plus™

Purlin & Girt

High Strength | Light-weight | Recyclable | Durable | Corrosion Resistance



**TATA BLUESCOPE
STEEL**



LYSAGHT CEE-plus™ and ZED-plus™ are products specially designed and developed for purlin and girt application, which not only provides economy to the building construction, but also helps in keeping the site clean and environment friendly.

LYSAGHT CEE-plus™ and ZED-plus™ sections are accurately roll-formed from high strength zinc-coated steel, pre-punched to the required dimensions to provide an efficient, lightweight, economical purlin and girts.

These products are suitable for roof, wall support and portal framing up to a certain span. The system, which includes bridging and a comprehensive range of accessories, is supplied as ready for erection.

Benefits

Greater Spanning Capability: Cold formed galvanized purlins have a minimum yield strength of approximately 60% greater than that of hot rolled steel that is typically used for purlins. This high strength – to – weight ratio in most applications allows extra spanning capability for the most cost effective structures.

Easier to Handle: The high strength to low weight ratio makes the product easier to handle both during transportation and erection.

Lower Maintenance Costs: Superior corrosion resistance of the zinc coating lowers maintenance costs during its life cycle.

Quick and Easy Installation: The pre-punched sections of the high strength galvanized cold rolled sections reduces fixing time by using self-drilling, self-tapping screws and standard bolts.

Material Specifications

LYSAGHT CEE-plus™ and ZED-plus™ sections are roll-formed from galvanised steel complying with AS1397-2001. In the grades shown, the number prefixed with G indicates minimum yield stress in MPa; and the number prefixed with Z indicates minimum coating mass in g/m².

1.0 mm BMT: G550, Z275

1.9 mm BMT: G350, Z275

2.4 mm BMT: G350, Z275

Note: LYSAGHT CEE™ and ZED™ section are also available with Zinc coating of 120 g/m². Please contact nearest Tata BlueScope Steel office for further information.

Bolt Specification

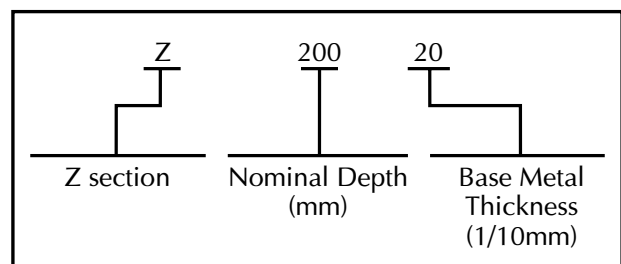
LYSAGHT® purlin bolts and nuts have integral washers. Tighten all bolts to 55 N-m torque. Nominal section size (mm)

100, 150, 200, 250	M12 LYSAGHT® purlin bolt standard(grade 4.6) or high strength (grade 8.8)
300*	M16 LYSAGHT® purlin bolt standard(grade 4.6) or high strength (grade 8.8)

*Non standard items

Size and Dimensions

The standard sizes for purlins are produced in nominal depth of 100,150, 200, 250 and 300 mm. The sections are generally designed by code number signifying the nominal depth and material thickness and letter prefix to indicate the profile. Purlin are generally produced in thickness of 1.0, 1.2, 1.5, 1.9 and 2.4 mm.



Shapes and Sections

Two basic cold formed shapes - CEE-plus™ and ZED-plus™ are used for purlins and girts. While each has individual characteristics, both perform effectively and in many instances the choice of one section over the other can come down to the personal preference of the designer.

Dimensions and Sectional Properties of LYSAGHT® Purlins

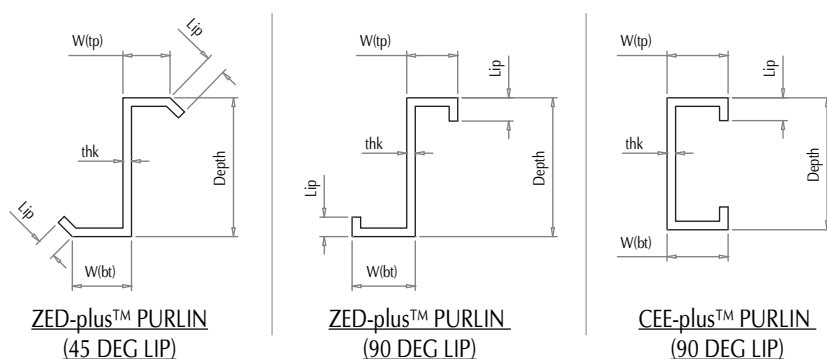


Table 1: LYSAGHT ZED-plus™ (45 DEG LIP) PURLIN PROPERTIES

Name	Depth mm	W(Tp) mm	W(Bt) mm	Thk mm	Lip mm	Rad mm	Lip angle deg	Area cm ²	Wt (Kg/m) (275GSM)	Yb mm	Ix cm ⁴	SxTop cm ³	SxBot cm ³	Rx mm	Iy cm ⁴	Sy cm ³	Ry mm
150Z10	152	60	60	1	16	5	45	2.96	2.36	76	108.73	14.31	14.31	60.61	27.06	3.82	30.23
150Z12	152	60	60	1.2	17	5	45	3.57	2.86	76	130.76	17.21	17.21	60.54	33.42	4.68	30.61
150Z15	152	60	60	1.5	18	5	45	4.47	3.56	76	163.34	21.49	21.49	60.42	42.84	5.95	30.94
150Z19	152	60	60	1.9	19	5	45	5.68	4.49	76	206.19	27.13	27.13	60.24	55.43	7.65	31.23
150Z24	152	60	60	2.4	20	5	45	7.18	5.64	76	258.82	34.06	34.06	60.02	71.23	9.76	31.49
200Z15	200	70	70	1.5	19.8	5	45	5.55	4.46	100	343.29	34.33	34.33	78.66	66.12	7.94	34.52
200Z19	200	70	70	1.9	23	5	45	7.13	5.7	100	439.8	43.98	43.98	78.57	91.19	10.69	35.78
200Z20	200	70	70	2.0*	23	5	45	7.49	6	100	461.98	46.2	46.2	78.52	95.7	11.22	35.74
200Z24	200	70	70	2.4	23.8	5	45	9	7.17	100	552.39	55.24	55.24	78.35	116.19	13.57	35.93
200Z30	200	70	70	3	24.8	5	45	11.25	9.1	100	685.89	68.59	68.59	78.08	146.91	17.08	36.14
240Z15	240	70	70	1.5	27.3	5	45	6.37	5.13	120	549.62	45.8	45.8	92.86	82.53	9.32	35.98
240Z19	240	70	70	1.9	28	5	45	8.08	6.46	120	693.76	57.81	57.81	92.69	105.38	11.86	36.13
240Z24	240	70	70	2.4	28.8	5	45	10.2	8.13	120	872.13	72.68	72.68	92.47	134.17	15.05	36.27
240Z30	240	70	70	3.0	29.8	5	45	12.75	10.28	120	1084.05	90.34	90.34	92.21	169.5	18.92	36.46
250Z30	254	70	70	3*	23	5	45	12.76	10.28	127	1193.39	93.97	93.97	96.7	139.24	16.43	33.03
300Z19	300	95	95	1.9	23	5	45	9.94	7.98	150	1341.32	89.42	89.42	116.18	185.03	17.11	43.15
300Z24	300	95	95	2.4	23.8	5	45	12.56	10.04	150	1689.92	112.66	112.66	115.99	236.47	21.77	43.39
300Z30	300	95	95	3*	24.8	5	45	15.7	12.52	150	2103.74	140.25	140.25	115.75	298.31	27.37	43.59

Please contact Tata BlueScope Steel office before adopting for design. Non standard thickness & sizes are also available on special request.

Table 2: LYSAGHT ZED-plus™ (90 DEG LIP) PURLIN PROPERTIES

Name	Depth mm	W(Tp) mm	W(Bt) mm	Thk mm	Lip mm	Rad mm	Lip angle deg	Area cm ²	Wt (Kg/m) (275GSM)	Yb mm	Ix cm ⁴	SxTop cm ³	SxBot cm ³	Rx mm	Iy cm ⁴	Sy cm ³	Ry mm
150Z10	152	65	61	1	13	5	90	2.91	2.36	77.04	105.86	14.12	13.74	60.36	23.66	3.73	28.54
150Z12	152	65	61	1.2	16	5	90	3.55	2.86	77.02	128.88	17.19	16.73	60.28	30.77	4.86	29.45
150Z15	152	65	61	1.5	17	5	90	4.44	3.56	77.02	160.54	21.41	20.84	60.12	38.87	6.15	29.58
150Z19	152	65	61	1.9	18	5	90	5.63	4.49	77.01	201.92	26.93	26.22	59.9	49.42	7.84	29.64
150Z24	152	65	61	2.4	20	5	90	7.15	5.64	77.01	253.9	33.86	33.97	59.61	64.02	10.2	29.93
200Z15	203	79	74	1.5	16	5	90	5.58	4.46	102.85	355.03	35.45	34.52	79.75	63.76	8.27	33.8
200Z19	203	79	74	1.9	20	5	90	7.19	5.7	102.83	455.5	45.47	44.3	79.62	87.48	11.38	34.89
200Z20	203	79	74	2*	20	5	90	7.55	6	102.82	478.21	47.74	46.51	79.56	91.6	11.93	34.82
200Z24	203	79	74	2.4	22	5	90	9.11	7.17	102.82	574.04	57.3	55.83	79.36	112.92	14.74	35.2
250Z15	254	79	74	1.5	18	5	90	6.41	5.13	128.48	607.53	48.4	47.29	97.38	67.14	8.7	32.37
250Z19	254	79	74	1.9	19	5	90	8.12	6.46	128.48	766.79	61.09	59.68	97.2	85.38	11.09	32.43
250Z24	254	79	74	2.4	21	5	90	10.29	8.13	128.47	968.23	77.13	75.37	97	110.3	14.38	32.74
300Z19	300	100	93	1.9	27	5	90	10.05	7.98	151.97	1357.77	91.72	89.34	116.21	187.31	19.21	43.16
300Z24	300	100	93	2.4	28	5	90	12.69	10.04	151.97	1706.16	115.26	112.27	115.95	236.14	24.29	43.14
300Z30	300	100	93	3*	30	5	90	15.89	12.52	151.96	2126.24	143.63	139.92	115.66	298.65	30.81	43.35

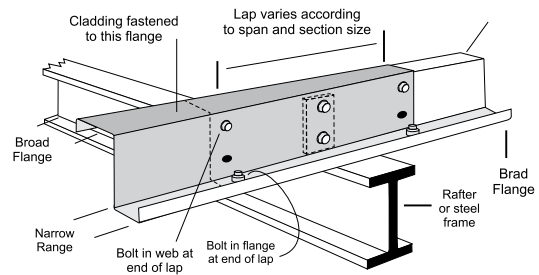
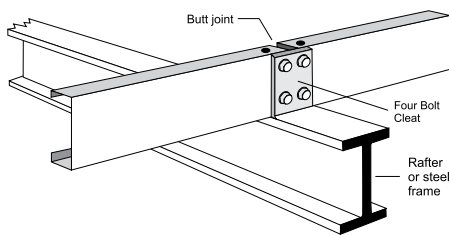
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Table 3: LYSAGHT CEE-plus™ PURLIN PROPERTIES

Name	Depth mm	W(Tp) mm	W(Bt) mm	Thk mm	Lip mm	Rad mm	Lip angle deg	Area cm ²	Wt (Kg/m) (275GSM)	Yb mm	Ix cm ⁴	SxTop cm ³	SxBot cm ³	Rx mm	Iy cm ⁴	Sy cm ³	Ry mm
100C10	102	51	51	1	12.5	5	90	2.16	1.75	51	36.38	7.13	7.13	41.08	7.55	2.19	18.71
100C12	102	51	51	1.2	12.5	5	90	2.58	2.09	51	43.25	8.48	8.48	40.98	8.92	2.59	18.61
100C15	102	51	51	1.5	13.5	5	90	3.22	2.59	51	53.74	10.54	10.54	40.81	11.24	3.29	18.67
100C19	102	51	51	1.9	14.5	5	90	4.09	3.27	51	67.32	13.2	13.2	40.58	14.24	4.21	18.66
100C24	102	51	51	2.4	16	5	90	5.18	4.11	51	83.98	16.47	16.47	40.27	18.09	5.42	18.69
150C10	152	64	64	1	14	5	90	2.95	2.36	76	107.81	14.19	14.19	60.5	15.66	3.46	23.06
150C12	152	64	64	1.2	14.5	5	90	3.53	2.86	76	128.96	16.97	16.97	60.4	18.81	4.17	23.07
150C15	152	64	64	1.5	15.5	5	90	4.43	3.56	76	160.68	21.14	21.14	60.25	23.68	5.29	23.13
150C19	152	64	64	1.9	16.5	5	90	5.61	4.49	76	202.15	26.6	26.6	60.04	30.03	6.75	23.14
150C24	152	64	64	2.4	18.5	5	90	7.12	5.64	76	254.34	33.47	33.47	59.76	38.61	8.79	23.28
200C15	200	76	76	1.5	16.9	5	90	5.55	4.46	100	343.47	34.35	34.35	78.68	40.69	7.43	27.08
200C19	200	76	76	1.9	20.4	5	90	7.12	5.7	100	439.19	43.92	43.92	78.51	54.3	10.11	27.61
200C24	200	76	76	2.4	21.6	5	90	9.00	7.17	100	551.03	55.1	55.1	78.25	68.53	12.84	27.6
200C30	200	76	76	3	23.1	5	90	11.25	9.1	100	683.3	68.33	68.33	77.93	85.65	16.17	27.59
240C15	240	76	76	1.5	24.4	5	90	6.37	5.13	120	548.26	45.69	45.69	92.74	49.78	9.09	27.94
240C19	240	76	76	1.9	25.4	5	90	8.07	6.46	120	691.4	57.62	57.62	92.53	63	11.56	27.93
240C24	240	76	76	2.4	26.6	5	90	10.2	8.13	120	868.23	72.35	72.35	92.27	79.41	14.66	27.9
240C30	240	76	76	3	28.1	5	90	12.75	10.28	120	1077.81	89.82	89.82	91.94	99.08	18.42	27.88
250C15	252	76	76	1.5	16.5	5	90	6.32	5.13	126	588.75	46.73	46.73	96.74	43.19	7.53	26.15
250C19	252	76	76	1.9	18.1	5	90	8.02	6.46	126	745.83	59.19	59.19	96.4	55.53	9.76	26.31
250C24	252	76	76	2.4	20.1	5	90	10.18	8.13	126	941.91	74.76	74.76	96.21	71.39	12.66	26.49
250C30	252	76	76	3	22.5	5	90	12.78	10.28	126	1176.56	93.38	93.38	95.97	90.95	16.32	26.68
300C19	300	96	96	1.9	24.1	5	90	9.92	7.98	150	1336.87	89.13	89.13	116.06	115.76	16.38	34.15
300C24	300	96	96	2.4	26.1	5	90	12.58	10.04	150	1687.56	112.5	112.5	115.84	148.06	21.11	34.31
300C30	300	96	96	3	28.5	5	90	15.78	12.52	150	2107.12	140.47	140.47	115.57	187.65	27	34.49

Please contact Tata BlueScope Steel office before adopting for design. Non standard thickness & sizes are also available on special request.

Typical Connection



Handling and Storage

LYSAGHT CEE-plus™ and ZED-plus™ sections are delivered in strapped bundles. Ideally, deliveries should be arranged so that the period between delivery and installation is minimised. If not required for immediate use, bundles of purlins should be neatly stacked off the ground and on a slight slope so that water can drain away. If in the open, it should be protected with waterproof covers to prevent the entry of water and /or condensation. If bundle becomes wet, the purlins should be separated, wiped dry and covered. Other accessories should be treated similarly. Bolts and nuts in particular should be kept

clean, dry and free of dirt or dust to prevent difficulties when tightening.

Bundles of purlins must be lifted carefully to avoid damage. Long length should be lifted using a separator bar and fabric slings. Care should be taken to prevent local damage at the lifting points.





Performance

In accordance with the provisions of AS/ANZ 4600:1996 cold-formed steel structures, load capacities have been calculated for LYSAGHT® sections using approved LYSAGHT® bridging systems, bolting and other accessories. Sections chosen using the data provided in the tables will perform as specified when the design, fabrication and erection are carried out in accordance with Tata BlueScope Steel recommendations and accepted building practice.

Application Area

LYSAGHT ZED-plus™ sections may be used over single spans, un-lapped continuous and lapped continuous spans in multi-bay buildings. Lapped continuous spans result in a considerable capacity increase in the system. LYSAGHT CEE-plus™ sections may be used in single spans and un-lapped continuous spans in multi-bay buildings. CEE-plus™ sections are ideal as eave Purlin or where compact sections are required for detailing. CEE-plus™ sections cannot be lapped.

Corrosion Protection

A zinc coating of Z275 (275 g/m² minimum coating mass) is the standard coating class provided with LYSAGHT CEE-plus™ and ZED-plus™ sections. This will provide a long and trouble-free life for enclosed buildings and open-sided rural buildings, in a non-aggressive environment. A non-aggressive environment is 1000 m from rough surf, 750 m from industrial emission and fossil fuel combustion and 300 m from calm salt waters. Consideration must be given to the nature of activities performed within the building. For corrosive environment, please seek advice from Tata BlueScope Steel office.

Compatibility with other Steel Products

The zinc coating on purlin is fully compatible with the zinc and aluminum / zinc coatings used on roof and wall sheeting. If minor damage occurs to the purlin coating, the base steel is protected by its own surrounding coating. Furthermore, the protective coating on the sheeting is not corroded by an un-protected base steel nearby.



Applications



Airports



Commercial Buildings



Indoor Stadiums

For further technical assistance mail us at : lysaght@tatabluescopesteel.com



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