

Simbologia

G	Peso do perfil em kg/m
h	Altura
B	Largura
t_w	Espessura da alma
t_f	Espessura do banzo
r	Raio de concordância
A	Área da secção transversal
h_i	Distância livre entre banzos
d	Altura da alma, com espessura constante
∅	Diâmetro máximo dos parafusos
p_{min}	Distância mínima entre parafusos
p_{max}	Distância máxima entre parafusos
e_{min}	Distância mínima ao bordo
e_{max}	Distância máxima ao bordo
A_{net}	Área da secção transversal, com dedução das aberturas dos parafusos
A_L	Superfície de pintura em m ² /m
A_G	Superfície de pintura em m ² /ton
I	Momento de inércia
W_{el}	Módulo de flexão elástico
W_{pl}	Módulo de flexão plástico
i	Raio de giração
A_v	Área de corte
s_s	Largura de apoio rígido
I_t	Momento de inércia à torção
I_∅	Constante de empenamento (torção não uniforme)

Simbologia

Classe 1 – Secções transversais com capacidade de atingir a sua resistência plástica sem risco de enfunamento local e com capacidade de rotação necessária para a formação de uma rótula plástica

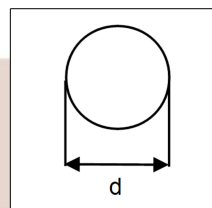
Classe 2 - Secções transversais com capacidade de atingir a sua resistência plástica sem risco de enfunamento local, mas com capacidade de rotação limitada.

Classe 3 - Secções transversais com capacidade de atingir a sua resistência elástica numa das fibras extremas, mas não a sua resistência plástica, com riscos de enfunamento localizado.

Classe 4 - Secções transversais sem capacidade de atingir a sua resistência elástica, com riscos de enfunamento localizado.

Varão Redondo

Norma EN 10060 ($d \geq 10\text{mm}$)

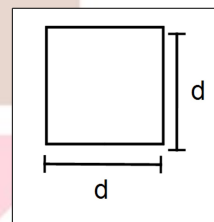


d (mm)	Varão Redondo		
	Peso (kg/m)	Área (cm ²)	Superfície (cm ²)
6	0.22	0.28	188
8	0.39	0.50	251
10	0.62	0.79	314
12	0.89	1.13	377
16	1.58	2.01	503
20	2.47	3.14	628
25	3.85	4.91	785
30	5.55	7.07	942
32	6.31	8.04	1,005
40	9.86	12.57	1,257
45	12.48	15.90	1,414
50	15.41	19.63	1,571
55	18.65	23.76	1,728
60	22.20	28.27	1,885
65	26.05	33.18	2,042
70	30.21	38.48	2,199
80	39.46	50.27	2,513
90	49.94	63.62	2,827
100	61.65	78.54	3,142
120	88.78	113.10	3,770

Barra Quadrada

Norma Dimensional **EN 10059** ($d \geq 8\text{mm}$)

Norma Material **NP EN 10025**

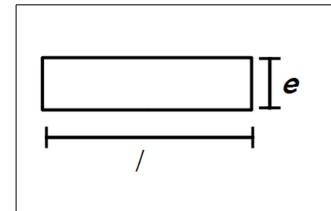


d (mm)	Barra Quadrada		
	Peso (kg/m)	Área (cm ²)	Superfície (cm ²)
6	0.283	0.36	240
8	0.502	0.64	320
10	0.785	1.00	400
12	1.130	1.44	480
16	2.010	2.56	640
20	3.140	4.00	800
25	4.906	6.25	1,000
30	7.065	9.00	1,200
32	8.038	10.24	1,280
40	12.560	16.00	1,600
50	19.625	25.00	2,000
60	28.260	36.00	2,400
70	38.465	49.00	2,800
80	50.240	64.00	3,200

Barra Rectangular

Norma Dimensional **EN 10058** ($l \leq 10\text{mm}$ e $e \geq 5\text{mm}$)

Norma Material **NP EN 10025**

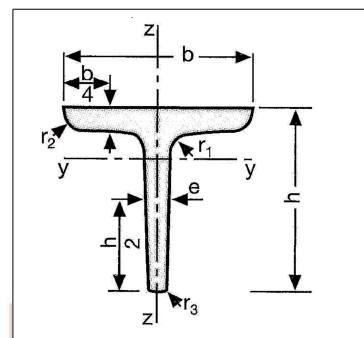


Largura - l (mm)	Espessura - e (mm)									
	3	4	5	8	10	12	15	20	25	30
	Peso (kg/m)									
12	0.28	0.47								
16	0.38	0.63								
20	0.47	0.79	0.94	1.26	1.57					
25	0.59	0.98	1.18	1.57	1.96	2.36				
30		1.18	1.41	1.88	2.36	2.83				
40		1.57	1.88	2.51	3.14	3.77	4.71	6.28	7.85	9.42
45		1.77	2.12	2.83	3.53	4.24	5.30	7.07	8.83	10.60
50			2.36	3.14	3.93	4.71	5.89	7.85	9.81	11.78
60			2.83	3.77	4.71	5.65	7.07	9.42	11.78	14.13
70			3.30	4.40	5.50	6.59	8.24	10.99	13.74	16.49
80			3.77	5.02	6.28	7.54	9.42	12.56	15.70	18.84
100			4.71	6.28	7.85	9.42	11.78	15.70	19.63	23.55
120				7.54	9.42	11.30	14.13	18.84	23.55	28.26
150					11.78	14.13	17.66	23.55	29.44	35.33
200					15.70	18.84	23.55	31.40	39.25	47.10
220					17.27	20.72	25.91	34.54	43.18	51.81
250					19.63	23.55	29.44	39.25	49.06	58.88
300						28.26	35.33	47.10	58.88	70.65
400						37.68	47.10	62.80	78.50	94.20
450						42.39	52.99	70.65	88.31	105.98
500						47.10	58.88	78.50	98.13	117.75

Barra T

Norma Dimensional EN 10055

Norma Material NP EN 10025



Barra	G Kg/m	Dimensões					Secção cm ²	I_y cm ⁴	W_{ely} cm ³	I_y cm	I_z cm ⁴	W_{elz} cm ³	I_z cm
		h Mm	b Mm	$e = r_1 = t$ mm	r_2 mm	r_3 mm							
20	0.88	20	20	3	1.5	1	1.12	0.38	0.27	0.58	0.2	0.2	0.42
25	1.29	25	25	3.5	2	1	1.64	0.87	0.49	0.73	0.43	0.4	0.51
30	1.77	30	30	4	2	1	2.26	1.72	0.8	0.87	0.87	0.58	0.62
35	2.33	35	35	4.5	2.5	1	2.97	3.1	1.23	1.04	1.57	0.9	0.73
40	2.96	40	40	5	2.5	1	3.77	5.28	1.84	1.18	2.58	1.29	0.83
45	3.67	45	45	5.5	3	1.5	4.67	8.13	2.51	1.32	4.01	1.78	0.93
50	4.44	50	50	6	3	1.5	5.66	12.1	3.36	1.46	6.06	2.42	1.03
60	6.23	60	60	7	3.5	2	7.94	23.8	5.48	1.73	12.2	4.07	1.24
70	8.32	70	70	8	4	2	10.6	44.5	8.79	2.05	22.1	6.32	1.44
80	10.7	80	80	9	4.5	2	13.6	73.7	12.8	2.33	37	9.25	1.65
90	13.4	90	90	10	5	2.5	17.1	119	18.2	2.64	58.5	13	1.85
100 (1)	16.4	100	100	11	5.5	3	20.9	179	24.6	2.92	88.3	17.7	2.05
120 (1)	23.2	120	120	13	6.5	3	29.6	366	42	3.51	178	29.7	2.45
140 (1)	31.3	140	140	15	7.5	4	39.9	660	64.7	4.07	330	47.2	2.88

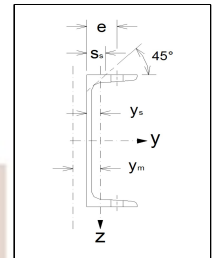
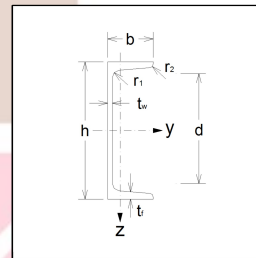
I - Momento de inércia;
 I/v - Momento de resistência;
 I - Raio de giração

1) Estes perfis não são correntes no mercado.

Barra UPN

Norma Dimensional **EN 10279**

Norma Material **NP EN 10025**



Barra	G Kg/m	Dimensões						Secção cm ²	I _y cm ⁴	W _{al,y} cm ³	I _y cm	I _z cm ⁴	W _{al,z} cm ³	I _z cm
		h Mm	b Mm	t _w mm	t _f mm	r ₂ mm	r ₃ mm							
30	1.74	30	15	4	4.5	2	2.21	0.103	2.53	1.69	1.07	0.38	0.39	0.42
30 (1)	4.27	30	33	5	7	3.5	5.44	0.174	6.39	4.26	1.08	5.33	2.68	0.99
40	2.87	40	20	5	5	2.5	3.66	0.142	7.58	3.79	1.44	1.14	0.86	0.56
40	4.87	40	35	5	7	3.5	6.21	0.199	14.1	7.05	1.5	6.68	3.08	1.04
50	3.86	50	25	5	6	3	4.92	0.181	16.8	6.73	1.85	2.49	1.48	0.71
50	5.59	50	38	5	7	3.5	7.12	0.232	26.4	10.6	1.92	9.12	3.75	1.13
60	5.07	60	30	6	6	3	6.46	0.215	31.6	10.5	2.21	4.51	2.16	0.84
65	7.09	65	42	5.5	7.5	4	9.03	0.273	57.5	17.7	2.52	14.1	5.07	1.25

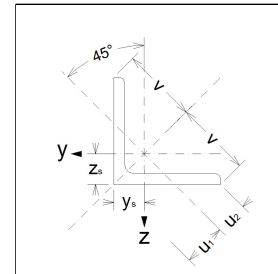
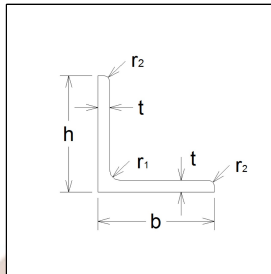
I - Momento de inércia;
I_v - Momento de resistência;
I - Raio de giração

1) Estes perfis não são correntes no mercado.

Cantoneiras de Abas Iguais

Norma Dimensional EN 10056-1

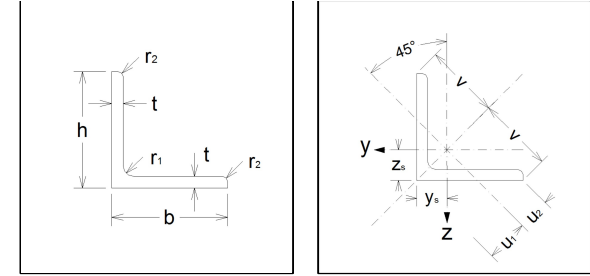
Norma Tolerâncias EN 10056-2



Perfil	G kg/m	DIMENSÕES				A Cm ²	z=y cm	V cm	U ₁ cm	A _G m ² /t	I _y =I _z cm ⁴	W _{el,yz} Cm ³	i _y =i _z cm	I _u cm ⁴	i _u cm	I _v cm ⁴	i _v cm	f (mm)	w (mm)
		h = b Mm	t Mm	r ₁ mm	R ₂ mm														
L 20 x 20 x 3	0.88	20	3	4	2	1.13	0.60	1.41	0.84	87.50	0.39	0.28	0.59	0.61	0.74	0.16	0.38	-	-
L 20 x 20 x 4	1.14	20	4	3.5	2	1.45	0.64	1.41	0.90	67.50	0.49	0.36	0.58	0.77	0.73	0.21	0.38	-	-
L 25 x 25 x 3	1.12	25	3	4	2	1.43	0.72	1.77	1.02	86.50	0.80	0.45	0.75	1.26	0.94	0.33	0.48	-	-
L 25 x 25 x 4	1.46	25	4	4	2	1.86	0.76	1.77	1.07	67.00	1.01	0.58	0.74	1.60	0.93	0.43	0.48	-	-
L 25 x 25 x 5	1.77	25	5	3.5	2	2.26	0.80	1.77	1.13	54.90	1.20	0.71	0.73	1.87	0.91	0.52	0.48	-	-
L 30 x 30 x 3	1.36	30	3	5	2.5	1.74	0.84	2.12	1.18	85.40	1.40	0.65	0.90	2.23	1.13	0.58	0.58	8.4	17
L 30 x 30 x 4	1.78	30	4	5	2.5	2.27	0.88	2.12	1.24	65.20	1.80	0.85	0.89	2.85	1.12	0.75	0.58	8.4	17
L 30 x 30 x 5	2.18	30	5	5	2.5	2.78	0.92	2.12	1.30	53.30	2.16	1.04	0.88	3.41	1.11	0.92	0.58	8.4	17
L 35 x 35 x 3.5	1.85	35	3.5	3.5	1.8	2.35	0.98	2.47	1.39	77.80	2.63	1.04	1.06	4.03	1.33	1.18	0.71	11	18
L 35 x 35 x 4	2.09	35	4	5	2.5	2.67	1.00	2.47	1.42	64.80	2.95	1.18	1.05	4.68	1.33	1.23	0.68	11	18
L 35 x 35 x 5	2.57	35	5	5	2.5	3.28	1.04	2.47	1.48	33.00	3.56	1.45	1.04	5.64	1.31	1.49	0.67	11	18
L 40 x 40 x 4	2.42	40	4	6	3	3.08	1.12	2.83	1.58	64.00	4.47	1.55	1.21	7.09	1.21	1.86	0.78	11	22
L 40 x 40 x 5	2.97	40	5	6	3	3.79	1.16	2.83	1.64	52.20	5.43	1.91	1.20	8.60	1.20	2.26	0.77	11	22
L 45 x 45 x 5	3.38	45	5	7	3.5	4.30	1.28	3.18	1.81	51.50	7.84	2.43	1.35	12.40	1.70	3.26	0.87	13	25
L 50 x 50 x 5	3.77	50	5	7	3.5	4.80	1.40	3.54	1.99	51.50	11.00	3.05	1.51	17.40	1.90	4.54	0.97	13	30
L 50 x 50 x 6	4.47	50	6	7	3.5	5.69	1.45	3.54	2.04	41.40	12.80	3.61	1.50	20.30	1.89	5.33	0.97	13	30
L 55 x 55 x 6	4.95	55	6	8	4	6.31	1.56	3.89	2.21	43.40	17.30	4.39	1.66	27.40	2.08	7.18	1.07	17	30
L 60 x 60 x 6	5.42	60	6	8	4	6.91	1.69	4.24	2.39	43.00	22.80	5.29	1.82	36.20	2.29	9.43	1.17	17	35
L 60 x 60 x 7	6.26	60	7	8	4	7.98	1.73	4.24	2.44	39.50	26.00	6.09	1.81	41.30	2.27	10.70	1.16	17	35
L 65 x 65 x 7	6.83	65	7	9	4.5	8.70	1.85	4.60	2.61	36.60	33.40	7.18	1.96	53.00	2.47	13.90	1.26	21	35
L 65 x 65 x 9	8.62	65	9	9	4.5	11.00	1.93	4.60	2.73	29.00	41.40	9.05	1.94	65.40	2.44	17.30	1.26	21	35
L 70 x 70 x 7	7.38	70	7	9	4.5	9.40	1.97	4.95	2.79	36.90	42.30	8.41	2.12	67.10	2.67	17.50	1.36	21	40
L 75 x 75 x 7	7.94	75	7	10	5	10.10	2.09	5.30	2.98	36.70	52.40	9.72	2.28	83.60	2.88	21.50	1.46	23	40
L 75 x 75 x 8	9.03	75	8	10	5	11.50	2.13	5.30	3.01	32.20	58.90	11.00	2.26	93.30	2.85	24.40	1.46	23	40
L 80 x 80 x 8	9.66	80	8	10	5	12.30	2.26	5.66	3.19	32.20	72.20	12.60	2.43	115	3.05	29.90	1.56	23	45
L 90 x 90 x 9	12.2	90	9	11	5.5	15.50	2.54	6.36	3.59	28.80	116	17.90	2.73	184	3.44	47.80	1.76	25	50
L 90 x 90 x 11	14.7	90	11	11	5.5	18.70	2.62	6.36	3.70	23.90	138	21.60	2.71	218	3.41	57.20	1.75	25	50

Cantoneiras de Abas Iguais

Norma Dimensional EN 10056-1
 Norma Tolerâncias EN 10056-2

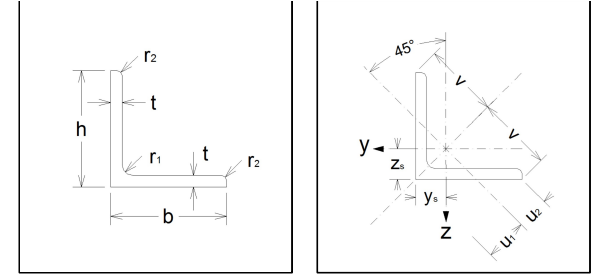


Perfil	G kg/m	Dimensões				A cm ²	z=y cm	v cm	u ₁ cm	u ₂ cm	f	e _{min} mm	e _{max} mm	A _{net} cm ²	A _L m ² /m	A _G m ² /t	I _y =I _z cm ⁴	W _{el,y} = W _{el,z} cm ³	i _y =i _z cm	I _u cm ⁴	i _u cm	I _v cm ⁴	i _v cm	I _{yz} cm ⁴	Classificação		
		h = b mm	T mm	r ₁ mm	r ₂ mm																				Compressão pura		
		235	275	355																							
L 100 x 100 x 8	12.2	100	8	12	6	15.51	2.74	7.07	3.87	3.52	M27	48	53	13.11	0.390	32.00	144.8	19.94	3.06	230.2	3.85	59.47	1.96	-85.37	4	4	4
L 100 x 100 x 10	15.0	100	10	12	6	19.20	2.82	7.07	3.99	3.54	M27	50	53	16.15	0.390	25.92	176.7	24.62	3.04	280.7	3.83	72.65	1.95	-104	1	2	4
L 100 x 100 x 12	17.8	100	12	12	6	22.71	2.90	7.07	4.11	3.57	M27	52	53	19.11	0.390	21.86	206.7	29.12	3.02	328.0	3.80	85.42	1.94	-121.3	1	1	2
L 120 x 120 x 10	18.2	120	10	13	6.5	23.18	3.31	8.49	4.69	4.24	M27	50	72	20.18	0.469	25.76	312.9	36.03	3.67	497.6	4.63	128.3	2.35	-184.6	4	4	4
L 120 x 120 x 11	19.9	120	11	13	6.5	25.37	3.36	8.49	4.75	4.25	M27	51	72	22.07	0.469	23.54	340.6	39.41	3.66	541.5	4.62	139.8	2.35	-200.9	2	4	4
L 120 x 120 x 12	21.6	120	12	13	6.5	27.54	3.40	8.49	4.80	4.26	M27	52	72	23.94	0.469	21.69	367.7	42.73	3.65	584.3	4.61	151.0	2.34	-216.6	1	2	4
L 120 x 120 x 13	23.3	120	13	13	6.5	29.69	3.44	8.49	4.86	4.28	M27	53	72	25.79	0.469	20.12	394.0	46.01	3.64	625.9	4.59	162.2	2.34	-231.8	1	2	3
L 120 x 120 x 15	26.6	120	15	13	6.5	33.93	3.51	8.49	4.97	4.31	M27	55	72	29.43	0.469	17.60	444.9	52.43	3.62	705.6	4.56	184.2	2.33	-260.7	1	1	1
L 130 x 130 x 12	23.5	130	12	14	7	30.00	3.64	9.19	5.15	4.60	M27	52	82	26.37	0.508	21.59	472.2	50.44	3.97	750.6	5.00	193.7	2.54	-278.5	2	4	4
L 130 x 130 x 15	29.0	130	15								M27														1	1	2
L 140 x 140 x 10	21.4	140	10	15	7.5	27.24	3.79	9.90	5.37	4.93	M27	51	92	24.24	0.547	25.59	504.4	49.43	4.30	802	5.43	206.8	2.76	-297.6	4	4	4
L 140 x 140 x 13	27.4	140	13	15	7.5	34.95	3.92	9.90	5.55	4.96	M27	54	92	31.05	0.547	19.94	638.5	63.37	4.27	1015	5.39	262.0	2.74	-376.6	2	4	4
L 150 x 150 x 10	23.0	150	10	16	8	29.27	4.03	10.61	5.71	5.28	M27	52	102	26.27	0.586	25.51	624.0	56.91	4.62	992	5.82	256.0	2.96	-368	4	4	4
L 150 x 150 x 12	27.3	150	12	16	8	34.83	4.12	10.61	5.83	5.29	M27	54	102	31.23	0.586	21.44	736.9	67.75	4.60	1172	5.80	302.0	2.94	-434.9	4	4	4
L 150 x 150 x 14	31.6	150	14	16	8	40.31	4.21	10.61	5.95	5.32	M27	56	102	36.11	0.586	18.53	845.4	78.33	4.58	1344	5.77	346.9	2.93	-498.5	2	4	4
L 150 x 150 x 15	33.8	150	15	16	8	43.02	4.25	10.61	6.01	5.33	M27	57	102	38.52	0.586	17.36	898.1	83.52	4.57	1427	5.76	368.9	2.93	-529.1	1	2	4
L 150 x 150 x 18	40.1	150	18	16	8	51.03	4.37	10.61	6.17	5.37	M27	61	102	45.63	0.586	14.63	1050	98.74	4.54	1666	5.71	433.8	2.92	-616.2	1	1	2
L 160 x 160 x 14	33.9	160	14	17	8.5	43.15	4.45	11.31	6.29	5.66	M27	57	111	38.95	0.625	18.46	1034	89.50	4.89	1644	6.17	423.8	3.13	-610	3	4	4
L 160 x 160 x 15	36.2	160	15	17	8.5	46.06	4.49	11.31	6.35	5.67	M27	58	111	41.56	0.625	17.30	1099	95.5	4.88	1747	6.16	450.8	3.13	-648	2	4	4
L 160 x 160 x 16	38.4	160	16	17	8.5	48.95	4.53	11.31	6.41	5.69	M27	60	111	44.15	0.625	16.28	1163	101.4	4.87	1848	6.14	477.6	3.12	-685.1	1	2	4
L 160 x 160 x 17	40.7	160	17	17	8.5	51.82	4.57	11.31	6.46	5.70	M27	61	111	46.72	0.625	15.37	1225	107.2	4.86	1947	6.13	504.1	3.12	-721.3	1	2	4

Cantoneiras de Abas Iguais

Norma Dimensional EN 10056-1

Norma Tolerâncias EN 10056-2

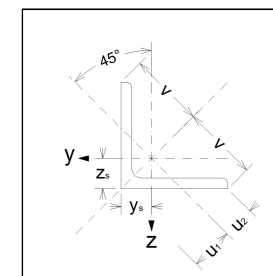
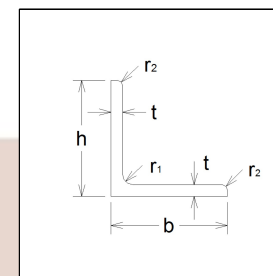


Perfil	G kg/m	Dimensões				A cm ²	z=y cm	v cm	u ₁ cm	u ₂ cm	f	e _{min} mm	e _{max} mm	A _{net} cm ²	A _L m ² /m	A _G m ² /t	I _y =I _z cm ⁴	W _{el,y} = W _{el,z} cm ³	j _{y=z} cm	I _u cm ⁴	i _u cm	I _v cm ⁴	i _v cm	I _{yz} cm ⁴	Classificação		
		h = b mm	T mm	r ₁ mm	r ₂ mm																				Compressão pura		
																									235	275	355
L 180 x 180 x 13	35.7	180	13	18	9	45.46	4.90	12.73	6.93	6.35	M27	57	131	41.56	0.705	19.74	1396	106.5	5.54	2221	6.99	571.6	3.55	-824.5	4	4	4
L 180 x 180 x 14	38.3	180	14	18	9	48.79	4.94	12.73	6.99	6.36	M27	58	131	44.59	0.705	18.40	1493	114.3	5.53	2375	6.98	611.3	3.54	-882	4	4	4
L 180 x 180 x 15	40.9	180	15	18	9	52.10	4.98	12.73	7.05	6.37	M27	59	131	47.60	0.705	17.23	1589	122.0	5.52	2527	6.96	650.5	3.53	-938	4	4	4
L 180 x 180 x 16	43.5	180	16	18	9	55.39	5.02	12.73	7.10	6.38	M27	61	131	50.59	0.705	16.20	1682	129.7	5.51	2675	6.95	689.4	3.53	-993	3	4	4
L 180 x 180 x 17	46.0	180	17	18	9	58.66	5.06	12.73	7.16	6.40	M27	62	131	53.56	0.705	15.30	1775	137.2	5.50	2822	6.94	727.8	3.52	-1047	2	4	4
L 180 x 180 x 18	48.6	180	18	18	9	61.91	5.10	12.73	7.22	6.41	M27	63	131	56.51	0.705	14.50	1866	144.7	5.49	2965	6.92	766.0	3.52	-1100	1	2	4
L 180 x 180 x 19	51.1	180	19	18	9	65.14	5.14	12.73	7.27	6.42	M27	64	131	59.44	0.705	13.78	1955	152.1	5.48	3106	6.91	803.8	3.51	-1151	1	2	4
L 180 x 180 x 20	53.7	180	20	18	9	68.35	5.18	12.73	7.33	6.44	M27	65	131	62.35	0.705	13.13	2043	159.4	5.47	3244	6.89	841.3	3.51	-1202	1	1	3
L 200 x 200 x 15	45.6	200	15	18	9	58.10	5.48	14.14	7.75	7.08	M27	59	151	53.60	0.785	17.20	2209	152.2	6.17	3516	7.78	903.0	3.94	-1306	4	4	4
L 200 x 200 x 16	48.5	200	16	18	9	61.79	5.52	14.14	7.81	7.09	M27	61	151	56.99	0.785	16.18	2341	161.7	6.16	3726	7.77	957.0	3.94	-1384	4	4	4
L 200 x 200 x 17	51.4	200	17	18	9	65.46	5.56	14.14	7.87	7.10	M27	62	151	60.36	0.785	15.27	2472	171.2	6.14	3932	7.75	1011.0	3.93	-1461	4	4	4
L 200 x 200 x 18	54.3	200	18	18	9	69.11	5.60	14.14	7.93	7.12	M27	63	151	63.71	0.785	14.46	2600	180.6	6.13	4135	7.74	1064.0	3.92	-1536	3	4	4
L 200 x 200 x 19	57.1	200	19	18	9	72.74	5.64	14.14	7.98	7.13	M27	64	151	67.04	0.785	13.74	2726	189.9	6.12	4335	7.72	1117.0	3.92	-1609	2	3	4
L 200 x 200 x 20	59.9	200	20	18	9	76.35	5.68	14.14	8.04	7.15	M27	65	151	70.35	0.785	13.09	2851	199.1	6.11	4532	7.70	1169.0	3.91	-1681	1	2	4
L 200 x 200 x 21	62.8	200	21	18	9	79.94	5.72	14.14	8.09	7.16	M27	66	151	73.64	0.785	12.50	2973	208.2	6.10	4725	7.69	1221.0	3.91	-1752	1	2	4
L 200 x 200 x 22	65.6	200	22	18	9	83.51	5.76	14.14	8.15	7.18	M27	67	151	76.91	0.785	11.97	3094	217.3	6.09	4915	7.67	1273.0	3.90	-1821	1	1	3
L 200 x 200 x 23	68.3	200	23	18	9	87.06	5.80	14.14	8.20	7.19	M27	68	151	80.16	0.785	11.48	3213	226.3	6.08	5102	7.66	1324.0	3.90	-1889	1	1	2
L 200 x 200 x 24	71.1	200	24	18	9	90.59	5.84	14.14	8.26	7.21	M27	69	151	83.39	0.785	11.03	3331	235.2	6.06	5286	7.64	1375.0	3.90	-1955	1	1	2
L 200 x 200 x 25	73.9	200	25	18	9	94.10	5.88	14.14	8.31	7.23	M27	70	151	86.60	0.785	10.62	3446	244.0	6.05	5467	7.62	1426.0	3.89	-2020	1	1	1
L 200 x 200 x 26	76.6	200	26	18	9	97.59	5.91	14.14	8.36	7.25	M27	71	151	89.79	0.785	10.24	3560	252.7	6.04	5645	7.61	1476.0	3.89	-2084	1	1	1

Cantoneiras de Abas Iguais

Norma Dimensional EN 10056-1

Norma Tolerâncias EN 10056-2

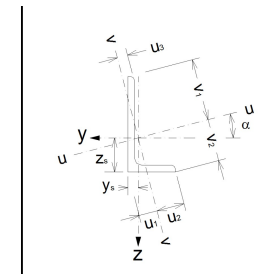
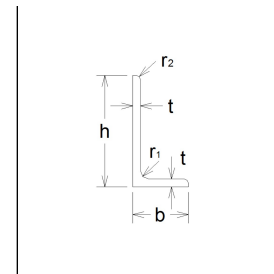


Perfil	G kg/m	Dimensões				A cm ²	z=y cm	v cm	u ₁ cm	u ₂ cm	f	e _{min} mm	e _{max} mm	A _{net} cm ²	A _L m ² /m	A _G m ² /t	I _y =I _z cm ⁴	W _{el,y} = W _{el,z} cm ³	j _y =j _z cm	I _u cm ⁴	i _u cm	I _v cm ⁴	i _v cm	I _{yz} cm ⁴	Classificação		
		h = b mm	T mm	r ₁ mm	r ₂ mm																				Compressão pura		
																									235	275	355
L 250 x 250 x 20	75.6	250	20	18	9	96.35	6.93	17.68	9.81	8.91	M27	40	240	96.35	0.985	13.02	5743	317.9	7.72	9144	9.74	2341.0	4.93	-3401	4	4	4
L 250 x 250 x 21	79.2	250	21	18	9	100.94	6.97	17.68	9.86	8.93	M27	41	246	100.94	0.985	12.43	5997	332.7	7.71	9548	9.73	2447.0	4.92	-3550	4	4	4
L 250 x 250 x 22	82.8	250	22	18	9	105.51	7.01	17.68	9.92	8.94	M27	42	246	105.51	0.985	11.89	6249	347.4	7.70	9946	9.71	2551.0	4.92	-3697	3	4	4
L 250 x 250 x 23	86.4	250	23	18	9	110.06	7.05	17.68	9.97	8.96	M27	43	246	110.06	0.985	11.40	6497	362.0	7.68	10339	9.69	2655.0	4.91	-3842	2	4	4
L 250 x 250 x 24	90.0	250	24	18	9	114.59	7.09	17.68	10.03	8.98	M27	44	246	114.59	0.985	10.95	6743	376.5	7.67	10727	9.68	2759.0	4.91	-3984	2	3	4
L 250 x 250 x 25	93.5	250	25	18	9	119.10	7.13	17.68	10.08	8.99	M27	45	246	119.10	0.985	10.53	6986	390.9	7.66	11110	9.66	2861.0	4.90	-4124	1	2	4
L 250 x 250 x 26	97.0	250	26	18	9	123.59	7.17	17.68	10.13	9.01	M27	46	246	123.59	0.985	10.15	7226	405.2	7.65	11488	9.64	2963.0	4.90	-4262	1	2	4
L 250 x 250 x 27	100.5	250	27	18	9	128.06	7.20	17.68	10.19	9.03	M27	47	246	128.06	0.985	9.79	7463	419.3	7.63	11861	9.62	3065.0	4.89	-4398	1	2	3
L 250 x 250 x 28	104.0	250	28	18	9	132.51	7.24	17.68	10.24	9.04	M27	48	246	132.51	0.985	9.47	7697	433.4	7.62	12229	9.61	3166.0	4.89	-4532	1	2	3

Cantoneiras de Abas Desiguais

Norma Dimensional EN 10056-1

Norma Tolerâncias EN 10056-2



Perfil	G kg/m	Dimensões					A cm²	z _s cm	y _s cm	v ₁ cm	v ₂ cm	u ₁ cm	u ₂ cm	u ₃ cm	Aba longa			Aba curta			A _L m²/m	A _G m²/t	I _y cm⁴	W _{el,y} cm³	i _y cm	I _z cm⁴	W _{el,z} cm³	i _z cm	I _u cm⁴	i _u cm	I _v cm⁴	i _v cm	I _{yz} cm⁴	a _o	Classificação											
		f _z	e _{z,min} mm	e _{z,max} mm	A _{z,net} cm²	f _y									e _{y,min} mm	e _{y,max} mm	A _{y,net} cm²	I _y	W _{el,y}	i _y															I _z	W _{el,z}	i _z	I _u	i _u	I _v	i _v	I _{yz}	a _o	Aba comprimido		
																																												235	275	355
L 120 x 80 x 8	12.2	120	80	8	11	5.5	15.49	3.83	1.87	8.23	5.97	3.25	4.19	2.09	M27	48	72	13.09	M16	38	51	14.05	0.391	32.12	225.7	27.63	3.82	80.76	13.17	2.28	260.0	4.10	46.39	1.73	-78.50	23.65	4	4	4							
L 120 x 80 x 10	15.0	120	80	10	11	5.5	19.13	3.92	1.95	8.19	6.01	3.35	4.17	2.15	M27	50	72	16.13	M16	40	51	17.33	0.391	26.01	275.5	34.10	3.80	98.11	16.21	2.26	317.0	4.07	56.60	1.72	-95.34	23.53	3	3	4							
L 120 x 80 x 12	17.8	120	80	12	11	5.5	22.69	4.00	2.03	8.14	6.04	3.45	4.16	2.20	M27	52	72	19.09	M16	42	51	20.53	0.391	21.93	322.8	40.37	3.77	114.33	19.14	2.24	370.7	4.04	66.46	1.71	-110.80	23.37	1	2	4							
L 130 x 65 x 8	11.8	130	65	8	11	5.5	15.09	4.56	1.37	8.51	5.71	2.48	3.82	1.39	M27	48	82	12.69	M12	35	42	13.97	0.381	32.13	262.5	31.10	4.17	44.77	8.72	1.72	278.6	4.30	28.72	1.38	-61.25	14.68	4	4	4							
L 130 x 65 x 10	14.6	130	65	10	11	5.5	18.63	4.65	1.45	8.44	5.77	2.57	3.78	1.46	M27	50	82	15.63	M12	37	42	17.23	0.381	26.02	320.5	38.39	4.15	54.20	10.73	1.71	339.6	4.27	35.02	1.37	-73.99	14.53	3	3	4							
L 150 x 90 x 10	18.2	150	90	10	12	6.0	23.15	5.00	2.04	10.10	7.07	3.61	4.97	2.20	M27	50	102	20.15	M24	47	49	20.55	0.470	25.84	533.1	53.29	4.80	146.10	20.98	2.51	591.3	5.05	87.93	1.95	-160.90	19.87	4	4	4							
L 150 x 90 x 11	19.9	150	90	11	12	6.0	25.34	5.04	2.08	10.07	7.09	3.66	4.95	2.23	M27	51	102	22.04	M24	48	49	22.48	0.470	23.61	580.7	58.30	4.79	158.70	22.91	2.50	643.7	5.04	95.71	1.94	-174.70	19.81	3	4	4							
L 150 x 100 x 10	19.0	150	100	10	12	6.0	24.15	4.81	2.34	10.27	7.48	4.08	5.25	2.64	M27	50	102	21.15	M27	50	53	21.15	0.490	25.83	552.6	54.23	4.78	198.50	25.92	2.87	637.3	5.14	113.80	2.17	-192.80	23.72	4	4	4							
L 150 x 100 x 12	22.5	150	100	12	12	6.0	28.71	4.90	2.42	10.23	7.52	4.18	5.23	2.70	M27	52	102	25.11	M27	52	53	25.11	0.490	21.72	650.5	64.38	4.76	232.60	30.69	2.85	749.3	5.11	133.90	2.16	-225.80	23.61	3	3	4							
L 150 x 100 x 14	26.1	150	100	14	12	6.0	33.19	4.98	2.50	10.19	7.55	4.28	5.22	2.75	M27	54	102	28.99	M24	51	59	29.55	0.490	18.79	744.4	74.27	4.74	264.90	35.32	2.82	855.9	5.08	153.40	2.15	-256.80	23.48	2	3	4							
L 160 x 80 x 10	18.2	160	80	10	13	6.5	23.18	5.63	1.69	10.46	7.04	3.06	4.70	1.73	M27	50	111	20.18	M16	40	51	21.38	0.469	25.76	611.3	58.94	5.14	104.40	16.55	2.12	648.7	5.29	67.01	1.70	-142.70	14.69	4	4	4							
L 160 x 80 x 12	21.6	160	80	12	13	6.5	27.54	5.72	1.77	10.40	7.10	3.15	4.66	1.80	M27	52	111	23.94	M16	42	51	25.38	0.469	21.69	719.5	69.98	5.11	122.00	19.59	2.10	762.8	5.26	78.77	1.69	-166.50	14.57	3	3	4							
L 200 x 100 x 10	23.0	200	100	10	15	7.5	29.24	6.93	2.01	13.15	8.74	3.72	5.94	2.09	M27	54	150	26.24	M27	51	53	26.24	0.587	25.58	1,219.0	93.24	6.46	210.30	26.33	2.68	1,294.0	6.65	134.50	2.14	-286.80	14.82	4	4	4							
L 200 x 100 x 12	27.3	200	100	12	15	7.5	34.80	7.03	2.10	13.08	8.81	3.82	5.89	2.17	M27	54	150	31.20	M27	53	53	31.20	0.587	21.49	1,440.0	111.00	6.43	247.20	31.28	2.67	1,529.0	6.63	158.50	2.13	-337.30	14.74	4	4	4							
L 200 x 100 x 14	31.6	200	100	14	15	7.5	40.28	7.12	2.18	13.01	8.86	3.91	5.85	2.24	M27	55	151	36.08	M24	52	59	36.64	0.587	18.57	1,654.0	128.40	6.41	282.20	36.08	2.65	1,755.0	6.60	181.70	2.12	-384.80	14.65	3	4	4							