



CLIK Shipbuilding Solutions

Break the Impossible

CLIK LIMITED

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ABOUT CLIK

Who we are?

CLIK® is a solution provider for projects and special steel users.



Why CLIK?

- a) Trusted quality. Mature quality control from raw material sourcing, rolling, quenching, tempering and fabrication.
- b) One-stop solution with full dimension and grades
- c) New product development for your bespoke sizes and grades.
- d) Professional team with 25+ years' experience and proven supply records.
- e) Global team with local service.

What we do?

- a) Providing a variety of solutions for shipbuilding industry.
 - Ship Plates
 - Bulb Flats
 - Angles
- b) Combining flexibly engineering, procurement and fabrication.
- c) Offering cost-effective solutions to your projects through our integration in the supply chain.
- d) Supplying bespoke sizes, grades and fully functional solutions to shipbuilding industry.

Ship Plates

Applications

Ship, Cruisers, Ice-breakers, Ice-going vessels.

Classification Societies

RS, RINA, NK, LR, KR, GL, DNV, CCS, BV, ABS, etc.

Standard

Classification Society Rules



Tolerance

Classification Society Rules * Tighter tolerance to be achieved upon special agreement.

Steel Grades, Dimension and Delivery Condition

Steel Grades	Delivery Condition	Thickness (mm)	Width (mm)	Length (mm)
A,B,D,E	CR,TMCP	6-40	900-4800	3000-25000
	N	6-350	900-4800	3000-18000
AH32,DH32,EH32,FH32	CR,TMCP	6-40	900-4800	3000-25000
	N	6-350	900-4800	3000-18000
AH36,DH36,EH36,FH36	CR,TMCP	6-40	900-4800	3000-25000
	N	6-350	900-4800	3000-18000
AH40,DH40,EH40,FH40	TMCP	6-40	900-4800	3000-25000
	N	6-150	900-4800	3000-18000
AH420,DH420,EH420 (AQ43,DQ43,EQ43)	Q+T	6-150	900-3650	3000-18000
AH460,DH460,EH460 (AQ47,DQ47,EQ47)	Q+T	6-150	900-3650	3000-18000
AH500,DH500,EH500 (AQ51,DQ51,EQ51)	Q+T	6-150	900-3650	3000-18000
AH550,DH550,EH550 (AQ56,DQ56,EQ56)	Q+T	6-150	900-3650	3000-18000
AH620,DH620,EH620 (AQ63,DQ63,EQ63)	Q+T	6-150	900-3650	3000-18000
AH690,DH690,EH69 (AQ70,DQ70,EQ70)	Q+T	6-150	900-3650	3000-18000

*Z15, Z25, Z35 can be agreed on the specific steel grades and dimension.

Mechanical Properties

Steel Grades	Tensile Strength Rm, MPa	Yield Strength ReH, MPa	Elongation A. %	Test Temperature °C	Impact Test (Charp V-notch) KV ₂ , J	
		≥	≥		Longitudinal ≥	Transverse ≥
AH36,DH36, EH36,FH36	490-630	355	21	-40	34	41
FH40	510-660	390	20	-60	41	46
EH460 (EQ47)	570-720	460	17	-40	46	31
EH550 (EQ56)	670-830	550	16	-40	50	37
EH690 (EQ70)	770-940	690	14	-40	69	46

Chemical Compositions

Steel Grades	Delivery Condition	Chemical Compositions %											
		≤											
		C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Nb	Ti	V
AH36,DH36, EH36,FH36	N	0.16	0.5	1.6	0.02	0.005	0.3	0.3	/	0.3	0.05	0.02	0.06
FH40	TMCP	0.10	0.5	1.6	0.02	0.005	/	0.3	/	/	0.05	0.02	/
EH460 (EQ47)	Q+T	0.15	0.5	1.7	0.02	0.005	0.5	0.5	0.5	0.5	0.05	0.02	0.06
EH550 (EQ56)	Q+T	0.15	0.5	1.7	0.02	0.005	0.8	0.8	0.8	0.8	0.05	0.02	0.06
EH690 (EQ70)	Q+T	0.15	0.5	1.6	0.02	0.005	0.8	0.8	0.8	0.8	0.05	0.02	0.06

Bulb Flats



Description

Bulb Flats are horizontally welded on the interior side of the body with plates as the stiffeners for construction of ship hulls.

Characteristics

- a) Rounded edges- saving the time and cost for edges grinding before painting
- b) Lower weight ratio
- c) Better reinforcing capacity, corrosion-resistant and life performance

Classification Societies

RS, RINA, NK, LR, KR, GL, DNV, CCS, BV, ABS, etc.

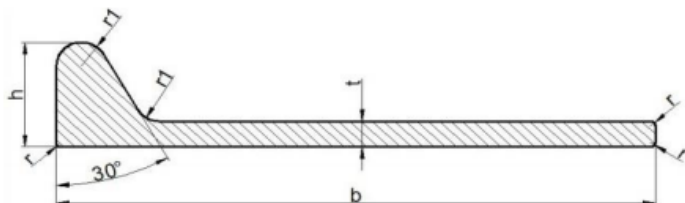
Steel Grades and Delivery Condition

Strength	Steel Grades	Delivery Condition
Normal	A,B,D,E	As Rolled
High	A32,D32,E32, A36,D36,E36.	

Standard

1. EN10067:1996 (GB/T9945-2012)
2. GOST 21937-76 (GB/T9945-2001)

Shape and Range of Dimension



Width (b):50mm-430mm

Thickness (t):4mm-20mm

Length: 6m-12m

*Short cuts or longer lengths are available by special agreement.

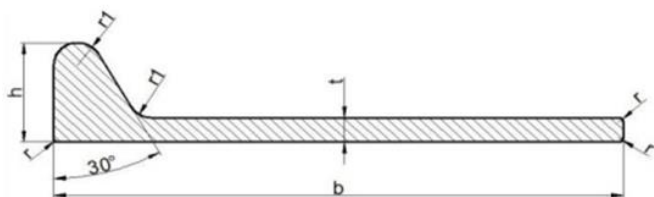
Tolerance

Nominal Dimension (mm)				Tolerance (mm)		
b		t	h	B	t	h
>	≤					
50	70	≤5	14-21	±1.0	+0.6 - 0.3	±0.5
70	120	5-8	19-30	±1.5	+0.7 - 0.3	±0.5
120	180	6-11	26-38	±2.0	+1.0 - 0.3	±0.8
180	300	8-14	37-57	±3.0	+1.1 - 0.3	±0.95
300	430	11-20	58-82.5	±4.0	+1.3 - 0.3	±1.1

*It is possible to agree on tighter tolerance with our sales when ordering.



Parameters- Sheet 1



EN10067:1996 (GB/T9945-2012)

Type	Nominal Dimension(mm)					Sectional Area (cm ²)	Metric Weight (kg/m)
	b	t	h	r1	r		
HP80x5	80	5	19	4	≤1.5	5.41	4.25
HP80x6	80	6	20	4	≤2	6.21	4.88
HP100x7	100	7	22.5	4.5	≤2	8.74	6.86
HP100x8	100	8	23.5	4.5	≤2	9.74	7.65
HP120x6	120	6	23	5	≤2	9.32	7.32
HP120x7	120	7	24	5	≤2	10.52	8.26
HP120x8	120	8	25	5	≤2	11.72	9.20
HP140x7	140	7	26	5.5	≤2	12.43	9.75
HP140x8	140	8	27	5.5	≤2	12.83	10.85
HP140x9	140	9	28	5.5	≤2	15.20	11.93
HP140x10	140	10	29	5.5	≤3	16.63	13.05
HP160x7	160	7	29	6	≤2	14.60	11.46
HP160x8	160	8	30	6	≤2	16.20	12.72
HP160x9	160	9	31	6	≤2	17.80	13.97
HP160x11	160	11	33	6	≤3	21.00	16.49
HP180x8	180	8	33	7	≤2	18.86	14.80
HP180x9	180	9	34	7	≤2	20.66	16.22
HP180x10	180	10	35	7	≤3	22.46	17.63
HP180x11	180	11	36	7	≤3	24.26	19.04
HP200x9	200	9	37	8	≤2	23.66	18.57
HP200x10	200	10	38	8	≤3	25.66	20.14
HP200x11	200	11	39	8	≤3	27.66	21.71
HP200x12	200	12	40	8	≤3	29.66	23.28
HP220x10	220	10	41	9	≤3	29.00	22.77
HP220x11	220	11	42	9	≤3	31.20	24.50
HP220x12	220	12	43	9	≤3	33.40	26.22

*The special requirements for thickness can be accepted by agreement.

Parameters - Sheet 2

EN10067:1996(GB/T9945-2012)

Type	Nominal Dimension(mm)					Sectional Area (cm ²)	Metric Weight (kg/m)
	b	t	h	r1	r		
HP240x10	240	10	44	10	≤3	32.49	25.50
HP240x11	240	11	45	10	≤3	34.89	27.39
HP240x12	240	12	46	10	≤3	37.29	29.27
HP260x10	260	10	47	11	≤3	36.11	28.35
HP260x11	260	11	48	11	≤3	38.71	30.39
HP260x12	260	12	49	11	≤3	41.31	32.43
HP260x13	260	13	50	11	≤3	43.85	34.43
HP280x11	280	11	51	12	≤3	42.68	33.50
HP280x12	280	12	52	12	≤3	45.48	35.70
HP280x13	280	13	53	12	≤3	48.28	37.90
HP300x11	300	11	54	13	≤3	46.78	36.70
HP300x12	300	12	55	13	≤3	49.79	39.09
HP300x13	300	13	56	13	≤3	52.79	41.44
HP320x12	320	12	58	14	≤3	54.25	42.60
HP320x13	320	13	59	14	≤3	57.25	45.09
HP320x14	320	14	60	14	≤4	60.85	47.60
HP340x12	340	12	61	15	≤3	58.84	46.20
HP340x13	340	13	62	15	≤3	62.24	48.86
HP340x14	340	14	63	15	≤4	65.54	51.50
HP370x13	370	13	66.5	16.5	≤3	69.70	54.70
HP370x14	370	14	67.5	16.5	≤4	73.40	57.60
HP370x15	370	15	68.5	16.5	≤4	77.10	60.50
HP400x14	400	14	72	18	≤4	81.48	63.96
HP400x15	400	15	73	18	≤4	85.48	67.10
HP400x16	400	16	74	18	≤4	89.48	70.20
HP430x14	430	14	76.5	19.5	≤4	89.70	70.60
HP430x15	430	15	77.5	19.5	≤4	94.19	73.90
HP430x17	430	17	79.5	19.5	≤4	102.79	80.70
HP430x19	430	19	81.5	19.5	≤4	111.39	87.40
HP430x20	430	20	82.5	19.5	≤4	115.00	90.80

*The special requirements for thickness can be accepted by agreement.

Parameters - Sheet 3

GOST 21937-76 (GB/T9945-2001)

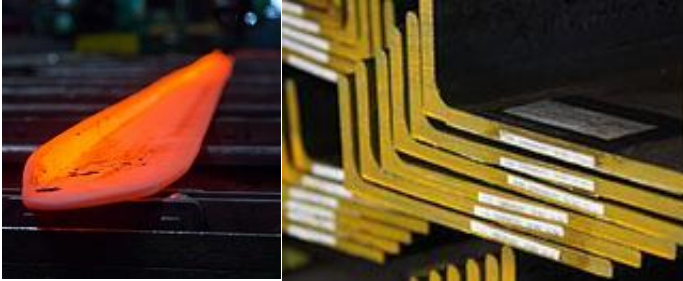
Type	Nominal Dimension(mm)					Sectional Area (cm ²)	Metric Weight (kg/m)
	b	t	h	r1	r		
50x4	50	4	19	3	≤1	2.88	2.26
60x5	60	5	20	3	≤1	4.31	3.38
80x5	80	5	22	4	≤1.5	5.86	4.61
90x5.5	90	5.5	24	4	≤1.5	7.06	5.55
100x6	100	6	26	5	≤1.5	8.66	6.81
120x6.5	120	6.5	30	5	≤2	11.18	8.78
140x7	140	7	33	6	≤2	14.12	11.10
140x9	140	9	35	6	≤2	16.91	13.30
220x11	220	11	48	8.5	≤3	32.90	25.87
220x13	220	13	50	8.5	≤3	37.30	29.33
240x12	240	12	52	9	≤3	38.87	30.55
240x14	240	14	54	9	≤3	43.67	34.32
270x12	270	12	55	9.5	≤3	43.93	34.53
270x14	270	14	57	9.5	≤3	49.33	38.77

*The special requirements for thickness can be accepted by agreement.



L- Sections (JIS G3192-2008)

Unequal angle steel with different thicknesses

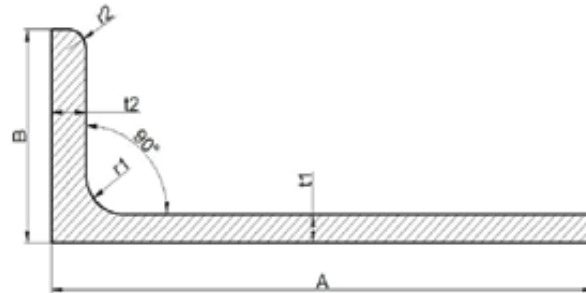


Normal Strength: Grade A, B, D, E

High Strength: Grade A32, D32, E32, A36, D36 & E36

Length: 6000mm- 12000mm

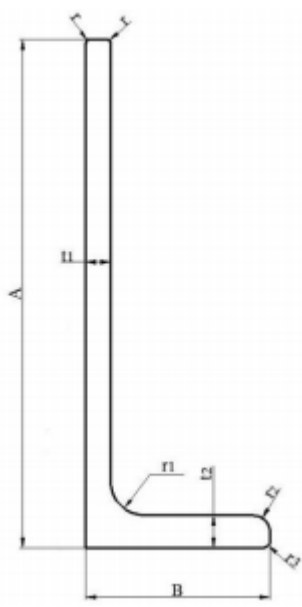
*Quote based on requirements specified in your drawing.



Production Type	Dimension (mm)						Sectional Area (CM ²)	Weight (kg/m)
	A	B	t1	t2	r1	r2		
L200x90x8x14	200	90	8	14	14	7	27.8	21.8
L200x90x9x14	200	90	9	14	14	7	29.66	23.3
L200x90x10x14	200	90	10	14	14	7	31.52	24.7
L250x90x9x14	250	90	9	14	17	8.5	34.31	26.9
L250x90x9x15	250	90	9	15	17	8.5	35.12	27.6
L250x90x10x15	250	90	10	15	17	8.5	37.47	29.4
L250x90x11x16	250	90	11	16	17	8.5	40.16	31.9
L250x90x12x16	250	90	12	16	17	8.5	42.95	33.7
L300x90x10x16	300	90	10	16	19	9.5	43.88	34.1
L300x90x11x16	300	90	11	16	19	9.5	46.22	36.3
L300x90x12x17	300	90	12	17	19	9.5	49.84	39.1
L300x90x13x17	300	90	13	17	19	9.5	52.67	41.3
L350x100x11x17	350	100	11	17	22	11	54.41	42.7
L350x100x12x17	350	100	12	17	22	11	57.74	45.3
L400x100x11.5x16	400	100	11.5	16	24	12	61.09	47.9
L400x100x12x18	400	100	12	18	24	12	64.7	50.8
L400x100x13x18	400	100	13	18	24	12	68.59	53.8
L450x125x11.5x 18	450	125	11.5	18	24	12	73.11	57.4

Tolerance of L-sections

Dimension (mm)			Tolerance (mm)
			Standard/ JIS G3192-2008
Side Length (A or B)	$50 \leq A, B < 100$		± 2.0
	$100 \leq A, B < 200$		± 3.0
	$A, B \geq 200$		± 4.0
Thickness(t,t ₁ ,t ₂)	A ≥ 130	$6.3 \leq t < 10$	± 0.8
		$10 \leq t < 16$	± 1.0
		$16 \leq t < 25$	± 1.2



Applications

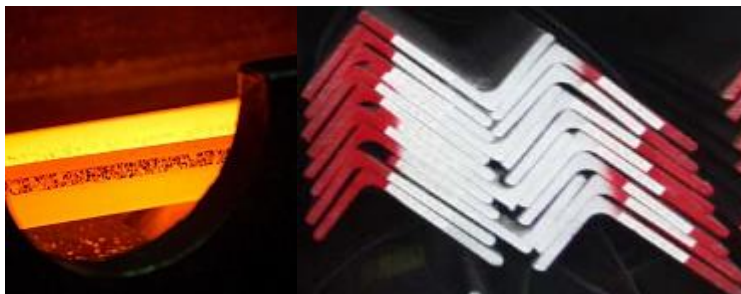
L-section is used for accommodation of loads in the bottom of a large ship's hull, ocean engineering and construction engineering structure of high demands.



All our products are approved by well-known international Classification Organizations, such as ABS, Lloyds Register, DNV-GL, BV, Class NK, RMRS, KR, Rina, GL and CCS.

Unequal Angles (GB/ T706-2008)

Unequal angle steel with same thickness

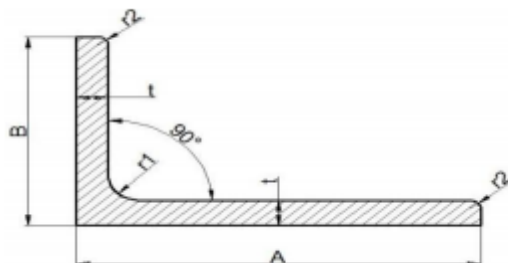


Normal Strength: Grade A, B, D, E

High Strength: Grade A32, D32, E32, A36, D36 & E36

Length: 6000mm- 12000mm

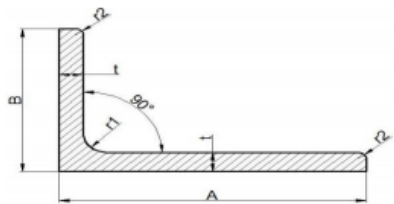
*Quote based on requirements specified in your drawing.



Production Type	Dimension (mm)					Sectional Area(CM ²)	Weight (kg/m)
	A	B	t1	r1	r2		
∠70x45x4	70	45	4	7.5	1/3t	4.547	3.57
∠70x45x5	70	45	5	7.5	1/3t	5.609	4.403
∠70x45x6	70	45	6	7.5	1/3t	6.647	5.218
∠70x45x7	70	45	7	7.5	1/3t	7.657	6.011
∠75x50x5	75	50	5	8	1/3t	6.125	4.808
∠75x50x6	75	50	6	8	1/3t	7.26	5.699
∠75x50x8	75	50	8	8	1/3t	9.467	7.431
∠75x50x10	75	50	10	8	1/3t	11.59	9.098
∠80x50x5	80	50	5	8	1/3t	6.375	5.005
∠80x50x6	80	50	6	8	1/3t	7.56	5.935
∠80x50x7	80	50	7	8	1/3t	8.724	6.848
∠80x50x8	80	50	8	8	1/3t	9.867	7.745
∠90x56x5	90	56	5	9	1/3t	7.212	5.661
∠90x56x6	90	56	6	9	1/3t	8.557	6.717
∠90x56x7	90	56	7	9	1/3t	9.88	7.756
∠90x56x8	90	56	8	9	1/3t	11.183	8.779

Production Type	Dimension (mm)					Sectional Area(CM ²)	Weight (kg/m)
	A	B	t1	r1	r2		
∠100x63x6	100	63	6	10	1/3t	9.617	7.55
∠100x63x7	100	63	7	10	1/3t	11.111	8.722
∠100x63x8	100	63	8	10	1/3t	12.534	9.878
∠100x63x10	100	63	10	10	1/3t	15.467	12.142
∠100x80x6	100	80	6	10	1/3t	10.637	8.35
∠100x80x7	100	80	7	10	1/3t	12.301	9.656
∠100x80x8	100	80	8	10	1/3t	13.944	10.946
∠100x80x10	100	80	10	10	1/3t	17.167	13.476
∠110x70x6	110	70	6	10	1/3t	10.637	8.35
∠110x70x7	110	70	7	10	1/3t	12.301	9.656
∠110x70x8	110	70	8	10	1/3t	13.944	10.946
∠110x70x10	110	70	10	10	1/3t	17.167	13.476
∠125x80x7	125	80	7	11	1/3t	14.096	11.066
∠125x80x8	125	80	8	11	1/3t	15.989	12.551
∠125x80x10	125	80	10	11	1/3t	19.721	15.474
∠125x80x12	125	80	12	11	1/3t	23.351	18.33
∠140x90x8	140	90	8	12	1/3t	18.038	14.16
∠140x90x10	140	90	10	12	1/3t	22.261	17.475
∠140x90x12	140	90	12	12	1/3t	26.4	20.724
∠140x90x14	140	90	14	12	1/3t	30.456	23.908
∠150x90x8	150	90	8	12	1/3t	18.839	14.788
∠150x90x10	150	90	10	12	1/3t	23.261	18.26
∠150x90x12	150	90	12	12	1/3t	27.6	21.666
∠150x90x14	150	90	14	12	1/3t	31.856	25.007
∠150x90x15	150	90	15	12	1/3t	33.952	26.652
∠150x90x16	150	90	16	12	1/3t	36.027	28.281
∠160x100x10	160	100	10	13	1/3t	25.315	19.872
∠160x100x12	160	100	12	13	1/3t	30.054	23.592
∠160x100x14	160	100	14	13	1/3t	34.709	27.247
∠160x100x16	160	100	16	13	1/3t	29.281	30.835
∠180x110x10	180	110	10	14	1/3t	28.373	22.273
∠180x110x12	180	110	12	14	1/3t	33.712	26.44
∠180x110x14	180	110	14	14	1/3t	38.967	30.589
∠180x110x16	180	110	16	14	1/3t	44.139	34.649
∠200x125x12	200	125	12	14	1/3t	37.912	29.761
∠200x125x14	200	125	14	14	1/3t	43.687	34.436
∠200x125x16	200	125	16	14	1/3t	49.739	39.045
∠200x125x18	200	125	18	14	1/3t	55.526	43.588

Tolerance of Unequal angles GB T706-2008

Dimension (mm)		Tolerance (mm)	
		Standard/ GB T706-2008	
Side width (A, B)	56<A, B≤90	±1.5	
	90<A, B≤140	±2.0	
	140<A,B≤200	±2.5	
	A,B >200	±3.5	
Thickness(t)	56<A, B≤90	±0.6	
	90<A, B≤140	±0.7	
	140<A,B≤200	±1.0	
	A,B >200	±1.4	
Tortuosity	Tortuosity per meter ≤3mm Total tortuosity ≤0.3% of total length		Adapt to big bend in up, down, left and right



Unequal Angles (JIS G3192-2008)

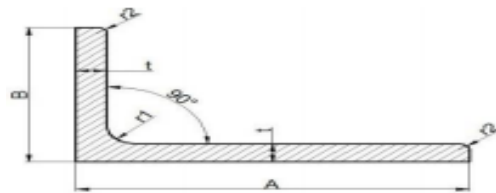
Unequal angle steel with same thickness

Normal Strength: Grade A, B, D, E

High Strength: Grade A32, D32, E32, A36, D36 & E36

Length: 6000mm- 12000mm

*Quote based on requirements specified in your drawing.



AxB	Dimension (mm)			Sectional Area(CM ²)	Weight (kg/m)
	t	r1	r2		
100x75	8	10	5	13.5	10.6
100x75	10	10	7	16.6	13
125x75	8	10	5	15.5	12.2
125x75	10	10	7	19.1	15
150x90	10	12	8.5	23.2	18.2
150x90	12	12	8.5	27.5	21.6
150x100	12	12	8.5	28.7	22.5

Tolerance of Unequal angles JIS G3192-2008

Dimension (mm)		Tolerance (mm)	
		Standard/ JIS G3192-2008	
Side Length (A, B)	50 ≤ A, B < 100		±2.0
	100 ≤ A, B < 200		±3.0
	A, B ≥ 200		±4.0
Thickness(t)	A < 130	6.3 ≤ t < 10	±0.7
		10 ≤ t < 16	±0.8
	A ≥ 130	6.3 ≤ t < 10	±0.8
		10 ≤ t < 16	±1.0
		16 ≤ t < 25	±1.2

Applications

Unequal Angle is used for accommodation of loads in the bottom of a large ship's hull, ocean engineering and construction engineering structure of high demands.



All our products are approved by well- known international Classification Organizations, such as ABS, Lloyds Register, DNV-GL, BV, Class NK, RMRS, KR, Rina, GL and CCS.

Equal Angles (GB/T706-2008)

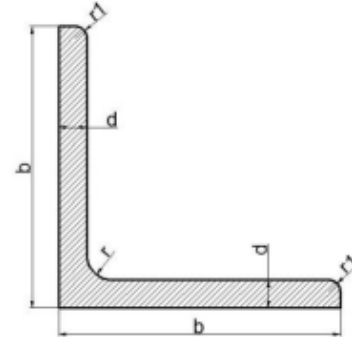


Normal Strength: Grade A, B, D, E

High Strength: Grade A32, D32, E32, A36, D36 & E36

Length: 6000mm- 12000mm

*Quote based on requirements specified in your drawing.



Production Type	Dimension				Sectional Area(CM ²)	Weight (kg/m)
	b	d	r	r1		
12.5	125	8	14	1/3d	19.75	15.504
		10	14	1/3d	24.373	19.133
		12	14	1/3d	28.912	22.696
		14	14	1/3d	33.367	26.193
		16	14	1/3d	37.739	29.625
13	130	10	14	1/3d	25.373	19.918
		12	14	1/3d	30.112	23.638
		14	14	1/3d	34.767	27.292
		16	14	1/3d	39.339	30.881
14	140	10	14	1/3d	27.373	21.488
		12	14	1/3d	32.512	25.522
		14	14	1/3d	37.567	29.49
		16	14	1/3d	42.539	33.393
15	150	8	14	1/3d	23.75	18.644
		10	14	1/3d	29.373	23.058
		12	14	1/3d	34.912	27.406
		14	14	1/3d	40.367	31.688
		15	14	1/3d	43.063	33.804
		16	14	1/3d	45.739	35.905
16	160	10	16	1/3d	31.502	24.729
		12	16	1/3d	37.441	29.391
		14	16	1/3d	43.296	33.987
		16	16	1/3d	49.067	38.518

Production Type	Dimension				Sectional Area(CM ²)	Weight (kg/m)
	b	d	r	r1		
18	180	12	16	1/3d	42.241	33.159
		14	16	1/3d	48.896	38.383
		16	16	1/3d	55.467	43.542
		18	16	1/3d	61.055	48.634
20	200	14	18	1/3d	54.642	42.894
		16	18	1/3d	62.013	48.68
		18	18	1/3d	69.301	54.401
		20	18	1/3d	76.505	60.056
		24	18	1/3d	90.661	71.168
22	220	16	21	1/3d	68.664	53.901
		18	21	1/3d	76.752	60.25
		20	21	1/3d	84.756	66.533
		22	21	1/3d	92.676	72.751
		24	21	1/3d	100.512	78.902
		26	21	1/3d	108.264	84.987
25	250	18	24	1/3d	87.842	68.956
		20	24	1/3d	97.045	76.18
		24	24	1/3d	115.201	90.433
		26	24	1/3d	124.154	97.461
		28	24	1/3d	133.022	104.422
		30	24	1/3d	141.807	111.318
		32	24	1/3d	150.508	118.149
		35	24	1/3d	163.402	128.271

Tolerance of Equal angles

Dimension (mm)		Tolerance (mm)		
		National Standard	SGCC Standard	CSPGC Standard
Side Width (b)	90<b≤140	±1.8	-0.9~ +1.8	0~ +1.8
	140<b≤200	±2.5	-1.2~ +2.5	0~ +2.5
	b >200	±3.5	-1.7~ +3.5	0~ +3.5
Side Thickness (d)	90<b≤140	±0.7	-0.35~ +0.7	0~ +0.6
	140<b≤200	±1.0	-0.5~ +1.0	0~ +0.8
	b >200	±1.4	-0.7~ +1.4	0~ +1.2
Tortuosity	Tortuosity per meter ≤3mm, total tortuosity ≤0.3% of total length			

***National Standard** is GB/706-2008, **SGCC Standard** is State Grid Corporation of China Standard, **CSPGC Standard** is China Southern Power Grid Company Standard.

Applications

Angle steel for tower is mainly used for making frame structure such as the transmission tower, steel structure framework on either side of bridge girder, arms and uprights of the tower crane on the construction site, columns and beams in the workshop, etc.



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Trusted by Our Customers



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