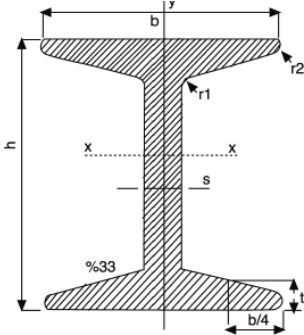


# Profiller



## PROPERTIES FOR DESIGNING DIN 21541 -1974

### PLATİNA (GI)

Anma adı GI	H mm	B mm	S mm	T mm	r1 mm	r2 mm	Kesit alanı F (cm <sup>2</sup> )	Ağırlık G (Kg/m)
110	110	84	10	14	14	5	31.1	24.5
140	140	110	12	19	17	8	53.0	41.6

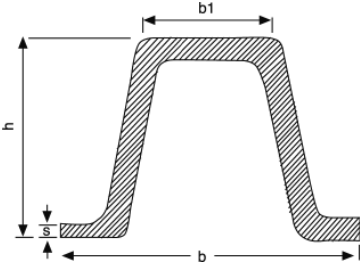
## STEEL MATERIAL

TS 2162-1986

DIN 17100-1980

SFe 37.2 and SFe 44.2

RSt 37.2 and RSt 44.2



## PROPERTIES FOR DESIGNING

DÇ 9012

STEEL MATERIAL

TS 2162 (1986)

DIN 17100 - (1980)

SFe 37.2 and SFe 44.2

RSt 37.2 and RSt 44.2

### OMEGA PROFİLLERİ

	h	b	b1	s	Ağırlık Kg/m	Kesit alanı (cm <sup>2</sup> )
46x83	46	83	35	5	5.85	7.5

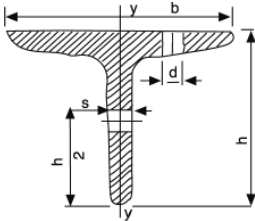
## STEEL MATERIAL

TS 2162-1986

DIN17100-1980

SFe 37.2 and SFe 44.2

RSt 37.2 and RSt 44.2



## STEEL MATERIAL

TS 2162-1986

DIN 17100-1980

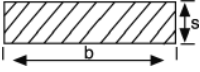
SFe 37.2 and SFe 44.

RSt 37.2 and RSt 44.2

### (T) PROFİLLERİ

T	H mm	B mm	S mm	F cm <sup>2</sup>	G Kg/m	U m <sup>2</sup> /m
	30	30	4	2.26	1.77	0.114
	35	35	4.5	2.97	2.33	0.133
	40	40	5	3.77	2.96	0.153
	50	50	6	5.66	4.44	0.191

## Sıcak Haddelenmiş Çelik Lamalar (TS 3024)



Kg/mt

Kalınlık (s) mm







Geniçlik (b) mm.	5	6	6.5	7	8	9	10	11	12	13	14	15	16	17	20	22	24	27	30	32	34	43	48	53
21.5	-	-	-	-	1.35	-	1.69	1.86	2.03	2.19	2.36	-	-	-	-	-	-	-	-	-	-	-	-	-
23.5	-	-	-	-	-	-	1.84	-	2.21	2.40	-	2.77	-	-	-	-	-	-	-	-	-	-	-	-
26.5	-	-	-	-	-	1.87	-	2.29	-	-	2.91	-	3.33	-	-	4.58	-	-	-	-	-	-	-	-
31.5	1.24	1.48	-	1.73	-	2.23	-	2.72	-	-	-	-	-	4.20	-	-	-	-	-	-	-	-	-	-
33.5	-	-	-	-	-	-	2.63	-	3.16	-	-	-	-	4.47	5.26	5.79	-	-	-	-	-	-	-	-
36.5	-	1.72	-	2.01	-	2.58	-	3.15	-	-	4.01	-	-	4.87	-	6.30	-	7.74	-	-	-	-	-	-
41.5	-	1.95	-	2.28	-	2.93	-	3.58	-	-	4.56	-	-	5.54	-	7.17	7.82	8.80	-	10.4	11.1	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.54	-	-	-	-	-	-
46.5	-	2.19	-	2.56	-	3.79	-	4.02	-	-	(5.11)	-	-	6.21	-	8.03	-	9.85	-	-	12.4	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.54	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.6	-	-	-
51.5	-	2.43	-	2.83	-	3.64	-	4.45	-	-	5.66	-	-	6.87	-	8.89	-	10.8	(12.1)	12.9	(13.7)	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.7	-	-	-
56.5	-	-	-	3.10	-	3.99	-	4.88	-	-	6.21	-	-	7.54	-	9.76	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	6.71	-	-	-	-	-	-	-	-	-	15.2	-	-
61.5	-	2.90	-	3.38	-	4.34	-	-	5.79	-	6.76	-	-	8.21	-	10.6	-	13.0	-	15.4	-	20.0	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(17.3)	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	-	-
72	-	-	-	-	4.52	-	5.65	-	6.78	-	7.91	-	-	9.61	-	12.4	-	15.3	-	18.1	-	-	(24.3)	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(15.9)	-	-	(20.0)	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(17.0)	-	-	(21.4)	-	-	-
82	-	-	-	4.51	5.15	-	6.44	-	7.72	-	9.01	-	-	10.9	-	14.2	-	17.4	-	20.6	-	-	27.7	34.1
85	-	-	(4.34)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(18.0)	-	-	(22.7)	-	-	-
92	-	-	-	-	5.78	-	7.22	-	8.67	-	10.1	-	-	12.3	-	15.9	-	19.5	-	-	-	-	-	-
102	-	-	-	-	-	-	-	-	9.61	-	11.2	-	-	13.6	-	17.6	-	21.6	-	25.6	-	-	(34.4)	(42.4)
122	-	-	-	-	(7.66)	-	(9.58)	-	(11.5)	-	(13.4)	-	-	(16.3)	-	(21.1)	-	(25.9)	-	(30.6)	-	-	-	-

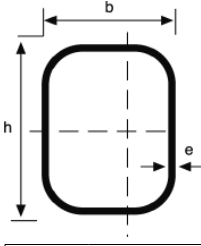
\* Parantez içindeki ölçüler zorunluk olmadıkça kullanılmamalıdır.

## Yuvarlak ve Dört Köşeli Çelik Ağırlıkları

Ağırlık 7.85 daN/dm<sup>3</sup>

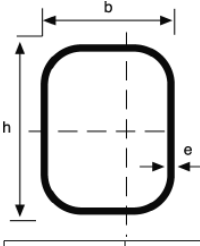
Yoğunluk 7.85 kg/dm<sup>3</sup>

Kalınlık d mm	Ağırlık kg / m		Kalınlık d mm	Ağırlık kg / m		Kalınlık d mm	Ağırlık kg / m	
								
5	0.196	0.154	50	19.625	15.414	180	254.340	199.759
6	0.283	0.222	52	21.226	16.671	185	268.666	211.011
7	0.385	0.302	54	22.891	17.978	190	283.385	222.571
8	0.502	0.395	56	24.618	19.335	195	298.496	234.439
9	0.636	0.499	58	26.407	20.740	200	314.000	246.616
10	0.785	0.617	60	28.260	22.195	205	329.896	259.101
11	0.950	0.746	62	30.175	23.700	210	346.185	271.984
12	1.130	0.888	64	32.154	25.253	215	361.866	284.996
13	1.327	1.042	66	34.195	26.856	220	379.940	298.405
14	1.539	1.208	68	36.298	28.509	225	397.406	312.125
15	1.766	1.387	70	38.465	30.210	230	415.265	326.150
16	2.010	1.578	72	40.465	31.961	235	433.516	340.484
17	2.269	1.782	74	42.987	33.762	240	452.160	355.127
18	2.543	1.988	76	45.342	35.611	245	471.196	370.078
19	2.834	2.226	78	47.759	37.510	250	490.625	385.338
20	3.140	2.719	80	50.240	39.459	255	510.446	400.905
21	3.462	2.984	85	56.716	44.545	260	530.666	416.781
22	3.799	3.261	90	63.585	49.940	265	551.266	432.965
23	4.153	3.551	95	70.846	55.643	270	572.265	449.448
24	4.522	3.853	100	78.500	61.654	275	593.656	466.258
25	4.906	3.853	105	84.546	67.974	280	615.440	483.367
26	5.307	4.168	110	94.985	74.601	285	637.616	500.785
27	5.723	4.495	115	103.816	81.537	290	660.185	518.510
28	6.154	4.834	120	113.040	88.782	295	683.146	536.544
29	6.601	5.185	125	122.656	96.334	300	706.500	554.886
30	7.065	5.549	130	132.665	104.195	305	730.246	573.536
31	8.038	6.313	135	143.066	112.364	310	754.385	592.495
34	9.075	7.127	140	153.860	120.842	315	778.916	611.762
36	10174	7.990	145	165.045	129.628	320	803.840	631.337
38	11335	8.903	150	176.625	138.722	325	829.156	651.220
40	12560	9.865	155	188.596	148.12	330	854.865	671.412
42	13847	10876	160	200.960	157.834	335	880.966	691.912
44	15198	11936	165	213.716	168.853	340	907.460	712.720
46	16611	13046	170	226.865	178.180	345	934.346	733.837
48	18086	14205	175	240.406	188.815	350	961.625	755.262



## İnce Etli Kare ve Dikdörtgen Profilleri (TS 6475)

Kenar Uzunluğu			Birim Ağırlıkları (kg/m)							
H Anma Boyutu	B Anma Boyutu	h ve b için toleranslar	1	1.25	1.5	2	2.5	3	4	
15	15	±0.20	0.438	0.537	0.632	0.810				
18	18	±0.20	0.532	0.655	0.773	0.998				
20	10	±0.20	0.438	0.537	0.632	0.810				
	15		0.516	0.635	0.750	0.967				
25	20	±0.25	0.595	0.733	0.868	1.12	-	-		
	25		0.752	0.930	1.10	1.44	-	-		
30	10	±0.25	0.595	0.733	0.868	1.12	-	-		
	15		0.673	0.831	0.985	1.28	-	-		
	20		0.752	0.930	1.10	1.44	-	-		
	30		0.909	1.13	1.34	1.75	2.15	2.39	-	
34	20	±0.25	0.815	1.01	1.20	1.56	-	-	-	-
	34		1.03	1.28	1.53	2.00	2.46	2.77	-	-
35	20	±0.25	0.830	1.03	1.22	1.59	1.95	-	-	-
	25		0.909	1.13	1.34	1.75	2.15	2.39	-	-
	35		1.07	1.32	1.57	2.07	2.54	2.86	-	-
36	11	±0.25	0.705	0.871	1.03	1.34	-	-	-	
40	20	±0.30			1.34	1.75	2.15	2.39	-	-
	25				1.46	1.91	2.34	2.63	-	-
	30				1.57	2.07	2.54	2.86	-	-
	40				1.81	2.38	2.93	3.33	4.25	-
45	45	±0.30			2.05	2.69	3.33	3.80	4.88	-
50	20	±0.30			1.57	2.07	2.54	2.86	-	-
	25				1.69	2.22	2.74	3.10	-	-
	30				1.81	2.38	2.93	3.33	4.25	-
	34				1.90	2.51	3.09	3.52	4.50	-
	40				2.05	2.69	3.33	3.80	4.88	-
	50				2.28	3.01	3.72	4.28	5.51	-
55	34	±0.40			2.02	2.66	3.29	3.76	4.82	-
60	20	±0.40				2.38	2.93	3.33	-	-
	30					2.69	3.33	3.80	4.88	-
	40					3.01	3.72	4.28	5.51	-
	50					3.32	4.11	4.75	6.14	-
	60					3.64	4.50	5.22	6.76	8.13
70	40	±0.50				3.32	4.11	4.75	6.14	-
	70					4.26	5.29	6.16	8.02	9.70
80	20	±0.60				3.01	3.72	4.28	-	-
	30					3.32	4.11	4.75	-	-
	40					3.64	4.50	5.22	6.76	8.13
	50					3.95	4.90	5.69	7.39	8.91
	60					4.26	5.29	6.16	8.02	9.70
	80					4.89	6.07	7.10	9.28	11.3
90	90	±0.75				5.52	6.86	8.04	10.5	12.8
100	40	±0.80				4.26	5.29	6.16	8.02	9.70
	50					4.58	5.68	6.63	8.65	10.5
	60					4.89	6.07	7.10	9.28	11.3
	80					5.52	6.86	8.04	10.5	12.8
	100					6.15	7.64	8.99	11.8	14.4
120	40	±0.80				4.89	6.07	7.10	9.28	11.3
	60					5.52	6.86	8.04	10.5	12.8

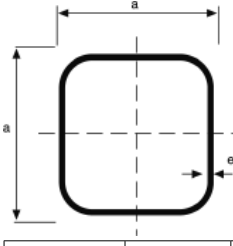


## Kalın Etli Dikdörtgen Profilleri (TS 5317)

Boyutlar a x b	Kalınlığı e	Ağırlık	Kesit Alanı A
mm	mm	kg/m	cm <sup>2</sup>
40x20	1.2	1.05	1.33
	1.6	1.36	1.73
	2	1.65	2.10
	2.6	2.05	2.62
50x30	1.2	1.42	1.81
	1.6	1.86	2.37
	2	2.28	2.90
	2.6	2.87	3.66
	3.2	3.42	4.36
	4	4.09	5.21
60x40	1.6	2.36	3.01
	2	2.91	3.70
	2.6	3.69	4.70
	3.2	4.43	5.64
	4	5.35	6.81
	5	6.39	8.14
80x40	1.6	2.87	3.65
	2	3.53	4.50
	2.6	4.50	5.74
	3.2	5.43	6.92
	4	6.60	8.41
	5	7.96	10.1
90x50	1.6	3.37	4.29
	2	4.16	5.30
	2.6	5.32	6.78
	3.2	6.44	8.20
	4	7.86	10.0
	5	9.53	12.1
100x60	2	4.79	6.10
	2.6	6.14	7.82
	3.2	7.44	9.48
	4	9.11	11.6
	5	11.1	14.1
	120x60	2	5.42
2.6		6.95	8.86
3.2		8.45	10.8
4		10.4	13.2
5		12.7	16.1
6.3		15.5	19.7
120x80	2.6	7.77	9.90
	3.2	9.45	12.0
	4	11.6	14.8
	5	14.2	18.1
	6.3	17.5	22.2
	7.1	19.4	24.7
140x90	3.2	11.00	14.0
	4	13.5	17.2
	5	16.6	21.1
	6.3	20.4	26.0
	7.1	22.7	28.9

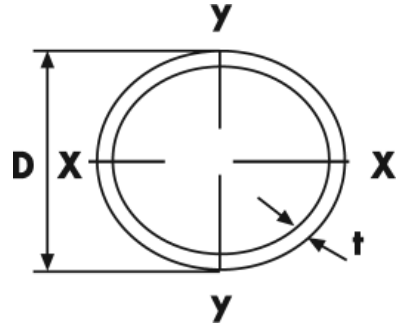
Boyutlar a x b	Et Kalınlığı e	Ağırlık	Kesit Alanı A
mm	mm	kg/m	cm <sup>2</sup>
150x100	3.2	12.0	15.2
	4	14.8	18.8
	5	18.2	23.1
	6.3	22.4	28.5
	7.1	24.9	31.8
	8	27.7	35.2
160x80	10	33.4	42.6
	3.2	11.5	14.6
	4	14.1	18.0
	5	17.4	22.1
	6.3	21.4	27.3
	7.1	23.8	30.3
180x100	8	26.4	33.6
	10	31.8	40.6
	3.2	13.5	17.2
	4	16.7	21.2
	5	20.5	26.1
	6.3	25.4	32.3
200x100	7.1	28.3	36.0
	8	31.4	40.0
	10	38.1	48.6
	4	17.9	22.8
	5	22.1	28.1
	6.3	27.4	34.8
220x120	7.1	30.5	38.9
	8	33.9	43.2
	10	41.3	52.6
	4	21.7	27.7
	5	26.8	34.0
	6.3	33.3	42.1
250x150	7.1	37.2	47.1
	8	41.5	52.6
	10	50.7	64.4
	4	24.2	30.8
	5	29.9	38.1
	6.3	37.2	47.4
250x150	7.1	41.6	53.1
	8	46.5	59.2
	10	57.0	72.6
	12.5	69.4	88.4

## Kalın Etli Kare Profilleri (TS 5317)



Boyutlar a x b	Et Kalınlığı e	Ağırlık	Kesit Alanı A
mm	mm	kg/m	cm <sup>2</sup>
20x20	1.2	0.670	0.853
	1.6	0.855	1.09
	2	1.02	1.30
30x30	1.2	1.05	1.33
	1.6	1.36	1.73
	2	1.65	2.10
	2.6	2.05	2.62
40x40	1.2	1.42	1.81
	1.6	1.86	2.37
	2	2.28	2.90
	2.6	2.87	3.66
	3.2	3.42	4.36
	4	4.09	5.21
50x50	1.6	2.36	3.01
	2	2.91	3.70
	2.6	3.69	4.70
	3.2	4.43	5.64
	4	5.35	6.81
	5	6.39	8.14
60x60	1.6	2.87	3.65
	2	3.53	4.50
	2.6	4.50	5.74
	3.2	5.43	6.92
	4	6.60	8.41
	5	7.96	10.1
70x70	1.6	3.37	4.29
	2	4.16	5.30
	2.6	5.32	6.78
	3.2	6.44	8.20
	4	7.86	10.0
	5	9.53	12.1
80x80	2	4.79	6.10
	2.6	6.14	7.82
	3.2	7.44	9.48
	4	9.11	11.6
	5	11.10	14.1
	90x90	2	5.42
2.6		6.95	8.96
3.2		8.45	10.8
4		10.4	13.2
5		12.7	16.1
6.3		15.5	19.7
100x100	2.6	7.77	9.90
	3.2	9.45	12.0
	4	11.6	14.8
	5	14.2	18.1
	6.3	17.5	22.2
	7.1	19.4	24.7

Boyutlar a x b	Et Kalınlığı e	Ağırlık	Kesit Alanı A
mm	mm	kg/m	cm <sup>2</sup>
115x115	2.6	8.99	11.5
	3.2	11.0	14.0
	4	13.5	17.2
	5	16.6	21.1
	6.3	20.4	26.0
	7.1	22.7	28.9
120x120	3.2	11.5	14.6
	4	14.1	18.0
	5	17.4	22.1
	6.3	21.4	27.3
	7.1	23.8	30.3
	8	26.4	33.6
135x135	3.2	13.0	16.5
	4	16.0	20.4
	5	19.7	25.1
	6.3	24.4	31.1
	7.1	27.2	34.6
	8	30.2	38.4
140x140	10	36.6	46.6
	4	16.7	21.2
	5	20.5	26.1
	6.3	25.4	32.3
	7.1	28.3	36.0
	8	31.4	40.0
150x150	10	38.1	48.6
	4	17.9	22.8
	5	22.1	28.1
	6.3	27.4	34.8
	7.1	30.5	38.9
	8	33.9	43.2
160x160	10	41.3	52.6
	4	19.2	24.4
	5	23.7	30.1
	6.3	29.3	37.4
	7.1	32.7	41.7
	8	36.5	46.4
175x175	10	44.4	56.6
	4	21.0	26.8
	5	26.0	33.1
	6.3	32.3	41.1
	7.1	36.1	46.0
	8	40.2	51.2
180x180	10	49.1	62.6
	4	21.7	27.6
	5	26.8	34.1
	6.3	33.3	42.4
	7.1	37.2	47.4
	8	41.5	52.8
180x180	10	50.7	64.6
	12.5	61.5	78.4



## Borular

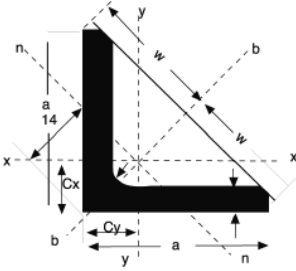
Dış Çap	Et Kalınlığı	Birim Ağırlık	Kesit Alanı	Yüzey Alanı	Atalet Momenti	Atalet Yarı Çapı	Mukavemet Momenti	Plastik Momenti	Burulma Katsayıları	
D mm	t mm	M kg/m	A cm <sup>2</sup>	A <sub>S</sub> m <sup>2</sup> /m	I cm <sup>4</sup>	i cm	Wel cm <sup>3</sup>	Wpl cm <sup>3</sup>	It cm <sup>4</sup>	Ct cm <sup>3</sup>
21,3	2,0	0,95	1,21	0,07	0,57	0,69	0,54	0,75	1,14	1,07
21,3	2,5	1,16	1,48	0,07	0,66	0,67	0,62	0,89	1,38	1,25
21,3	* 3,0	1,35	1,72	0,07	0,74	0,66	0,7	1,01	1,48	1,39
26,9	* 2,0	1,23	1,56	0,08	1,22	0,88	0,91	1,24	2,44	1,81
26,9	* 2,5	1,50	1,92	0,08	1,44	0,87	1,07	1,49	2,88	2,14
26,9	* 3,0	1,77	2,25	0,08	1,63	0,85	1,21	1,72	3,27	2,43
33,7	* 2,0	1,56	1,99	0,11	2,51	1,12	1,49	2,01	5,02	2,98
33,7	* 2,5	1,92	2,45	0,106	3,00	1,11	1,78	2,44	6,00	3,56
33,7	* 3,0	2,27	2,89	0,106	3,44	1,09	2,04	2,84	6,88	4,08
42,4	* 2,0	1,99	2,54	0,133	5,19	1,43	2,45	3,27	10,4	4,90
42,4	* 2,5	2,46	3,13	0,133	6,26	1,41	2,95	3,99	12,5	5,91
42,4	* 3,0	2,91	3,71	0,133	7,25	1,40	3,42	4,67	14,5	6,84
42,4	* 4,0	3,79	4,83	0,133	8,99	1,36	4,24	5,92	18,0	8,48
48,3	* 2,0	2,28	2,91	0,152	7,81	1,64	3,23	4,29	15,6	6,47
48,3	* 2,5	2,82	3,60	0,152	9,46	1,62	3,92	5,25	18,9	7,83
48,3	* 3,0	3,35	4,27	0,152	11,0	1,61	4,55	6,17	22,0	9,11
48,3	* 4,0	4,37	5,57	0,152	13,8	1,57	5,70	7,87	27,5	11,4
48,3	5,0	5,34	6,80	0,152	16,2	1,54	6,69	9,42	32,3	13,4
60,3	* 2,0	2,88	3,66	0,189	15,6	2,06	5,17	6,80	31,2	10,3
60,3	* 2,5	3,56	4,54	0,189	19,0	2,05	6,30	8,36	38,0	12,6
60,3	* 3,0	4,24	5,40	0,189	22,2	2,03	7,37	9,86	44,4	14,7
60,3	* 4,0	5,55	7,07	0,189	28,2	2,00	9,34	12,7	56,3	18,7
60,3	* 5,0	6,82	8,69	0,189	33,5	1,96	11,1	15,3	67,0	22,2
76,1	* 2,0	3,65	4,66	0,239	32,0	2,62	8,40	11,0	64,0	16,8
76,1	* 2,5	4,54	5,78	0,239	39,2	2,60	10,3	13,5	78,4	20,6
76,1	* 3,0	5,41	6,89	0,239	46,1	2,59	12,1	16,0	92,2	24,2
76,1	* 4,0	7,11	9,06	0,239	59,1	2,55	15,5	20,8	118	31,0
76,1	* 5,0	8,77	11,2	0,239	70,9	2,52	18,6	25,3	142	37,3
88,9	* 2,0	4,29	5,46	0,279	51,6	3,07	11,6	15,1	103	23,2
88,9	* 2,5	5,33	6,79	0,279	63,4	3,06	14,3	18,7	127	28,5
88,9	* 3,0	6,36	8,10	0,279	74,8	3,04	16,8	22,1	150	33,6
88,9	* 4,0	8,38	10,7	0,279	96,3	3,00	21,7	28,9	193	43,3
88,9	* 5,0	10,30	13,2	0,279	116	2,97	26,2	35,2	233	52,4
88,9	* 6,0	12,30	15,6	0,279	135	2,94	30,4	41,3	270	60,7
88,9	* 6,3	12,80	16,3	0,279	140	2,93	31,5	43,1	280	63,1
101,6	2,0	4,91	6,26	0,319	77,6	3,52	15,3	19,8	155	30,6

Dış Çap	Et Kalınlığı	Birim Ağırlık	Kesit Alanı	Yüzey Alanı	Atalet Momenti	Atalet Yarı Çapı	Mukavemet Momenti	Plastik Momenti	Burulma Katsayıları	Ct
D mm	t mm	M kg/m	A cm <sup>2</sup>	AS m <sup>2</sup> /m	I cm <sup>4</sup>	i cm	Wel cm <sup>3</sup>	Wpl cm <sup>3</sup>	It cm <sup>4</sup>	Ct cm <sup>3</sup>
101,6	2,5	6,11	7,78	0,319	95,6	3,50	18,8	24,6	191	37,6
101,6	3,0	7,29	9,29	0,319	113	3,49	22,3	29,2	226	44,5
101,6	* 4,0	9,63	12,3	0,319	146	3,45	28,8	38,1	293	57,6
101,6	* 5,0	11,90	15,2	0,319	177	3,42	34,9	46,7	355	69,9
101,6	* 6,0	14,10	18,0	0,319	207	3,39	40,7	54,9	413	81,4
101,6	* 6,3	14,80	18,9	0,319	215	3,38	42,3	57,3	430	84,7
114,3	* 2,5	6,89	8,78	0,359	137	3,95	24,0	31,3	275	48,0
114,3	* 3,0	8,23	10,5	0,359	163	3,94	28,4	37,2	325	56,9
114,3	* 4,0	10,9	13,9	0,359	211	3,90	36,9	48,7	422	73,9
114,3	* 5,0	13,5	17,2	0,359	257	3,87	45,0	59,8	514	89,9
114,3	* 6,0	16,0	20,4	0,359	300	3,83	52,5	70,4	600	105
114,3	* 6,3	16,8	21,4	0,359	313	3,82	54,7	73,6	625	109
114,3	8,0	21,0	26,7	0,359	379	3,77	66,4	90,6	759	133
139,7	3,0	10,1	12,9	0,439	301	4,83	43,1	56,1	602	86,2
139,7	4,0	13,4	17,1	0,439	393	4,80	56,2	73,7	786	112
139,7	* 5,0	16,6	21,2	0,439	481	4,77	68,8	90,8	961	138
139,7	* 6,0	19,8	25,2	0,439	564	4,73	80,8	107	1129	162
139,7	* 6,3	20,7	26,4	0,439	589	4,72	84,3	112	1177	169
139,7	8,0	26,0	33,1	0,439	720	4,66	103	139	1441	206
168,3	3,0	12,2	15,6	0,529	532	5,85	63,3	82,0	1065	127
168,3	4,0	16,2	20,6	0,529	697	5,81	82,8	108	1394	166
168,3	5,0	20,1	25,7	0,529	856	5,78	102	133	1712	203
168,3	* 6,0	24,0	30,6	0,529	1009	5,74	120	158	2017	240
168,3	* 6,3	25,2	32,1	0,529	1053	5,73	125	165	2107	250
168,3	8,0	31,6	40,3	0,529	1297	5,67	154	206	2595	308
177,8	4,0	17,1	21,8	0,559	825	6,15	92,8	121	1650	186
177,8	5,0	21,3	27,1	0,559	1014	6,11	114	149	2028	228
177,8	* 6,0	25,4	32,4	0,559	1196	6,08	135	177	2392	269
177,8	* 6,3	26,6	33,9	0,559	1250	6,07	141	185	2499	281
177,8	8,0	33,5	42,7	0,559	1541	6,01	173	231	3083	347
219,1	* 4,0	21,2	27,0	0,688	1564	7,61	143	185	3128	286
219,1	* 5,0	26,4	33,6	0,688	1928	7,57	176	229	3856	352
219,1	* 6,0	31,5	40,2	0,688	2282	7,54	208	273	4564	417
219,1	* 6,3	33,1	42,1	0,688	2386	7,53	218	285	4772	436
219,1	* 8,0	41,6	53,1	0,688	2960	7,47	270	357	5919	540
219,1	* 10,0	51,6	65,7	0,688	3598	7,40	328	438	7197	657
244,5	5,0	29,5	37,6	0,768	2699	8,47	221	287	5397	441
244,5	* 6,0	35,3	45,0	0,768	3199	8,43	262	341	6397	523
244,5	* 6,3	37,0	47,1	0,768	3346	8,42	274	358	6692	547
244,5	8,0	46,7	59,4	0,768	4160	8,37	340	448	8321	681
244,5	* 10,0	57,8	73,7	0,768	5073	8,30	415	550	10146	830
273,0	* 5,0	33,0	42,1	0,858	3781	9,48	277	359	7562	554
273,0	* 6,0	39,5	50,2	0,858	4487	9,44	329	428	8974	657
273,0	* 6,3	41,4	52,8	0,858	4696	9,43	344	448	9392	688
273,0	* 8,0	52,3	66,6	0,858	5852	9,37	429	562	11703	857
273,0	* 10,0	64,9	82,6	0,858	7154	9,31	524	692	14308	1048
273,0	* 12,0	77,2	98,4	0,858	8396	9,24	615	818	16792	1230
323,9	* 5,0	39,3	50,1	1,020	6369	11,3	393	509	12739	787
323,9	* 6,0	47,0	59,9	1,020	7572	11,2	468	606	15145	935
323,9	* 6,3	49,3	62,9	1,020	7929	11,2	490	636	15858	979
323,9	* 8,0	62,3	79,4	1,020	9910	11,2	612	799	19820	1224
323,9	* 10,0	77,4	98,6	1,020	12158	11,1	751	986	24317	1501
323,9	* 12,0	92,3	118	1,020	14320	11,0	884	1168	28369	1768

Bulunabilirlik Bilgisi: (\*) İşaretili kesitler Türkiye iç piyasa stoklarda sık bulunabilen ebatlar olup, diğer ebatlar için üretici ve stok yerlerine danışılmalıdır.



## Eşit Kollu Yuvarlak Kenarlı (L) Çeliği (DIN 1028)



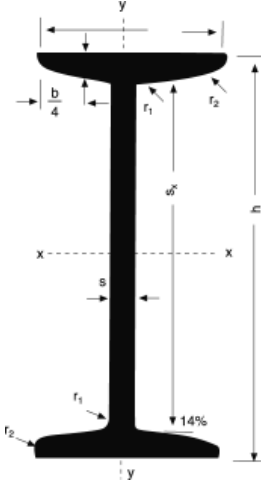
- F** = enkesit alanı  
**G** = ağırlık  
**U** = 1 mt için çevre yüzeyi  
**J** = atalet momenti  
**W** = mukavemet momenti  
 $i = \sqrt{\frac{J}{F}}$  = atalet yarıçapı
- } ait olduğu eğilme eksenine izafe

$$r_2 = \frac{r_1}{2} \text{ yarım veya tam sayı mm'ye yuvarlatılmış eksenine açı ortayıdır}$$

Profil	Boyutlar mm				F cm <sup>2</sup>	G kg/m	U m <sup>2</sup> /m	Eksenler için										Eğilme Eksenini için						
	L	a	s	r <sub>1</sub>				r <sub>2</sub>	Eksenler için										Eğilme Eksenini için					
									x-x=y-y için					h-h için										
						e <sub>x</sub> =e <sub>y</sub> cm	w cm	V <sub>1</sub> cm	V <sub>2</sub> cm	J <sub>x</sub> =J <sub>y</sub> cm <sup>4</sup>	w <sub>x</sub> =w <sub>y</sub> cm <sup>3</sup>	L <sub>x</sub> =L <sub>y</sub> cm <sup>4</sup>	J cm <sup>4</sup>	I cm <sup>4</sup>	J <sub>h</sub>	w <sub>h</sub>	L <sub>h</sub> =I <sub>1</sub>							
20x	3	20	3	3.5	2	1.12	0.88	0.077	0.60	1.41	0.85	0.70	0.39	0.28	0.59	0.62	0.74	0.15	0.18	0.37				
	4					1.45	1.14		0.64		0.90	0.71	0.48	0.35	0.58	0.77	0.73	0.19	0.21	0.36				
25x	3	25	4	3.5	2	1.42	1.12	0.097	0.73	1.77	1.03	0.87	0.79	0.45	0.75	1.27	0.95	0.31	0.30	0.47				
	4					1.85	1.45		0.76		1.08	0.89	1.01	0.58	0.74	1.61	0.93	0.40	0.37	0.47				
	5					2.26	1.77		0.80		1.13	0.91	1.18	0.69	0.72	1.87	0.91	0.50	0.44	0.47				
30x	3	30	4	5	2.5	1.74	1.36	0.116	0.84	2.12	1.18	1.04	1.41	0.65	0.90	2.24	1.14	0.57	0.48	0.57				
	4					2.27	1.78		0.89		1.24	1.05	1.81	0.86	0.89	3.85	1.12	0.76	0.61	0.58				
	5					2.78	2.18		0.92		1.30	1.07	2.16	1.04	0.88	3.41	1.11	0.91	0.70	0.57				
35x	3	35	4	5	2.5	2.04	1.60	0.136	0.96	2.47	1.36	1.23	2.29	0.90	1.06	3.63	1.34	0.95	0.70	0.68				
	4					2.67	2.10		1.00		1.41	1.24	2.96	1.18	1.05	4.68	1.33	1.24	0.88	0.68				
	5					3.28	2.57		1.04		1.47	1.25	3.56	1.45	1.04	5.63	1.31	1.49	1.10	0.67				
	6					3.87	3.04		1.08		1.53	1.27	4.14	1.71	1.04	6.50	1.30	1.77	1.16	0.68				
40x	3	40	4	6	3	2.35	1.84	0.155	1.07	2.83	1.52	1.40	3.45	1.18	1.21	5.45	1.52	1.44	0.95	0.78				
	4					3.08	2.42		1.12		1.58	1.40	4.48	1.56	1.21	7.09	1.52	1.86	1.18	0.78				
	5					3.79	2.97		1.16		1.64	1.42	5.43	1.91	1.20	8.64	1.51	2.22	1.35	0.77				
	6					4.48	3.52		1.20		1.70	1.43	6.33	2.26	1.19	9.98	1.49	2.67	1.57	0.77				
45x	4	45	5	7	3.5	3.49	2.74	0.174	1.23	3.18	1.75	1.57	6.43	1.97	1.36	10.2	1.71	2.68	1.53	0.88				
	5					4.30	3.38		1.28		1.81	1.58	7.83	2.43	1.35	12.4	1.70	3.25	1.80	0.87				
	6					5.09	4.00		1.32		1.87	1.59	9.16	2.88	1.34	14.5	1.69	3.83	2.05	0.87				
	7					5.86	4.60		1.36		1.92	1.61	10.4	3.31	1.35	16.4	1.67	4.39	2.29	0.87				
50x	4	50	5	3.5	3	3.89	3.06	0.194	1.36	3.54	1.92	1.75	8.97	2.97	1.52	14.2	1.91	3.73	1.94	0.98				
	5					4.80	3.77		1.40		1.98	1.76	11.0	3.05	1.51	17.4	1.90	4.59	2.32	0.98				
	6					5.69	4.47		1.45		2.04	1.77	12.8	3.61	1.50	20.4	1.89	5.24	2.57	0.96				
	7					6.56	5.15		1.49		2.11	1.78	14.6	4.15	1.49	23.1	1.88	6.02	2.85	0.96				
	8					7.41	5.82		1.52		2.16	1.80	16.3	4.68	1.48	25.7	1.86	6.87	3.19	0.96				
	9					8.24	6.47		1.56		2.21	1.82	17.9	5.20	1.47	28.1	1.85	7.67	3.47	0.96				
55x	5	55	6	8	4	5.32	4.18	0.213	1.52	3.89	2.15	1.93	14.7	2.70	1.66	25.3	2.09	6.11	2.84	1.07				
	6					6.31	4.95		1.56		2.21	1.94	17.3	4.40	1.66	27.4	2.08	7.24	3.28	1.07				
	8					8.23	6.46		1.64		2.32	1.97	22.1	5.72	1.64	34.8	2.06	9.35	4.03	1.07				
	10					10.1	7.90		1.72		2.43	2.00	26.3	6.97	1.62	41.4	2.02	11.3	4.65	1.06				
60x	5	60	6	8	4	5.82	4.57	0.223	1.64	4.24	2.32	2.11	19.4	4.45	1.82	30.7	2.30	8.03	3.46	1.17				
	6					6.91	5.42		1.69		2.39	2.11	22.8	5.29	1.82	36.1	2.29	9.43	3.95	1.17				
	8					9.03	7.09		1.77		2.50	2.14	29.1	6.88	1.80	46.1	2.26	12.1	4.84	1.16				
	10					11.1	8.69		1.85		2.62	2.17	34.9	8.41	1.78	55.1	2.23	14.6	5.57	1.15				
65x	6	65	7	9	4.5	7.53	5.91	0.252	1.80	4.60	2.55	2.28	29.2	6.21	1.97	46.3	2.48	12.1	4.74	1.27				
	7					8.70	6.83		1.85		2.62	2.29	33.4	7.18	1.96	53.0	2.47	13.8	5.27	1.26				
	8					9.85	7.73		1.89		2.67	2.31	37.5	8.13	1.95	59.4	2.46	15.6	5.84	1.26				
	10					11.0	8.62		1.93		2.73	2.32	41.3	9.04	1.94	55.4	2.44	17.2	6.30	1.25				
	11					13.2	10.3		2.00		2.83	2.36	48.8	10.8	1.91	76.8	2.42	20.7	7.31	1.25				

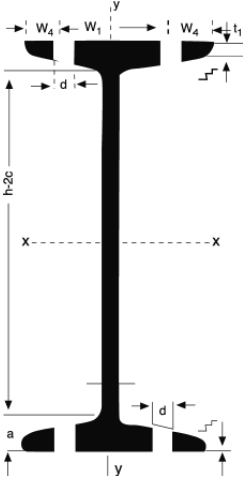
Profil	Boyutlar mm				F	G	U	Eğilme Eksenine İçin												
								Eksenler İçin						x-x=y-y için			h-h için			
	L	a	s	r <sub>1</sub>				r <sub>2</sub>	cm <sup>3</sup>	kg/m	m <sup>2</sup> /m	e <sub>x</sub> =e <sub>y</sub> cm	w cm	V <sub>1</sub> cm	V <sub>2</sub> cm	J <sub>x</sub> =J <sub>y</sub> cm <sup>4</sup>	w <sub>x</sub> =w <sub>y</sub> cm <sup>3</sup>	L <sub>x</sub> =L <sub>y</sub> cm <sup>2</sup>	J cm <sup>4</sup>	I cm <sup>4</sup>
6		6			8.13	6.38		1.93		2.73	2.46	36.9	7.27	2.13	58.5	2.68	15.3	5.60	1.37	
7		7			9.40	7.38		1.97		2.79	2.46	42.4	8.43	2.12	67.1	2.67	17.6	6.31	1.37	
9		9			11.9	9.34		2.05		2.90	2.50	52.6	10.6	2.10	83.1	2.64	22.0	7.59	1.36	
11		11			14.3	11.2		2.13		3.01	2.53	61.8	12.7	2.08	97.6	2.61	26.0	8.64	1.35	
6		6			8.75	6.87		2.04		2.89	2.63	45.6	8.35	2.28	72.2	2.87	18.9	6.54	1.47	
7		7			10.1	7.94		2.09		2.95	2.63	52.4	9.67	2.28	83.6	2.87	21.1	7.15	1.45	
8		8			11.4	9.03		2.13		3.01	2.65	58.9	11.0	2.26	93.3	2.85	24.4	8.11	1.45	
10		10			14.1	11.1		2.21		3.12	2.68	71.4	13.5	2.25	113	2.83	29.8	9.55	1.45	
12		12			16.7	13.1		2.29		3.24	2.71	82.4	15.8	2.22	130	2.79	34.7	10.7	1.44	
7		7			10.8	8.49		2.21		3.13	2.82	64.2	11.1	2.44	102	3.07	26.5	8.48	1.57	
8		8			12.3	9.66		2.26		3.20	2.82	72.3	12.6	2.42	115	3.06	29.6	9.25	1.55	
10		10			15.1	11.9		2.34		3.31	2.85	87.5	15.5	2.41	139	3.03	35.9	10.9	1.54	
12		12			17.9	14.1		2.41		3.41	2.89	102	18.2	2.39	161	3.00	43.0	12.6	1.53	
14		14			20.6	16.1		2.48		3.51	2.93	115	20.8	2.36	181	2.96	48.6	13.9	1.54	
8		8			13.9	10.9		2.50		3.53	3.17	104	16.1	2.74	166	3.45	43.1	12.2	1.76	
9		9			15.5	12.2		2.54		3.59	3.18	116	18.0	2.74	184	3.45	47.8	13.3	1.76	
11		11			18.7	14.7		2.62		3.70	3.21	138	21.6	2.72	218	3.41	57.1	15.4	1.75	
13		13			21.8	17.1		2.70		3.81	3.24	158	25.1	2.69	250	3.39	65.9	17.3	1.74	
16		16			26.4	20.7		2.81		3.97	3.29	186	30.1	2.62	294	3.34	79.1	19.9	1.73	
8		8			15.5	12.2		2.74		3.87	3.52	145	19.9	3.06	230	3.85	59.9	15.5	1.96	
10		10			19.2	15.1		2.82		3.99	3.54	177	24.7	3.04	280	3.82	73.3	18.4	1.95	
12		12			27.7	17.8		2.90		4.10	3.57	207	29.2	3.02	328	3.80	86.2	21.0	1.95	
14		14			36.2	20.6		2.98		4.21	3.60	235	33.5	3.00	372	3.77	98.3	23.4	1.94	
16		16			29.6	23.2		3.06		4.32	3.63	262	37.7	2.97	413	3.74	111	25.6	1.93	
20		20			36.2	28.4		3.20		4.53	3.71	311	45.7	2.93	487	3.67	135	29.8	1.93	
10		10			21.2	16.6		3.07		4.34	3.89	239	30.1	3.36	379	4.23	98.6	22.7	2.16	
12		12			25.1	19.7		3.15		4.45	3.93	280	35.7	3.34	444	4.21	116	26.1	2.15	
14		14			29.0	22.8		3.21		4.54	3.98	319	41.0	3.32	505	4.18	133	29.3	2.14	
11		11			25.4	19.9		3.36		4.75	4.24	341	39.5	3.66	541	4.62	140	29.5	2.35	
12		12			27.5	21.6		3.40		4.80	4.26	368	42.7	3.65	584	4.60	152	31.6	2.35	
13		13			29.7	23.3		3.44		4.86	4.27	394	46.0	3.64	625	4.59	162	33.3	2.34	
15		15			33.9	26.6		3.51		4.96	4.31	446	52.0	3.63	705	4.56	186	37.5	2.34	
12		12			30.0	23.6		3.64		5.15	4.60	472	50.4	3.97	750	5.00	194	37.7	2.54	
14		14			34.7	27.2		3.72		5.26	4.63	540	58.2	3.94	857	4.97	223	42.4	2.53	
16		16			39.3	30.9		3.80		5.37	4.86	605	65.8	3.92	959	4.94	251	46.7	2.52	
13		13			35.0	27.5		3.92		5.54	4.96	638	63.3	4.27	1010	5.38	262	47.3	2.74	
15		15			40.0	31.4		4.00		5.66	4.99	723	72.3	4.25	1150	5.36	298	52.7	2.73	
12		12			34.8	27.3		4.12		5.83	5.29	737	67.7	4.60	1170	5.80	303	52.0	2.95	
14		14			40.3	31.6		4.21		5.95	5.31	845	78.2	4.58	1340	5.77	347	58.3	2.94	
15		15			43.0	33.8		4.25		6.01	5.33	898	83.5	4.57	1430	5.76	370	61.6	2.93	
16		16			45.7	35.9		4.29		6.07	5.33	949	88.7	4.56	1510	5.74	391	64.4	2.93	
18		18			51.0	40.1		4.36		6.17	5.38	1050	99.3	4.54	1670	5.70	438	71.0	2.93	
20		20			56.3	44.2		4.44		6.28	5.41	1150	109	4.51	1820	5.68	477	76.0	2.91	
15		15			46.1	36.2		4.49		6.35	5.67	1100	95.6	4.88	1760	6.15	453	71.3	3.14	
17		17			51.8	40.7		4.57		6.46	5.70	1230	108	4.86	1950	6.13	506	78.5	3.13	
19		19			57.5	45.1		4.65		6.58	5.73	1350	118	4.84	2140	6.10	558	84.8	3.12	
16		16			55.4	43.5		5.02		7.11	6.39	1680	130	5.51	2690	6.96	679	95.5	3.50	
18		18			61.9	48.6		5.10		7.22	6.41	1870	145	5.49	2970	6.93	757	105	3.49	
20		20			68.4	53.7		5.18		7.33	6.44	2040	160	5.47	3260	6.90	830	113	3.49	
22		22			74.7	58.6		5.25		7.44	6.47	2210	174	5.44	3510	6.86	918	123	3.50	
16		16			61.8	48.5		5.52		7.80	7.09	2340	162	6.15	3740	7.78	943	121	3.91	
18		18			69.1	54.3		5.60		7.92	7.12	2600	181	6.13	4150	7.75	1050	133	3.90	
20		20			76.4	59.9		5.68		8.04	7.15	2850	199	6.11	4540	7.72	1160	144	3.89	
24		24			90.6	71.1		5.84		8.26	7.21	3330	235	6.06	5280	7.64	1380	167	3.90	
28		28			105	82.0		5.99		8.47	7.28	3780	270	6.02	5990	7.57	1580	186	3.89	

## Flanş İ Yüzeyleri Meyilli, Narin (I) Kiriřleri (DIN 1025)



- F** = enkesit alanı  
**G** = ağırlık  
**U** = 1 mt için çevre düzeyi  
**J** = atalet momenti  
**i** =  $\sqrt{\frac{J}{F}}$  = atalet yarıçapı  
**Sx** = yarım I- enkesitinin statik momenti  
**Sx** =  $\frac{J_x}{S_x}$  çekme ve basınç merkezleri mesafesi
- } ait olduėu eğilme  
 } eksenine izafe

Profil I	Boyutlar mm					F cm <sup>3</sup>	G kg/m	U m <sup>2</sup> /m	Eğilme Eksenini için						S <sub>x3</sub> cm <sup>3</sup>	S <sub>x</sub> cm
	h	b	s=r <sub>1</sub>	t	r <sub>3</sub>				x-x için			y-y için				
									J <sub>x</sub> cm <sup>4</sup>	W <sub>x</sub> cm <sup>3</sup>	I <sub>x</sub> cm	J <sub>y</sub> cm <sup>4</sup>	W <sub>y</sub> cm <sup>3</sup>	I <sub>y</sub> -I <sub>1</sub> cm		
80	80	42	3.9	5.9	2.3	7.57	5.95	0.304	77.8	19.5	3.20	6.29	3.00	0.91	11.4	6.84
100	100	50	4.5	6.8	2.7	10.6	8.14	0.370	171	34.2	4.01	12.2	4.88	1.07	19.9	8.57
120	120	58	5.1	7.7	3.1	14.2	11.1	0.439	328	54.7	4.81	21.5	7.41	1.23	31.8	10.3
140	140	66	5.7	8.6	3.4	18.3	14.3	0.502	573	81.9	5.61	35.2	10.7	1.40	47.7	12.0
160	160	74	6.3	9.5	3.8	22.8	17.9	0.575	935	117	6.40	54.7	14.8	1.55	68.0	13.7
180	180	82	6.9	10.4	4.1	27.9	21.9	0.640	1450	161	7.20	81.3	19.8	1.71	93.4	15.5
200	200	90	7.5	11.3	4.5	33.4	26.2	0.709	2140	214	8.00	117	26.0	1.87	125	17.2
220	220	98	8.1	12.2	4.9	39.5	31.1	0.775	3060	278	8.80	162	33.1	2.02	162	18.9
240	240	106	8.7	13.1	5.2	46.1	36.2	0.844	4250	354	9.59	221	41.7	2.20	206	20.6
260	260	113	9.4	14.1	5.6	53.3	41.9	0.906	5740	442	10.4	288	51.0	2.32	257	22.3
280	280	119	10.1	15.2	6.1	61.0	47.9	0.966	7590	542	11.1	364	61.2	2.45	316	24.0
300	300	125	10.8	16.2	6.5	69.0	54.2	1.030	9800	653	11.9	451	72.2	2.56	381	25.7
320	320	131	11.5	17.3	6.9	77.7	61.0	1.09	12510	782	12.7	555	84.7	2.67	457	27.4
340	340	137	12.2	18.3	7.3	86.7	68.0	1.15	15700	923	13.5	674	98.4	2.80	540	29.1
360	360	143	13.0	19.5	7.8	97.0	76.1	1.21	19610	1090	14.2	818	114	2.90	638	30.7
380	380	149	13.7	20.5	8.2	107	84.0	1.27	24010	1260	15.0	975	131	3.02	741	32.4
400	400	155	14.4	21.6	8.6	118	92.4	1.33	29210	1460	15.7	1160	149	3.13	857	34.1
425	425	163	15.3	23.0	9.2	132	104	1.41	36970	1740	16.7	1440	176	3.30	1020	36.2
450	450	170	16.2	24.3	9.7	147	115	1.48	45850	2040	17.7	1730	203	3.43	1200	38.3
475	475	178	17.1	25.6	10.3	163	128	1.55	56480	2380	18.6	2090	235	3.60	1400	40.4
500	500	185	18.0	27.0	10.8	180	141	1.63	68740	2750	19.6	2480	268	3.72	1620	42.4
550	550	200	19.0	30.0	11.9	212	166	1.80	99180	3610	21.6	3490	349	4.02	2120	46.8
600	600	215	21.6	32.4	13.0	254	199	1.92	139000	4630	23.4	4670	434	4.30	2730	50.9

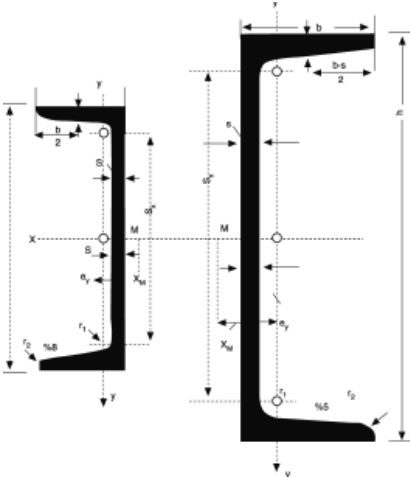


max sK = Bir I- basınç çubuğu için mümkün olan en büyük çubuk burkulma boyu; max 250.

a = Her iki eksene göre aynı atalet momentine sahip iki L- eksenleri arasındaki çift sayıya yuvarlatılmış uzaklığı (=y - eksenleri arasındaki mesafe); J=2J

Profil I	DİN 997'e göre Flaş delikleri		h-2c mm	w <sub>4</sub> mm	t <sub>1</sub> mm	K <sub>s</sub> m	a mm	eksenlere uzaklığı e=l'nin yüksekliği h olan il için		Tesis derecesi $\frac{W_x}{G}$	Burulma mukavemeti J <sub>y</sub> cm <sup>4</sup>	Çarpılma mukavemeti C <sub>m</sub> cm <sup>6</sup>	
	w <sub>1</sub> mm	Ød mm						J <sub>y</sub> cm	I <sub>y</sub> cm				
80	22	6.4	59	10	4.43	2.28	62	255	4.10	3.28	0.710	87.5	1. Basınca maruz çubuklar için boyutlandırma tabloları 1.1 ile 1.4'e bak
100	28	6.4	75	11	5.05	2.68	78	554	5.13	4.11	1.31	268	
120	32	8.4	92	13	5.67	3.08	94	1060	6.10	4.91	2.23	685	2. Yanal burkulmaya göre boyutlandırma tabloları 1.1'e bak.
140	34	11	109	16	6.29	3.50	108	1860	7.13	5.70	3.56	1540	
160	40	11	125	17	6.91	3.88	124	3030	8.15	6.54	5.40	3138	
180	44	13	142	19	7.53	4.28	140	4680	9.16	7.35	7.89	5924	
200	48	13	159	21	8.15	4.68	156	6930	10.2	8.14	11.2	10520	
220	52	13	176	23	8.77	5.05	172	9910	11.2	8.94	15.3	17760	
240	56	17	192	25	9.39	5.50	188	13720	12.2	9.78	20.6	28730	Yatay yazılmış sayılar flaş için kısımlarında perçin ve bulon birleşimlerini daha başarılı yapabilmek için uygun bir şekilde büyütülmelidir.
260	60	17	208	26.5	10.15	5.80	202	18630	13.2	10.5	27.5	44070	
280	62	17	225	28.5	11.04	6.13	218	24680	14.2	11.3	36.4	64580	
300	64	21	241	30.5	11.83	6.40	234	32000	15.2	12.0	46.7	91850	
320	70	21	258	30.5	12.72	6.68	248	40940	16.2	12.8	59.7	128800	
340	74	21	274	31.5	13.51	7.00	264	51520	17.2	13.6	74.3	176300	
360	76	23	290	33.5	14.50	7.25	278	64560	18.2	14.3	94.2	240100	
380	82	23	306	33.5	15.29	7.55	294	79200	19.3	15.1	115	318700	
400	86	23	323	34.5	16.18	7.83	308	96720	20.2	15.8	140	419600	
425	88	25	343	37.5	17.30	8.25	328	122100	21.5	16.8	177	587500	
450	94	25	363	38	18.35	8.58	348	152300	22.8	17.7	220	791100	
475	96	28	384	41	19.37	9.00	366	188100	24.0	18.6	270	1067000	
500	100	28	404	42.5	20.53	9.90	384	230000	25.3	19.5	329	1403000	
550	110	28	445	45	23.00	10.1	424	329100	27.8	21.6	472	2389000	
600	120	28	485	47.5	24.88	10.8	460	466500	30.3	23.2	667	3821000	

## Yuvarlak Kenarlı (I) Çeliği (DIN 1026)

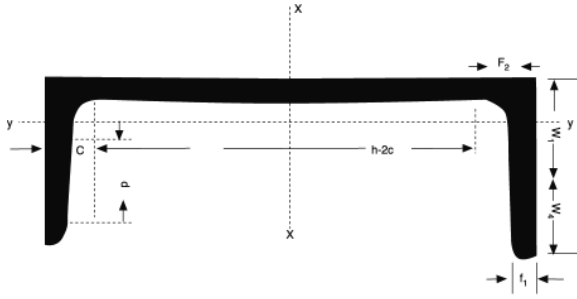


- F = enkesit alanı  
 G = ağırlık  
 U = 1 mt çevre yüzeyi  
 J = atalet momenti  
 W = mukavemet momenti  
 $i = \sqrt{\frac{J}{F}}$  = atalet yarıçapı
- } ait olduğu eğilme eksenine izafe edilmiş
- Sx = yarım I - enkesitinin statik momenti
- $S_x = \frac{J_x}{S_x}$  çekme ve basınç merkezleri mesafesi
- $X_M$  = kayma merkezi M nin y-y ekseninden uzaklığı

[ ≤ 300 için

[ > 300 için

Profil	Boyutlar mm						F cm <sup>2</sup>	G kg/m	U m <sup>2</sup> /m	Eğilme Eksenini						$S_x$ cm <sup>3</sup>	$S_y$ cm <sup>3</sup>	y-y ekseninin	
	I	h	b	s	t=t <sub>1</sub>	r <sub>3</sub>				X-X için		y-y için						$e_u$ uzaklığı cm	$X_M$ cm
										$J_x$ cm <sup>4</sup>	$W_x$ cm <sup>3</sup>	$I_x$ cm	$J_y$ cm <sup>4</sup>	$W_y$ cm <sup>3</sup>	$I_y$ cm				
30x15	30	15	4	4.5	2	2.21	1.74	0.103	2.53	1.69	1.07	0.38	0.39	0.42	-	-	0.52	0.74	
30	30	33	5	7	3.5	5.44	4.27	0.174	6.39	4.26	1.08	5.33	2.68	0.99	-	-	1.31	2.22	
40x20	40	20	5	5.5*)	2.5	3.66	2.87	0.142	7.58	3.79	1.44	1.14	0.86	0.56	-	-	0.67	1.01	
40	40	35	5	7	3.5	6.21	4.87	0.199	14.1	7.05	1.50	6.68	3.08	1.04	-	-	1.33	2.32	
50x25	50	25	5	6	3	4.92	3.86	0.181	16.8	6.73	1.85	2.49	1.48	0.71	-	-	0.81	1.34	
50	50	38	5	7	3.5	7.12	5.59	0.232	26.4	10.6	1.92	9.12	3.75	1.13	-	-	1.37	2.47	
60	60	30	6	6	3	6.46	5.07	0.215	31.6	10.5	2.21	4.51	2.16	0.84	-	-	0.91	1.50	
65	65	42	5.5	7.5	4	9.03	7.09	0.273	57.5	17.7	2.52	14.1	5.07	1.25	-	-	1.42	2.60	
80	80	45	6	8	4	11.0	8.64	0.312	106	26.5	3.10	19.4	6.36	1.33	15.9	6.65	1.45	2.67	
100	100	50	6	8.5	4.5	13.5	10.6	0.372	206	41.2	3.91	29.3	8.49	1.47	24.5	8.42	1.55	2.93	
120	120	55	7	9	4.5	17.0	13.4	0.434	364	60.7	4.62	43.2	11.1	1.59	36.3	10.0	1.60	3.03	
140	140	60	7	10	5	20.4	16.0	0.489	605	86.4	5.45	62.7	14.8	1.75	51.4	11.8	1.75	3.37	
160	160	65	7.5	10.5	5.5	24.0	18.8	0.546	925	116	6.21	85.3	18.3	1.89	68.8	13.3	1.84	3.56	
180	180	70	8	11	5.5	28.0	22.0	0.611	1350	150	6.95	114	22.4	2.02	89.6	15.1	1.92	3.75	
200	200	75	8.5	11.5	6	32.2	25.3	0.661	1910	191	7.70	148	27.0	2.14	114	16.8	2.01	3.94	
220	220	80	9	12.5	6.5	37.4	29.4	0.718	2690	245	8.48	197	33.6	2.30	146	18.5	2.14	4.20	
240	240	85	9.5	13	6.5	42.3	33.2	0.775	3600	300	9.22	248	39.6	2.42	179	20.1	2.23	4.39	
260	260	90	10	14	7	48.3	37.9	0.834	4820	371	9.09	317	47.7	2.56	221	21.8	2.36	4.66	
280	280	95	10	15	7.5	53.3	41.8	0.890	6280	448	10.9	399	57.2	2.74	266	23.6	2.53	5.02	
300	300	100	10	16	8	58.8	46.2	0.950	8030	535	11.7	495	67.8	2.90	316	25.4	2.70	5.41	
320	320	100	14	17.5	8.75	75.8	59.5	0.982	10870	679	12.1	597	80.6	2.81	413	26.3	2.60	4.82	
350	350	100	14	16	8	77.3	60.6	1.047	12840	734	12.9	570	75.0	2.72	459	28.6	2.40	4.45	
380	380	102	13.5	16	8	80.4	63.1	1.110	15760	829	14.0	615	78.7	2.77	507	31.1	2.38	4.58	
400	400	110	14	18	9	91.5	71.8	1.182	20350	1020	14.9	846	102	3.04	618	32.9	2.65	5.11	

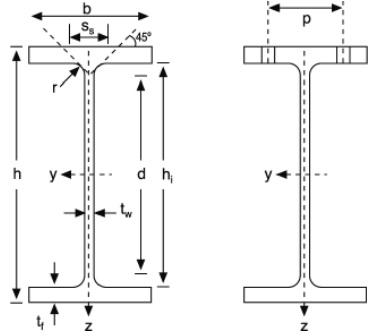


a= Her iki eksene göre aynı atalet momentine sahip iki [ nun gövdeleri arasında çift sayıya yuvarlatılmış uzaklığı

$$J = 2 J_0$$

Profil t	DIN 997'e göre Flanş delikleri		h-2c mm	Delik kenar mesafesi W <sub>4</sub> mm	Kalınlık					Profiller arasındaki mesafenin [- nun yükseklği h olan konum		Tesir derecesi n=W <sub>2</sub>	Boyutlandırma Tabloları
	W <sub>1</sub> mm	O <sub>d</sub> mm			f <sub>1</sub> mm	f <sub>2</sub> mm				j <sub>y</sub> cm <sup>4</sup>	l <sub>y</sub> cm		
30x15	10	6.4	12	5	3.9	5.1	-	-	-	-	-	0.971	Basınca maruz çubuklar için tabloları 4.1 ila .7'ye bak
30	18	8.4	1	15	5.68	8.32	-	-	-	-	-	0.998	
40x20	11	6.4	18	9	4.7	6.3	-	-	-	-	-	1.32	
40	18	11	11	17	5.6	8.4	-	-	-	-	-	1.45	
50x25	16	8.4	25	9	5	7	-	-	-	-	-	1.74	
50	20	11	20	18	5.48	8.52	-	-	-	-	-	1.90	
60	18	8.4	35	12	7.2	4.8	-	-	-	-	-	2.07	
65	25	11	33	17	5.82	9.18	-	-	-	-	-	2.50	
80	25	13	46	20	6.20	9.80	28	-	50	382	4.17	3.07	
100	30	13	64	20	6.50	10.5	42	104	70	747	5.26	3.89	
120	30	17	82	25	6.80	11.2	56	120	90	1350	6.30	4.55	
140	35	17	98	25	7.60	12.4	70	140	100	1980	5.40	5.40	
160	35	21	115	30	7.90	13.1	82	156	120	3120	8.06	6.13	
180	40	21	133	30	8.20	13.8	96	172	140	4680	9.14	6.82	
200	40	23	151	35	8.50	14.3	108	190	160	6750	10.2	7.56	
220	45	23	167	35	9.30	15.7	122	208	180	9680	11.4	8.35	
240	45	25	184	40	9.60	16.4	134	224	200	13150	12.5	9.03	
260	50	25	200	40	10.4	17.6	146	212	220	17880	13.6	9.78	
280	50	25	216	45	11.2	18.8	160	262	240	23300	14.8	10.7	
300	55	25	232	45	12.0	20.0	174	282	250	28160	15.5	11.6	
320	55	25	246	45	15.35	20.35	182	286	280	42970	16.8	11.4	
350	55	25	282	45	13.85	18.85	204	300	300	47950	17.6	12.1	
380	60	25	313	42	14.45	18.01	230	324	340	60910	19.5	13.2	
400	60	25	324	50	15.60	21.10	240	346	350	75990	20.4	14.2	

## HE-HL



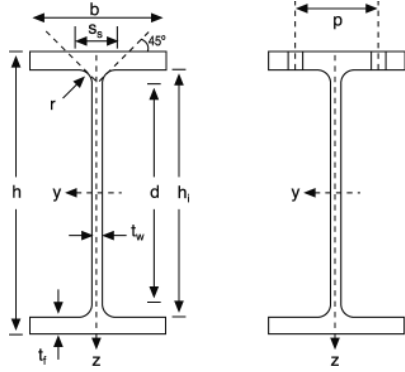
Kesit	Boyutlar									Kesit Bilgileri					
	G kg/m	h mm	b mm	tw mm	tf mm	r mm	A cm <sup>2</sup>	d mm	Ø	y-y aksı			z-z aksı		
										ly cm <sup>4</sup>	Wy cm <sup>3</sup>	ly cm	lz cm <sup>4</sup>	Wz cm <sup>3</sup>	lz cm
HE 100 AA	12.2	91	100	4.2	5.5	12	15.60	56	M10	236.5	51.98	3.89	92.06	18.41	2.43
HE 100 A	16.7	96	100	5.0	8.0	12	21.24	56	M10	349.2	72.76	4.06	133.8	26.76	2.51
HE 100 B	20.4	100	100	6.0	10.0	12	26.04	56	M10	449.5	89.91	4.16	167.3	33.45	2.53
HE 100 M	41.8	120	106	12.0	20.0	12	53.24	56	M10	1143.0	190.4	4.63	399.2	75.31	2.74
HE 120 AA	14.6	109	120	4.2	5.5	12	18.55	74	M12	413.4	75.85	4.72	158.8	26.47	2.93
HE 120 A	19.9	114	120	5.0	8.0	12	25.34	74	M12	606.2	106.3	4.89	230.9	38.48	3.02
HE 120 B	26.7	120	120	6.5	11.0	12	34.01	74	M12	864.4	144.1	5.04	317.5	52.92	3.06
HE 120 M	52.1	140	126	12.5	21.0	12	66.41	74	M12	2018.0	288.2	5.51	702.8	111.60	3.25
HE 140 AA	18.1	128	140	4.3	6.0	12	23.02	92	M16	719.5	112.4	5.59	274.8	39.26	3.45
HE 140 A	24.7	133	140	5.5	8.5	12	31.42	92	M16	1033.0	155.4	5.73	389.3	55.62	3.52
HE 140 B	33.7	140	140	7.0	12.0	12	42.96	92	M16	1509.0	215.6	5.93	549.7	78.52	3.58
HE 140 M	63.2	160	146	13.0	22.0	12	80.56	92	M16	3291.0	411.4	6.39	1144.0	156.80	3.77
HE 160 AA	23.8	148	160	4.5	7.0	15	30.36	104	M20	1283.0	173.4	6.50	478.7	59.84	3.97
HE 160 A	30.4	152	160	6.0	9.0	15	38.77	104	M20	1673.0	220.1	6.57	615.6	76.95	3.98
HE 160 B	42.36	160	160	8.0	13.0	15	54.25	104	M20	2492.0	311.5	6.78	889.2	111.2	4.05
HE 160 M	76.2	180	166	14.0	23.0	15	97.05	104	M20	5098.0	566.5	7.25	1759.0	211.9	4.26
HE 180 AA	28.7	167	180	5.0	7.5	15	36.53	122	M24	1697.0	235.6	7.34	730.0	81.1	4.47
HE 180 A	35.5	171	180	6.0	9.5	15	45.25	122	M24	2510.0	293.6	7.45	924.6	102.7	4.52
HE 180 B	52.2	180	180	8.5	14.0	15	65.25	122	M24	3831.0	425.7	7.66	1363.0	151.4	4.57
HE 180 M	88.9	200	186	14.5	24.0	15	113.30	122	M24	7483.0	748.3	8.13	2580	277.4	4.77
HE 200 AA	34.6	186	200	5.5	8.0	18	44.13	134	M27	2944.0	316.6	8.17	1068.0	106.8	4.92
HE 200 A	42.3	190	200	6.5	10.0	18	53.83	134	M27	3692.0	388.6	8.28	1336.0	133.6	4.98
HE 200 B	61.3	200	200	9.0	15.0	18	78.08	134	M27	5696.0	569.6	8.54	2003.0	200.3	5.07
HE 200 M	103.0	220	206	15.0	25.0	18	131.30	134	M27	10640.0	967.4	9.00	3651.0	354.5	5.27
HE 220 AA	40.4	205	220	6.0	8.5	18	51.46	152	M27	4170.0	406.9	9.00	1510.0	137.3	5.42
HE 220 A	50.5	210	220	7.0	11.0	18	64.34	152	M27	5410.0	515.2	9.17	1955	177.7	5.51
HE 220 B	71.5	220	220	9.5	16.0	18	91.04	152	M27	8091.0	735.5	9.43	2843.0	258.5	5.59
HE 220 M	117.0	240	226	15.5	26.0	18	149.40	152	M27	14600.0	1217.0	9.89	5012.0	443.5	5.79
HE 240 AA	47.4	224	240	6.5	9.0	21	60.38	164	M27	5835.0	521.0	9.83	2077	173.1	5.87
HE 240 A	60.3	230	240	7.5	12.0	21	76.84	164	M27	7763.0	675.1	10.05	2769	230.7	6.00
HE 240 B	83.2	240	240	10.0	17.0	21	106.00	164	M27	11260.0	938.3	10.31	3923	326.9	6.08
HE 240 M	157.0	270	248	18.0	32.0	21	199.60	164	M27	24290.0	1799.0	11.03	8153	657.5	6.39
HE 260 AA	54.1	244	260	6.5	9.5	24	68.97	177	M27	7981.0	654.1	10.76	2788	214.5	6.36
HE 260 A	68.2	250	260	7.5	12.5	24	86.82	177	M27	10450.0	836.4	10.97	3668	282.1	6.50
HE 260 B	93.0	260	260	10.0	17.5	24	118.40	177	M27	14920.0	1148.0	11.22	5135	395.0	6.58
HE 260 M	172	290	268	18.0	32.5	24	219.60	177	M27	31310.0	2159.0	11.94	10450	779.7	6.90
HE 280 AA	61.2	264	280	7.0	10.0	24	78.02	196	M27	10560.0	799.8	11.63	3664	261.7	6.85

Kesit	Kesit Bilgileri														
	G kg/m	Boyutlar					Alan	Boyutlar		y-y aksı			z-z aksı		
		h mm	b mm	tw mm	tf mm	r mm	A cm <sup>2</sup>	d mm	Ø	ly cm <sup>2</sup>	Wy cm <sup>2</sup>	ly cm	lz cm <sup>2</sup>	Wz cm <sup>2</sup>	iz cm
HE 280 A	76.4	270	280	8.0	13.0	24	97.26	196	M27	13670.0	1013.0	11.86	4763	340.2	7.00
HE 280 B	103	280	280	10.5	18.0	24	131.40	196	M27	19270.0	1376.0	12.11	6595	471.0	7.09
HE 280 M	189.0	310	288	18.5	33.0	24	240.20	196	M27	39550.0	2551.0	12.83	13160	914.1	7.40
HE 300 AA	69.8	283	300	7.5	10.5	27	88.91	208	M27	13800.0	976	12.46	4734	315.6	7.30
HE 300 A	88	290	300	8.5	14.0	27	112.25	208	M27	18260.0	1260	12.74	6310	420.6	7.49
HE 300 B	117.0	300	300	11.0	19.0	27	149.10	208	M27	25170.0	1678.0	12.99	8563	570.9	7.58
HE 300 M	238.0	340	310	21.0	39.0	27	303.10	208	M27	59200.0	3482	13.98	19400	1252.0	8.00
HE 320 AA	74	301	300	8.0	11.0	27	94.58	225	M27	16450.0	1093	13.19	4959	330.6	7.24
HE 320 A	97.6	310	300	9.0	15.5	27	124.40	225	M27	22930.0	1479.0	13.58	6985	465.7	7.49
HE 320 B	127.0	320	300	11.5	20.5	27	161.30	225	M27	30820.0	1926	13.82	9239	615.9	7.57
HE 320 M	245	359	309	21.0	40.0	27	312.00	225	M27	68130.0	3796	14.78	19710	1276.0	7.95
HE 340 AA	78.9	320	300	8.5	11.5	27	100.50	243	M27	19550.0	1222	13.95	5185	345.6	7.18
HE 340 A	105.0	330	300	9.5	16.5	27	133.50	243	M27	27690.0	1678	14.40	7436	495.7	7.46
HE 340 B	134	340	300	12.0	21.5	27	170.90	243	M27	36660.0	2156	14.65	9690	646.0	7.53
HE 340 M	248	377	309	21.0	40.0	27	315.80	243	M27	76370.0	4052	15.55	19710	1276.0	7.90
HE 360 AA	84	339	300	9.0	12.0	27	16.60	261	M27	23040.0	1359	14.70	5410	360.7	7.12
HE 360 A	112	350	300	10.0	17.5	27	142.80	261	M27	33090.0	1891	15.22	7887	525.8	7.43
HE 360 B	142	360	300	12.5	22.5	27	180.60	261	M27	43190.0	2400	15.46	10140	676.1	7.49
HE 360 M	250.0	395	308	21.0	40.0	27	318.80	261	M27	84870.0	4297	16.32	19520	1268.0	7.83
HE 400 AA	92	378	300	9.5	13.0	27	117.70	298	M27	31250.0	1654	16.30	5861	390.8	7.06
HE 400 A	125	390	300	11.0	19.0	27	159.00	298	M27	45070.0	2311	16.84	8564	570.9	7.34
HE 400 B	155.0	400	300	13.5	24.0	27	197.80	298	M27	57680.0	2884	17.08	10820	721.3	7.40
HE 400 M	256	432	307	21.0	40.0	27	325.80	298	M27	104100.0	4820	17.88	19340	1260.0	7.70
HE 450 AA	100	425	300	10.0	13.5	27	127.10	344	M27	41890.0	1971	18.16	6088	405.8	6.92
HE 450 A	140.0	440	300	11.5	21.0	27	178.00	344	M27	63720.0	2896	18.92	9465	631.0	7.29
HE 450 B	171	450	300	14.0	26.0	27	218.00	344	M27	79890.0	3551	19.14	11720	781.4	7.33
HE 450 M	263	478	307	21.0	40.0	27	335.40	344	M27	131500.0	5501	19.80	19340	1260.0	7.59
HE 500 AA	107	472	300	10.5	14.0	27	136.90	390	M27	54640.0	2315	19.98	6314	420.9	6.79
HE 500 A	155	490	300	12.0	23.0	27	197.50	390	M27	86970.0	3550	20.98	10370	691.1	7.24
HE 500 B	187	500	300	14.5	28.0	27	238.60	390	M27	107200.0	4287	21.19	12620	841.6	7.27
HE 500 M	270	524	306	21.0	40.0	27	344.30	390	M27	161900.0	6180	21.69	19150	1252.0	7.46
HE 550 AA	120	522	300	11.5	15.0	21	152.80	438	M27	72870.0	2792	21.84	6767	451.1	6.65
HE 550 A	166	540	300	12.5	24.0	24	211.80	438	M27	111900.0	4146	22.99	10820	721.3	7.15
HE 550 B	199	550	300	15.0	29.0	24	254.10	438	M27	136700.0	4971	23.20	13080	871.8	7.17
HE 550 M	278	572	306	21.0	40.0	24	354.40	438	M27	198000.0	6923	23.64	19160	1252.0	7.35
HE 600 AA	129	571	300	12.0	15.5	24	164.10	486	M27	91900.0	3218	23.66	6993	466.2	6.53
HE 600 A	178	590	300	13.0	25.0	24	226.50	486	M27	141200.0	4787	24.97	11270	751.4	7.05
HE 600 B	212	600	300	15.5	30.0	24	270.00	486	M27	171000.0	5701	25.17	13530	902.0	7.08
HE 600 M	285	620	305	21.0	40.0	24	363.70	486	M27	237400.0	7660	25.55	18980	1244.0	7.22
HE 600x637	337	632	310	25.5	46.0	24	429.20	486	M27	283200.0	8961	25.69	22940	1480.0	7.31
HE 600x399	399	648	315	30.0	54.0	27	508.50	486	M27	344600.0	10640	26.03	28280	1796.0	7.46
HE 650 AA	138	620	300	12.5	16.0	27	175.80	534	M27	113900.0	3676	25.46	7221	481.4	6.41
HE 650 A	190	640	300	13.5	26.0	27	241.60	534	M27	175200.0	5474	26.93	11720	781.6	6.97
HE 650 B	225	650	300	16.0	31.0	27	286.30	534	M27	210600.0	6480	27.12	13980	932.3	6.99
HE 650 M	293	668	305	21.0	40.0	27	373.70	534	M27	281700.0	8433	27.45	18980	1245.0	7.13
HE 650x343	343	680	309	25.0	46.0	27	437.50	534	M27	333700.0	9815	27.62	22720	1470.0	7.21
HE 650x407	407	696	314	29.5	54.0	27	518.80	534	M27	405400.0	11650	27.95	28020	1785.0	7.35
HE 700 AA	150	670	300	13.0	17.0	27	190.90	582	M27	142700.0	4260	27.34	7673	511.5	6.34
HE 700 A	204	690	300	14.5	27.0	27	260.50	582	M27	215300.0	6241	28.75	12180	811.9	6.84
HE 700 B	241	700	300	17.0	32.0	27	306.40	582	M27	256900.0	7340	28.96	14440	962.7	6.87



Kesit	Kesit Bilgileri														
	G kg/m	Boyutlar					Alan	Boyutlar		y-y aksı			z-z aksı		
		h mm	b mm	tw mm	tf mm	r mm	A cm <sup>2</sup>	d mm	Ø	ly cm <sup>2</sup>	Wy cm <sup>3</sup>	ly cm	lz cm <sup>4</sup>	Wz cm <sup>3</sup>	iz cm
HE 700 M	301	716	304	21.0	40.0	27	383.00	582	M27	329300.0	9198	29.32	18800	1237.0	7.01
HE 700x352	352	728	308	25.0	46.0	27	448.60	582	M27	389700.0	10710	29.47	22510	1461.0	7.08
HE 700x418	418	744	313	29.5	54.0	27	531.90	582	M27	472500.0	12700	29.80	27760	1774.0	7.22
HE 800 AA	172	770	300	14.0	18.0	30	218.50	674	M27	208900.0	5426	30.92	8134	542.2	6.10
HE 800 A	224	790	300	15.0	28.0	30	285.80	674	M27	303400.0	7682	32.58	12640	842.6	6.65
HE 800 B	262	800	300	17.5	33.0	30	334.20	674	M27	359100.0	8977	32.78	14900	993.6	6.68
HE 800 M	317	814	303	21.0	40.0	30	404.30	674	M27	442600.0	10870	33.09	18630	1230.0	6.79
HE 800x373	373	826	308	25.0	46.0	30	474.60	674	M27	523900.0	12690	33.23	22530	1463.0	6.89
HE 800x444	444	842	313	30.0	54.0	30	566.00	674	M27	634500.0	15070	33.48	27800	1776.0	7.01
HE 900 AA	198	870	300	15.0	20.0	30	252.20	770	M27	301100.0	6923	34.55	9041	602.8	5.99
HE 900 A	252	890	300	16.0	30.0	30	320.50	770	M27	422100.0	9485	36.29	13550	903.2	6.50
HE 900 B	291	900	300	18.5	35.0	30	371.30	770	M27	494100.0	10980	36.48	15820	1054.0	6.53
HE 900 M	333	910	302	21.0	40.0	30	423.60	770	M27	570400.0	12540	36.70	18450	1222.0	6.60
HE 900x391	391	922	307	25.0	46.0	30	497.70	770	M27	674300.0	14630	36.81	22320	1454.0	6.70
HE 900x466	466	938	312	30.0	54.0	30	593.70	770	M27	814900.0	17380	37.05	27560	1767.0	6.81
HE 1000 AA	222	970	300	16.0	21.0	30	282.20	868	M27	406500.0	8380	37.95	9501	633.4	5.80
HE 1000 A	272	990	300	16.5	31.0	30	346.80	868	M27	553800.0	11190	39.96	14000	933.6	6.35
HE 1000 B	314	1000	300	19.0	36.0	30	400.00	868	M27	644700.0	12890	40.15	16280	1085.0	6.38
HE 1000 M	349	1008	302	21.0	40.0	30	444.20	868	M27	722300.0	14330	40.32	18460	1222.0	6.45
HE 1000x393	393	1016	303	24.4	43.9	30	500.20	868	M27	807700.0	15900	40.18	20500	1353.0	6.40
HE 1000x409	409	1020	306	25.0	46.0	30	521.20	868	M27	850800.0	16680	40.40	22120	1446.0	6.51
HE 1000x488	488	1036	311	30.0	54.0	30	622.00	868	M27	1027000.0	19820	40.62	27320	1757.0	6.63
HE 1000x579	579	1056	316	35.0	64.0	30	737.00	868	M27	1246000.0	23590	41.11	34040	2154.0	6.80
HL 920x342	342	912	418	19.3	32.0	24	436.10	800	M27	624900.0	13700	37.85	39010	1867.0	9.46
HL 920x365	365	916	419	20.3	34.3	24	464.40	799.4	M27	670500.0	14640	38.00	42120	2011.0	9.52
HL 920x387	387	921	420	21.3	36.6	24	493.00	799.8	M27	718300.0	15600	38.17	45280	2156.0	9.58
HL 920x417	417	928	422	22.5	39.9	24	532.50	800.2	M27	787600.0	16970	38.46	50070	2373.0	9.70
HL 920x446	446	933	423	24.0	42.7	24	569.60	799.6	M27	846800.0	18150	38.56	53980	2552.0	9.73
HL 920x488	488	942	422	25.9	47.0	24	621.30	800	M27	935390.0	19860	38.80	59010	2797.0	9.75
HL 920x534	534	950	425	28.4	51.1	24	680.10	799.8	M27	1031000.0	21710	38.94	65560	3085.0	9.82
HL 920x585	585	960	427	31.0	55.9	24	745.30	800.2	M27	1143090.0	23814	39.16	72770	3408.0	9.88
HL 920x653	653	972	431	34.5	62.0	24	831.90	800	M27	1292000.0	26590	39.41	83050	3854.0	9.99
HL 920x784	784	996	437	40.9	73.9	24	997.70	800.2	M27	1593000.0	31980	39.95	103300	4728.0	10.18
HL 920x967	967	1028	446	50.0	89.9	24	1231.00	800.2	M27	2033000.0	39540	40.64	133900	6003.0	10.43
HL 1000x296	296	982	400	16.5	27.0	30	376.80	868	M27	618700.0	12600	40.52	28850	1443.0	8.75
HL 1000 A	321	990	400	16.5	31.0	30	408.80	868	M27	696400.0	14070	41.27	33120	1656.0	9.00
HL 1000 B	371	1000	400	19.0	36.0	30	472.00	868	M27	812100.0	16240	41.48	38480	1924.0	9.03
HL 1000 M	412	1008	402	21.0	40.0	30	524.20	868	M27	909800.0	18050	41.66	43410	2160.0	9.10
HL 1000x477	477	1018	404	25.5	45.0	30	608.00	868	M27	1047000.0	20570	41.50	49610	2456.0	9.03
HL 1000x554	554	1032	408	29.5	52.0	30	705.80	868	M27	1232000.0	23880	41.79	59100	2897.0	9.15
HL 1000x642	642	1048	412	34.0	60.0	30	817.60	868	M27	1451000.0	27680	42.12	70280	3412.0	9.27
HL 1000x748	748	1068	417	39.0	70.0	30	953.40	868	M27	1732000.0	32430	42.62	85111	4082.0	9.45
HL 1000x883	883	1092	424	45.5	82.0	30	1125.30	868	M27	2096000.0	38390	43.16	105000	4952.0	9.66
HL 1100 A	343	1090	400	18.0	31.0	20	436.50	988	M27	867400.0	15920	44.58	33120	1656.0	8.71
HL 1100 B	390	1100	400	20.0	36.0	20	497.00	988	M27	1005000.0	18280	44.98	38480	1924.0	8.80
HL 1100 M	433	1108	402	22.0	40.0	20	551.20	988	M27	1126000.0	20320	45.19	43410	2160.0	8.87
HL 1100 R	499	1118	405	26.0	45.0	20	635.20	988	M27	1294000.0	23150	45.14	49980	2468.0	8.87

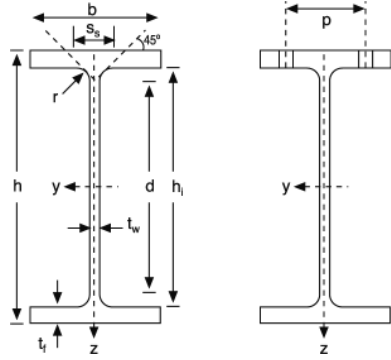
## Flanş Yüzeyleri Birbirine Paralel, Orta Genişlikte (I) Kirişleri (DIN 1025)



### IPE

Kesit	G kg/m	Boyutlar					Alan A cm <sup>2</sup>	Boyutlar		Kesit Bilgileri					
		h mm	b mm	tw mm	tf mm	r mm		d mm	Ø	y-y aksı			z-z aksı		
										ly cm <sup>4</sup>	Wy cm <sup>3</sup>	ly cm	lz cm <sup>4</sup>	Wz cm <sup>3</sup>	lz cm
IPE 100 A	6.9	98	55	3.6	4.7	7	8.78	74.6	-	141.2	28.81	4.01	13.12	4.77	1.22
IPE 100	8.1	100	55	4.1	5.7	7	10.32	74.6	-	171.0	34.20	4.07	15.92	5.79	1.24
IPE 120 A	8.7	117.6	64	3.8	5.1	7	11.03	93.4	-	257.4	43.77	4.83	22.39	7.00	1.42
IPE 120	10.4	120	64	4.4	6.3	7	13.21	93.4	-	317.8	52.96	4.90	27.67	8.65	1.45
IPE 140 A	10.5	137.4	73	3.8	5.6	7	13.39	112.2	-	434.9	63.30	5.70	36.42	9.98	1.65
IPE 140	12.9	140	73	4.7	6.9	7	16.43	112.2	-	541.2	77.32	5.74	44.92	12.31	1.65
IPE 160 A	12.7	157	82	4.0	5.9	9	16.18	127.2	-	689.3	87.81	6.53	54.43	13.27	1.83
IPE 160	15.8	160	82	5.0	7.4	9	20.09	127.2	-	869.3	108.7	6.58	68.31	16.66	1.84
IPE 180 A	15.4	177	91	4.3	6.5	9	19.58	146.0	M10	1063	120.1	7.37	81.89	18.00	2.05
IPE 180	18.8	180	91	5.3	8.0	9	23.95	146.0	M10	1317	146.3	7.42	100.9	22.16	2.05
IPE 180 O	21.3	182	92	6.0	9.0	9	27.10	146.0	M10	1505	165.4	7.45	117.3	25.50	2.08
IPE 200 A	18.4	197	100	4.5	7.0	12	23.47	159.0	M10	1591	161.6	8.23	117.2	23.43	2.23
IPE 200	22.4	200	100	5.6	8.5	12	28.48	159.0	M10	1943	194.3	8.26	142.4	28.47	2.24
IPE 200 O	25.1	202	102	6.2	9.5	12	31.96	159.0	M10	2211	218.9	8.32	168.9	33.11	2.30
IPE 220 A	22.2	217	110	5.0	7.7	12	28.26	177.6	M12	2317	213.5	9.05	171.4	31.17	2.46
IPE 220	26.2	220	110	5.9	9.2	12	33.37	177.6	M12	2772	252.0	9.11	204.9	37.25	2.48
IPE 220 O	29.4	222	112	6.6	10.2	12	37.39	177.6	M10	3134	282.3	9.16	239.8	42.83	2.53
IPE 240 A	26.2	237	120	5.2	8.3	15	33.31	190.4	M12	3290	277.7	9.94	240.1	40.02	2.68
IPE 240	30.7	240	120	6.2	9.8	15	39.12	190.4	M12	3892	324.3	9.97	283.6	47.27	2.69
IPE 240 O	34.3	242	122	7.0	10.8	15	43.71	190.4	M12	4369	361.1	10.00	328.5	53.86	2.74
IPE 270 A	30.7	267	135	5.5	8.7	15	39.15	219.6	M16	4917	368.3	11.21	358.0	53.03	3.02
IPE 270	36.1	270	135	6.6	10.2	15	45.95	219.6	M16	5790	428.9	11.23	419.9	62.20	3.02
IPE 270 O	42.3	274	136	7.5	12.2	15	53.84	219.6	M16	6947	507.1	11.36	513.5	75.51	3.09

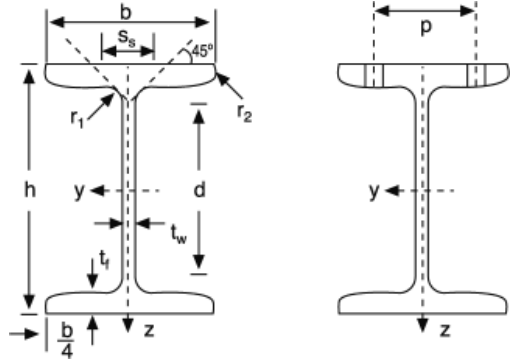
										Kesit Bilgileri					
Kesit	G kg/m	Boyutlar					Alan	Boyutlar		y-y aksı			z-z aksı		
		h mm	b mm	tw mm	tf mm	r mm	A cm <sup>2</sup>	d mm	Ø	ly cm <sup>1</sup>	Wy cm <sup>2</sup>	ly cm	lz cm <sup>1</sup>	Wz cm <sup>2</sup>	iz cm
IPE 300 A	36.5	297	150	6.1	9.2	15	46.53	248.6	M16	7173	483.1	12.42	519.0	69.20	3.34
IPE 300	42.2	300	150	7.1	10.7	15	53.81	248.6	M16	8356	557.1	12.46	603.8	80.50	3.35
IPE 300 O	49.3	304	152	8.0	12.7	15	62.83	248.6	M16	9994	657.5	12.61	745.7	98.12	3.45
IPE 330 A	43.0	327	160	6.5	10.0	18	54.74	271.0	M16	10230	625.7	13.67	685.2	85.64	3.54
IPE 330	49.1	330	160	7.5	11.5	18	62.61	271.0	M16	11770	713.1	13.71	788.1	98.52	3.55
IPE 330 O	57.0	334	162	8.5	13.5	18	72.62	271.0	M16	13910	833.0	13.84	960.4	118.6	3.64
IPE 360 A	50.2	357.6	170	6.6	11.5	18	63.96	298.6	M22	14520	811.8	15.06	944.3	111.1	3.84
IPE 360	57.1	360	170	8.0	12.7	18	72.73	298.6	M22	16270	903.6	14.95	1043	122.8	3.79
IPE 360 O	66.0	364	172	9.2	14.7	18	84.13	298.6	M22	19050	1047	15.05	1251	145.5	3.86
IPE 400 A	57.4	397	180	7.0	12.0	21	73.10	331.0	M22	20290	1022	16.66	1171	130.1	4.00
IPE 400	66.3	400	180	8.6	13.5	21	84.46	331.0	M22	23130	1156	16.55	1318	146.4	3.95
IPE 400 O	75.7	404	182	9.7	15.5	21	96.39	331.0	M22	26750	1324	16.66	1564	171.9	4.03
IPE 450 A	67.2	447	190	7.6	13.1	21	85.55	378.8	M24	29760	1331	18.65	1502	158.1	4.19
IPE 450	77.6	450	190	9.4	14.6	21	98.82	378.8	M24	33740	1500	18.48	1676	176.4	4.12
IPE 450 O	92.4	456	192	11.0	17.6	21	117.7	378.8	M24	40920	1795	18.65	2085.0	217.2	4.21
IPE 500 A	79.4	497	200	8.4	14.5	21	101.1	426.0	M24	42930	1728	20.61	1939	193.9	4.38
IPE 500	90.7	500	200	10.2	16.0	21	115.5	426.0	M24	48200	1928	20.43	2142	214.2	4.31
IPE 500 O	107.0	506	202	12.0	19.0	21	136.7	426.0	M24	57780	2284	20.56	2622	259.6	4.38
IPE 550 A	92.1	547	210	9.0	15.7	24	117.3	467.6	M24	59980	2193	22.61	2432	231.6	4.55
IPE 550	106	550	210	11.1	17.2	24	134.4	467.6	M24	67120	2441	22.35	2668	254.1	4.45
IPE 550 O	123	556	212	12.7	20.2	24	156.1	467.6	M24	79160	2847	22.52	3224	304.2	4.55
IPE 600 A	108	597	220	9.8	17.5	24	137.0	514.0	M27	82920	2778	24.60	3116	283.3	4.77
IPE 600	122	600	220	12.0	19.0	24	156.0	514.0	M27	92080	3069	24.30	3387	307.9	4.66
IPE 600 O	154	610	224	15.0	24.0	24	196.8	514.0	M27	118300	3879	24.52	4521	403.6	4.79
IPE 750x147	147	753	265	13.2	17.0	17	187.5	685.0	M27	166100	4411	29.76	5289	399.2	5.31
IPE 750x173	173	762	267	14.4	21.6	17	221.3	684.8	M27	205800	5402	30.49	6873	514.9	5.57
IPE 750x196	196	770	268	15.6	25.4	17	250.8	685.2	M27	240300	6241	30.95	8175	610.1	5.71



## HD

Kesit	Boyutlar										Kesit Bilgileri					
	G kg/m	Boyutlar					Alan	Boyutlar		y-y aksı			z-z aksı			
		h mm	b mm	tw mm	tf mm	r mm	A cm <sup>2</sup>	d mm	Ø	ly cm <sup>4</sup>	Wy cm <sup>3</sup>	ly cm	lz cm <sup>4</sup>	Wz cm <sup>3</sup>	iz cm	
HD 260x54.1	54.1	244	260	6.5	9.5	24	68.97	177	M27	7981	654.1	10.76	2788	214.5	6.36	
HD 260x68.2	68.2	250	260	7.5	12.5	24	86.82	177	M27	10450	836.4	10.97	3668	282.1	6.50	
HD 260x93.0	93.0	260	260	10.0	17.5	24	118.4	177	M27	14920	1148	11.22	5135	395.0	6.58	
HD 260x114	114	268	262	12.5	21.5	24	145.7	177	M27	18910	1411	11.39	6456	492.8	6.66	
H D 260x142	142	278	265	15.5	26.5	24	180.3	177	M27	243330	1750	11.62	8236	621.6	6.76	
H D 260x172	172	290	268	18.0	32.5	24	219.6	177	M27	31310	2159	11.94	10450	779.7	6.90	
HD 320x74.2	74.2	301	300	8.0	11.0	27	94.58	225	M27	16450	1093	13.19	4959	330.6	7.24	
HD 320x97.6	97.6	310	300	9.0	15.5	27	124.4	225	M27	22930	1479	13.58	6985	465.7	7.49	
H D 320x127	127	320	300	11.5	20.5	27	161.3	225	M27	30820	1926	13.82	9239	615.9	7.57	
H D 320x158	158	330	303	14.5	25.5	27	201.2	225	M27	39640	2403	14.04	11840	781.7	7.67	
H D 320x198	198	343	306	18.0	32.0	27	252.3	225	M27	51900	3026	14.34	15310	1001	7.79	
HD 320x245	245	359	309	21.0	40.0	27	312.0	225	M27	68130	3796	14.78	19710	1276	7.95	
HD 320x300	300	375	313	27.0	48.0	27	382.1	225	M27	86900	4635	15.08	24600	1572	8.02	
H D 360x134	134	356	369	11.2	18.0	15	170.6	290	M27	41510	2332	15.60	15080	817.3	9.40	
H D 360x147	147	360	370	12.3	19.8	15	187.9	290.4	M27	46290	2572	15.70	16720	903.9	9.43	
H D 360x162	162	364	371	13.3	21.8	15	206.3	290.4	M27	51540	2832	15.81	18560	1001	9.49	
H D 360x179	179	368	373	15.0	23.9	15	228.3	290.2	M27	57440	3122	15.86	20680	1109	9.52	
H D 360x196	196	372	374	16.4	26.2	15	250.3	289.6	M27	63630	3421	15.94	22860	1222	9.56	
HD 400x187	187	368	391	15.0	24.0	15	237.6	290	M27	60180	3271	15.91	23920	1224	10.03	
HD 400x216	216	375	394	17.3	27.7	15	275.5	289.6	M27	71140	3794	16.07	28250	1434	10.13	
HD 400x237	237	380	395	18.9	30.2	15	300.9	289.6	M27	78780	4146	16.18	31040	1572	10.16	
HD 400x262	262	387	398	21.1	33.3	15	334.6	290.4	M27	89410	4620	16.35	35020	1760	10.23	
HD 400x287	287	393	399	22.6	36.6	15	366.3	289.8	M27	99710	5074	16.50	38780	1944	10.29	
HD 400x314	314	399	401	24.9	39.6	15	399.2	289.8	M27	110200	5525	16.62	42600	2125	10.33	
HD 400x347	347	407	404	27.2	43.7	15	442.0	289.6	M27	124900	6140	16.81	48090	2380	10.43	
HD 400x382	382	416	406	29.8	48.0	15	487.1	290	M27	141300	6794	17.03	53620	2641	10.49	
HD 400x421	421	425	409	32.8	52.6	15	537.1	289.8	M27	159600	7510	17.24	60080	2938	10.58	
HD 400x463	463	435	412	35.8	57.4	15	589.5	290.2	M27	180200	8283	17.48	67040	3254	10.66	
HD 400x509	509	446	416	39.1	62.7	15	649.0	290.6	M27	204500	9172	17.75	75400	3625	10.78	
HD 400x551	551	455	418	42.0	67.6	15	701.4	289.8	M27	226100	9939	17.95	82490	3947	10.85	
HD 400x592	592	465	421	45.0	72.3	15	754.9	290.4	M27	250200	10760	18.20	90170	4284	10.93	
HD 400x634	634	474	424	47.6	77.1	15	808.0	289.8	M27	274200	11570	18.42	98250	4634	11.03	
HD 400x677	677	483	428	51.2	81.5	15	863.4	290	M27	299500	12400	18.62	106900	4994	11.13	
HD 400x744	744	498	432	55.6	88.9	15	948.1	290.2	M27	342100	13740	19.00	119900	5552	11.25	
H D 400x818	818	514	437	60.5	97.0	15	1043	290	M27	392200	15260	19.39	135500	6203	11.40	
HD 400x900	900	531	442	65.9	106	15	1149	289	M27	450200	16960	19.79	153300	6938	11.55	
HD 400x990	990	550	448	71.9	115	15	1262	290	M27	518900	18870	20.27	173400	7739	11.72	
HD 400x1086	1086	569	454	78.0	125	15	1386	289	M27	595700	20940	20.73	196200	8645	11.90	

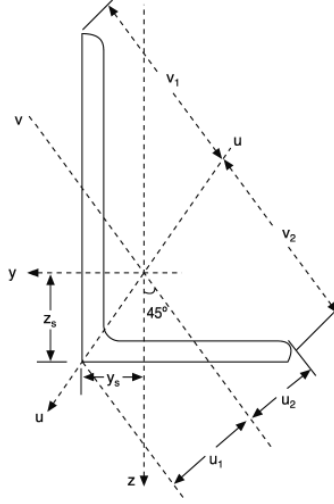
## Flanş İç Yüzeyleri Meyilli, Narin (I) Kirişleri (DIN 1025)



### IPN

Kesit	G kg/m	Boyutlar						Alan A cm <sup>2</sup>	Boyutlar d mm	Ø	Kesit Bilgileri								
		h mm	b mm	tw mm	tf mm	r1 mm	r2 mm				y-y aksı			z-z aksı					
											ly cm <sup>4</sup>	Wy cm <sup>3</sup>	Wpl,y cm <sup>3</sup>	ly cm	Avz cm <sup>2</sup>	İz cm <sup>4</sup>	Wz cm <sup>3</sup>	Wpl,z cm <sup>3</sup>	iz cm
IPN 80*	5.95	80	42	3.9	5.9	3.9	2.3	7.58	59	-	77.8	19.5	22.8	3.2	3.41	6.29	3.5	5	0.91
IPN 100*	8.32	100	50	4.5	6.8	4.5	2.7	10.6	75.7	-	171	34.2	39.8	4.01	4.85	12.2	4.88	8.1	1.07
IPN 120	11.1	120	58	5.1	7.7	5.1	3.1	14.2	92.4	-	328	54.7	63.6	4.81	6.63	21.5	7.41	12.4	1.23
IPN 140	14.3	140	66	5.7	8.6	5.7	3.4	18.3	109.1	-	573	81.9	95.4	5.61	8.65	35.2	10.7	17.9	1.4
IPN 160	17.9	160	74	6.3	9.5	6.3	3.8	22.8	125.8	-	935	117	136	6.4	10.83	54.7	14.8	24.9	1.55
IPN 180	21.9	180	82	6.9	10.4	6.9	4.1	27.9	142.4	-	1450	161	187	7.2	13.35	81.3	19.8	33.2	1.71
IPN 200	26.2	200	90	7.5	11.3	7.5	4.5	33.4	159.1	-	2140	214	250	8	16.03	117	26	43.5	1.87
IPN 220	31.1	220	98	8.1	12.2	8.1	4.9	39.5	175.8	M10	3060	278	324	8.8	19.06	162	33.1	55.7	2.02
IPN 240	36.2	240	106	8.7	13.1	8.7	5.2	46.1	192.5	M10	4250	354	412	9.59	22.33	221	41.7	70	2.2
IPN 260	41.9	260	113	9.4	14.1	9.4	5.6	53.3	208.9	M12	5740	442	514	10.4	26.08	288	51	85.9	2.32
IPN 280	47.9	280	119	10.1	15.2	10.1	6.1	61	225.1	M12	7590	542	632	11.1	30.18	364	61.2	103	2.45
IPN 300	54.2	300	125	10.8	16.2	10.8	6.5	69	241.6	M16	9800	653	762	11.9	34.58	451	72.2	121	2.56
IPN 320	61	320	131	11.5	17.3	11.5	6.9	77.7	257.9	M16	12510	782	914	12.7	39.26	555	84.7	143	2.67
IPN 340	68	340	137	12.2	18.3	12.2	7.3	86.7	274.3	M16	15700	923	1080	13.5	44.27	674	98.4	166	2.8
IPN 360	76.1	360	143	13	19.5	13	7.8	97	290.2	M16	19610	1090	1276	14.2	49.95	818	114	194	2.9
IPN 380	84	380	149	13.7	20.5	13.7	8.2	107	306.7	M16	24010	1260	1482	15	55.55	975	131	221	3.02
IPN 400	92.4	400	155	14.4	21.6	14.4	8.6	118	322.9	M20	29210	1460	1714	15.7	61.69	1160	149	253	3.13
IPN 450	115	450	170	16.2	24.3	16.2	9.7	147	363.6	M22	45850	2040	2400	17.7	77.79	1730	203	345	3.43
IPN 500	141	500	185	18	27	18	10.8	179	404.3	M24	58740	2750	3240	19.6	95.6	2480	268	456	3.72
IPN 550	166	550	200	19	30	19	11.9	212	445.6	M27	99180	3610	4240	21.6	111.3	3490	349	592	4.02

## Eşit Kollu Yuvarlak Kenarlı (L) Çeliği

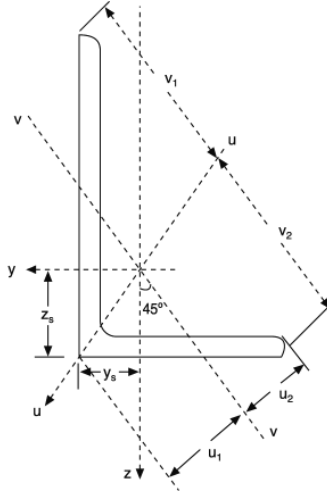
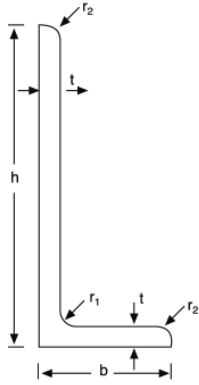


L

Kesit	G kg/m	Boyutlar				Alan A cm <sup>2</sup>	Boyutlar				Kesit Bilgileri						
		h=b mm	t mm	r1 mm	r2 mm		z=y cm	v cm	u <sub>1</sub> cm	u <sub>2</sub> cm	y-y / z-z aksı		u-u aksı		v-v aksı		
										ly=Iz cm <sup>4</sup>	Wely= Welz cm <sup>3</sup>	ly=Iz cm <sup>4</sup>	I <sub>u</sub> cm <sup>4</sup>	i <sub>u</sub> cm	I <sub>v</sub> cm <sup>4</sup>	i <sub>v</sub> cm	
L 100x100x8	12,2	100	8	12	6	15,51	2,74	7,07	3,87	3,52	144,8	19,94	3,06	230,2	3,85	59,47	1,96
L 100x100x10	15,0	100	10	12	6	19,20	2,82	7,07	3,99	3,54	176,7	24,62	3,04	280,7	3,83	72,65	1,95
L 100x100x12	17,8	100	12	12	6	22,71	2,90	7,07	4,11	3,57	206,7	29,12	3,02	328,0	3,80	85,42	1,94
L 110x110x10	16,6	110	10	13	6,5	21,18	3,06	7,78	4,33	3,88	238,0	29,99	3,35	378,2	4,23	97,72	2,15
L 110x110x12	19,7	110	12	13	6,5	25,14	3,15	7,78	4,45	3,91	279,1	35,54	3,33	443,3	4,20	115,0	2,14
L 120x120x10	18,2	120	10	13	6,5	23,18	3,31	8,49	4,69	4,24	312,9	36,03	3,67	497,6	4,63	128,3	2,35
L 120x120x11	19,9	120	11	13	6,5	25,37	3,36	8,49	4,75	4,25	340,6	39,41	3,66	541,5	4,62	139,8	2,35
L 120x120x12	21,6	120	12	13	6,5	27,54	3,40	8,49	4,80	4,26	367,7	42,73	3,65	584,3	4,61	151,0	2,34
L 120x120x13	23,3	120	13	13	6,5	29,69	3,44	8,49	4,86	4,28	394,0	46,01	3,64	625,9	4,59	162,2	2,34
L 120x120x15	26,6	120	15	13	6,5	33,93	3,51	8,49	4,97	4,31	444,9	52,43	3,62	705,6	4,56	184,2	2,33
L 130x130x12	23,5	130	12	14	7	30,00	3,64	9,19	5,15	4,60	472,2	50,44	3,97	750,6	5,00	193,7	2,54
L 140x140x10	21,4	140	10	15	7,5	27,24	3,79	9,90	5,37	4,93	504,4	49,43	4,30	802	5,43	206,8	2,76
L 140x140x13	27,4	140	13	15	7,5	34,95	3,92	9,90	5,55	4,96	638,5	63,37	4,27	1015	5,39	262,0	2,74
L 150x150x10	23,0	150	10	16	8	29,27	4,03	10,61	5,71	5,28	624,0	56,91	4,62	992	5,82	256,0	2,96
L 150x150x12	27,3	150	12	16	8	34,83	4,12	10,61	5,83	5,29	736,9	67,75	4,60	1172	5,80	302,0	2,94
L 150x150x14	31,6	150	14	16	8	40,31	4,21	10,61	5,95	5,32	845,4	78,33	4,58	1344	5,77	346,9	2,93
L 150x150x15	33,8	150	15	16	8	43,02	4,25	10,61	6,01	5,33	898,1	83,52	4,57	1427	5,76	368,9	2,93
L 150x150x18	40,1	150	18	16	8	51,03	4,37	10,61	6,17	5,37	1050	98,74	4,54	1666	5,71	433,8	2,92

											Kesit Bilgileri						
Kesit	G kg/m	Boyutlar				Alan A cm <sup>2</sup>	Boyutlar				y-y / z-z aksı		u-u aksı		v-v aksı		
		h=b mm	t mm	r1 mm	r2 mm		z=y cm	v cm	u <sub>1</sub> cm	u <sub>2</sub> cm	ly=lz cm <sup>4</sup>	Wely= Welz cm <sup>3</sup>	ly=lz cm	i <sub>u</sub> cm <sup>4</sup>	i <sub>u</sub> cm	i <sub>v</sub> cm <sup>4</sup>	i <sub>v</sub> cm
L 160x160x14	33,9	160	14	17	8,5	43,15	4,45	11,31	6,29	5,66	1034	89,50	4,89	1644	6,17	423,8	3,13
L 160x160x15	35,2	160	15	17	8,5	46,06	4,49	11,31	6,35	5,67	1099	95,5	4,88	1747	6,16	450,8	3,13
L 160x160x16	38,4	160	16	17	8,59	48,95	4,53	11,31	6,41	5,69	1163	101,4	4,87	1848	6,14	477,6	3,12
L 160x160x17	40,7	160	17	17	8,5	51,82	4,57	11,31	6,46	5,70	1225	107,2	4,86	1947	6,13	504,1	3,12
L 180x180x13	35,7	180	13	18	9	45,46	4,90	12,73	6,93	6,35	1396	106,5	5,54	2221	6,99	571,6	3,55
L 180x180x14	38,3	180	14	18	9	48,79	4,94	12,73	6,99	6,36	1493	114,3	5,53	2375	6,98	611,3	3,54
L 180x180x15	40,9	180	15	18	9	52,10	4,98	12,73	7,05	6,37	1589	122,0	5,52	2527	6,96	650,5	3,53
L 180x180x16	43,5	180	16	18	9	55,39	5,02	12,73	7,10	6,38	1682	129,7	5,51	2675	6,95	689,4	3,53
L 180x180x17	46,0	180	17	18	9	58,66	5,06	12,73	7,16	6,40	1775	137,2	5,50	2822	6,94	727,8	3,52
L 180x180x18	48,6	180	18	18	9	61,91	5,10	12,73	7,22	6,41	1866	144,7	5,49	2965	6,92	766,0	3,52
L 180x180x19	51,1	180	19	18	9	65,14	5,14	12,73	7,27	6,42	1955	152,1	5,48	3106	6,91	803,8	3,51
L180x180x20	53,7	180	20	18	9	68,35	5,18	12,73	7,33	6,44	2043	159,4	5,47	3244	6,89	841,3	3,51
L200x200x15	45,6	200	15	18	9	58,10	5,48	14,14	7,75	7,08	2209	152,2	6,17	3516	7,78	903	3,94
L200x200x16	48,5	200	16	18	9	61,79	5,52	14,14	7,81	7,09	2341	161,7	6,16	3726	7,77	957	3,94
L200x200x17	51,4	200	17	18	9	65,46	5,56	14,14	7,87	7,10	2472	171,2	6,14	3932	7,75	1011	3,93
L200x200x18	54,3	200	18	18	9	69,11	5,60	14,14	7,93	7,12	2600	180,6	6,13	4135	7,74	1064	3,92
L200x200x19	57,1	200	19	18	9	72,74	5,64	14,14	7,98	7,13	2726	189,9	6,12	4335	7,72	1117	3,92
L 200x200x20	59,9	200	20	18	9	76,35	5,68	14,14	8,04	7,15	2851	199,1	6,11	4532	7,70	1169	3,91
L 200x200x21	62,8	200	21	18	9	79,94	5,72	14,14	8,09	7,16	2973	208,2	6,10	4725	7,69	1221	3,91
L 200x200x22	65,6	200	22	18	9	83,51	5,76	14,14	8,15	7,18	3094	217,3	6,09	4915	7,67	1273	3,90
L 200x200x23	68,3	200	23	18	9	87,06	5,80	14,14	8,20	7,19	3213	226,3	6,08	5102	7,66	1324	3,90
L 200x200x24	71,1	200	24	18	9	90,59	5,84	14,14	8,26	7,21	3331	235,2	6,06	5286	7,64	1375	3,90
L 200x200x25	73,9	200	25	18	9	94,10	5,88	14,14	8,31	7,23	3446	244,0	6,05	5467	7,62	1426	3,89
L 200x200x26	76,6	200	26	18	9	97,59	5,91	14,14	8,36	7,25	3560	252,7	6,04	5645	7,61	1476	3,89
L 250x250x20	75,6	250	20	18	9	96,35	6,93	17,68	9,81	8,91	5743,0	317,90	7,72	9144	9,74	2341	4,93
L 250x250x21	79,2	250	21	18	9	100,94	6,97	17,68	9,86	8,93	5997,0	332,70	7,71	9548	9,73	2447	4,92
L 250x250x22	82,8	250	22	18	9	105,51	7,01	17,68	9,92	8,94	6249,0	347,40	7,70	9946	9,71	2551	4,92
L 250x250x23	86,4	250	23	18	9	110,06	7,05	17,68	9,97	8,96	6497,0	362,00	7,68	10339	9,69	2655	4,91
L 250x250x24	90,0	250	24	18	9	114,59	7,09	17,68	10,03	8,98	6743	376,50	7,67	10727	9,68	2759	4,91
L 250x250x25	93,5	250	25	18	9	119,10	7,13	17,68	10,08	8,99	6986	390,90	7,66	11110	9,66	2861	4,90
L 250x250x26	97,0	250	26	18	9	123,59	7,17	17,68	10,13	9,01	7226	405,2	7,65	11488	9,64	2963	4,90
L 250x250x27	100,5	250	27	18	9	128,06	7,20	17,68	10,19	9,03	7463	419,3	7,63	11861	9,62	3065	4,89
L 250x250x28	104,0	250	28	18	9	132,51	7,24	17,68	10,24	9,04	7697	433,4	7,62	12229	9,61	3166	4,89

## Farklı Kollu Yuvarlak Kenarlı (L) Çeliği

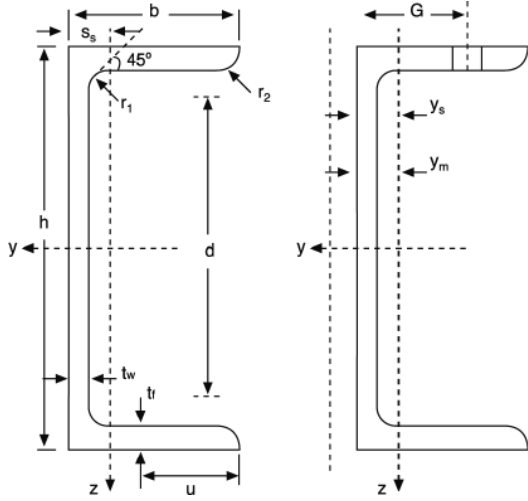


L

Kesit	G kg/m	Boyutlar					Alan A cm <sup>2</sup>	Kesit Bilgileri									
		h mm	b mm	t mm	r1 mm	r2 mm		y-y aksı			z-z aksı			u-u aksı		v-v aksı	
							Iy cm <sup>4</sup>	Iy cm <sup>4</sup>	Iy cm <sup>4</sup>	Iz cm <sup>4</sup>	Iz cm <sup>4</sup>	Iz cm <sup>4</sup>	Iu cm <sup>4</sup>	Iu cm <sup>4</sup>	Iv cm <sup>4</sup>	Iv cm <sup>4</sup>	
L120x80x8	12,2	120	80	8	11	5,5	15,49	225,7	27,63	3,82	80,76	13,17	2,28	260,0	4,10	46,39	1,73
L120x80x10	15,0	120	80	10	11	5,5	19,13	275,5	34,10	3,80	98,11	16,21	2,26	317,0	4,07	56,60	1,72
L120x80x12	17,8	120	80	12	11	5,5	22,69	322,8	40,37	3,77	114,33	19,14	2,24	370,7	4,04	66,46	1,71
L130x65x8	11,8	130	65	8	11	5,5	15,09	262,5	31,10	4,17	44,77	8,72	1,72	278,6	4,30	28,72	1,38
L130x65x10	14,6	130	65	10	11	5,5	18,63	320,5	38,39	4,15	54,20	10,73	1,71	339,6	4,27	35,02	1,37
L150x90x10	18,2	150	90	10	12	6	23,15	533,1	53,29	4,80	146,1	20,98	2,51	591,3	5,05	87,93	1,95
L150x90x11	19,9	150	90	11	12	6	25,34	580,7	58,30	4,79	158,7	22,91	2,50	643,7	5,04	95,71	1,94
L150x100x10	19,0	150	100	10	13	6,5	24,18	551,7	54,08	4,78	197,8	25,80	2,86	635,9	5,13	113,5	2,17
L150x100x12	22,6	150	100	12	13	6,5	28,74	649,6	64,23	4,75	231,9	30,58	2,84	747,9	5,10	133,5	2,16
L150x100x14	26,1	150	100	14	13	6,5	33,22	743,5	74,12	4,73	264,2	35,21	2,82	854,6	5,07	153,0	2,15
L160x80x10	18,2	160	80	10	13	6,5	23,18	611,3	58,94	5,14	104,4	16,55	2,12	648,7	5,29	67,01	1,70
L160x80x12	21,6	160	80	12	13	6,5	27,54	719,5	69,98	5,11	122,0	19,59	2,10	762,8	5,26	78,77	1,69
L200x100x10	23,0	200	100	10	15	7,5	29,24	1219	93,24	6,46	210,3	26,33	2,68	1294	6,65	134,5	2,14
L200x100x12	27,3	200	100	12	15	7,5	34,80	1440	111,0	6,43	247,2	31,28	2,67	1529	6,63	158,5	2,13
L200x100x14	31,6	200	100	14	15	7,5	40,28	1654	128,4	6,41	282,2	36,08	2,65	1755	6,60	181,7	2,12

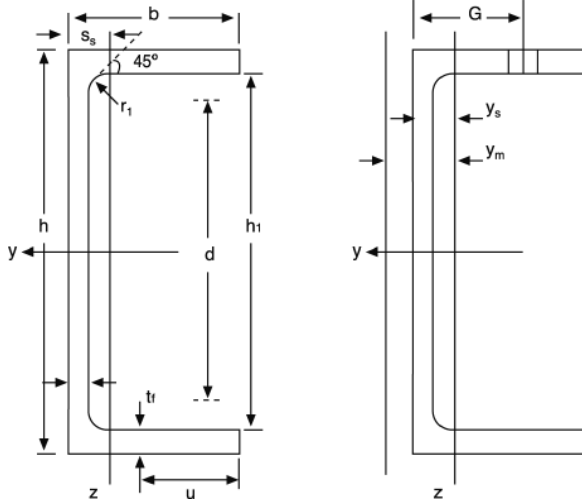


## Yuvarlak Kenarlı ( ) Çeliği (DIN 1026)



### UPN

Kesit	G kg/m	Boyutlar						Alan A cm <sup>2</sup>	Boyutlar		Kesit Bilgileri					
		h mm	b mm	tw mm	tf mm	r1 mm	r2 mm		d mm	Ø	y-y aksı			z-z aksı		
											ly cm <sup>4</sup>	Wy cm <sup>3</sup>	ly cm	lz cm <sup>4</sup>	Wz cm <sup>3</sup>	lz cm
UPN 80*	8,64	80	45	6	8	4	8	11	46	-	106	26,5	3,1	19,4	6,36	1,33
UPN 100	10,6	100	50	6	8,5	4,5	8,5	13,5	54	M10	206	41,2	3,91	29,3	8,49	1,47
UPN 120	13,4	120	55	7	9	4,5	9	17	82	M10	364	60,7	4,62	43,2	11,1	1,59
UPN 140	16	140	60	7	10	5	10	20,4	98	M12	605	86,4	5,45	62,7	14,8	1,75
UPN 160	18,8	160	65	7,5	10,5	5,5	10,5	24	115	M16	925	116	6,21	85,3	18,3	1,89
UPN 180	22	180	70	8	11	5,5	11	28	133	M 16	1350	150	6,95	114	22,4	2,02
UPN 200	25,3	200	75	8,5	11,5	6	11,5	32,2	151	M 16	1910	191	7,7	148	27	2,14
UPN 220	29,4	220	80	9	12,5	6,5	12,5	37,4	167	M 20	2690	245	8,48	197	33,6	2,3
UPN 240	33,2	240	85	9,5	13	6,5	13	42,3	184	M 20	3600	300	9,22	248	39,6	2,42
UPN 260	37,9	260	90	10	14	7	14	48,3	200	M 24	4820	371	9,99	317	47,7	2,56
UPN 280	41,8	280	95	10	15	7,5	15	53,3	216	M 24	6280	448	10,9	399	57,2	2,74
UPN 300	46,2	300	100	10	16	8	16	58,8	232	M 24	8030	535	11,7	495	67,8	2,9
UPN 320	59,5	320	100	14	17,5	8,75	17,5	75,8	246	M 24	10870	679	12,1	597	80,6	2,81
UPN 350	60,6	350	100	14	16	8	16	77,3	282	M 24	12840	734	12,9	570	75	2,72
UPN 380	63,1	380	102	13,5	16	8	16	80,4	313	M 24	15760	829	14	615	78,7	2,77
UPN 400	71,8	400	110	14	18	9	18	91,5	324	M 27	20350	1020	14,9	846	102	3,04



## UPE

Kesit	Boyutlar									Kesit Bilgileri					
	G kg/m	h mm	b mm	tw mm	tf mm	r mm	A cm <sup>2</sup>	d mm	Ø	y-y aksı			z-z aksı		
										ly cm <sup>4</sup>	Wy cm <sup>3</sup>	ly cm	lz cm <sup>4</sup>	Wz cm <sup>3</sup>	iz cm
UPE 80	7,9	80	50	4	7	10	10,07	46	-	107,2	26,8	3,26	25,41	7,98	1,59
UPE 100	9,82	100	55	4,5	7,5	10	12,5	65	M 12	206,9	41,37	4,07	38,21	10,63	1,75
UPE 120	12,1	120	60	5	8	12	15,42	80	M 12	363,5	60,58	4,86	55,4	13,79	1,9
UPE 140	14,5	140	65	5	9	12	18,42	98	M 16	599,5	85,64	5,71	78,7	18,19	2,07
UPE 160	17	160	70	5,5	9,5	12	21,67	117	M 16	911,1	113,9	6,48	106,8	22,58	2,22
UPE 180	19,7	180	75	5,5	10,5	12	25,11	135	M 16	1353	150,4	7,94	143,7	28,56	2,39
UPE 200	22,8	200	80	6	11	13	29,01	152	M 20	1909	190,9	8,11	187,3	34,43	2,54
UPE 220	26,6	220	85	6,5	12	13	33,87	170	M 22	2682	243,9	8,9	246,4	42,51	2,7
UPE 240	30,2	240	90	7	12,5	15	38,52	185	M 24	3599	299,9	9,67	310,9	50,08	2,84
UPE 270	35,2	270	95	7,5	13,5	15	44,84	213	M 27	5255	389,2	10,83	401	60,69	2,99
UPE 300	44,4	300	100	9,5	15	15	56,62	240	M 27	7823	521,5	11,76	537,7	75,58	3,08
UPE 330	53,2	330	105	11	16	18	67,77	262	M 27	11010	667,1	12,74	681,5	89,66	3,17
UPE 360	61,2	360	110	12	17	18	77,91	290	M 27	14830	823,6	13,79	843,7	105,1	3,29
UPE 400	72,2	400	115	13,5	18	18	91,93	328	M 27	20980	1049	15,11	1045	122,6	3,37

## St 00.12 ve St 37.12 Çelikleri İçin $\lambda_{\theta} = \lambda\sqrt{\omega}$ Değerleri

$\lambda$	$\lambda_{\theta}$										$\lambda$
	0	1	2	3	4	5	6	7	8	9	
20	20.4	21.4	22.4	23.6	24.6	25.7	26.8	27.9	29.0	30.1	29
30	31.2	32.4	33.4	34.6	35.7	36.9	37.9	39.2	40.4	41.5	30
40	42.7	43.8	45.0	46.3	47.4	48.7	50.0	51.3	52.4	53.7	40
50	55.0	56.3	57.7	58.8	60.1	61.5	62.9	64.2	65.6	67.0	50
60	68.4	69.8	71.2	72.7	74.1	75.5	77.0	78.4	80.2	81.6	60
70	83.1	84.6	86.4	87.9	89.4	91.2	92.8	94.3	96.2	97.7	70
80	99.6	101	103	105	107	108	110	112	114	116	80
90	118	120	121	123	125	127	130	132	134	136	90
100	138	140	142	144	146	148	151	153	155	158	100
110	160	162	165	167	169	172	175	179	181	184	110
120	187	190	193	196	200	203	206	209	213	216	120
130	219	223	226	230	233	237	240	241	248	251	130
140	255	258	262	266	269	273	277	281	285	289	140
150	292	296	300	304	308	312	316	320	325	329	150
160	333	337	341	345	349	354	358	362	367	371	160
170	376	380	385	389	393	398	402	407	422	416	170
180	421	426	430	435	440	445	449	455	459	464	180
190	469	474	479	484	489	494	499	504	509	515	190
200	520	525	534	536	541	546	552	557	562	568	200
210	573	579	584	590	595	601	606	612	618	623	210
220	629	635	640	646	652	658	664	670	676	682	220
230	687	693	699	706	712	718	724	730	736	742	230
240	749	755	761	767	773	780	786	793	799	806	240
250	812	-	-	-	-	-	-	-	-	-	250

## St 52 Çelikleri İçin $\lambda_{\theta} = \lambda\sqrt{\omega}$ Değerleri

$\lambda$	$\lambda_{\theta}$										$\lambda$
	0	1	2	3	4	5	6	7	8	9	
20	20.6	21.6	22.8	23.8	24.9	26.0	27.1	28.2	29.4	30.6	29
30	31.6	32.8	33.9	35.1	36.3	37.5	38.6	39.9	41.1	42.4	30
40	43.6	44.7	46.0	47.3	48.6	49.9	51.2	52.5	53.9	55.2	40
50	56.6	58.1	59.5	60.9	62.3	63.9	65.2	66.7	68.4	69.8	50
60	71.2	72.9	74.4	76.1	77.9	79.3	81.1	82.9	84.4	86.2	60
70	88.0	89.8	91.6	93.5	95.3	97.2	99.1	101	103	105	70
80	107	109	111	113	115	117	119	121	124	126	80
90	129	132	135	138	141	144	147	150	153	156	90
100	159	162	166	169	172	175	179	182	185	189	100
110	192	196	200	203	207	210	214	218	222	225	110
120	229	233	237	241	245	249	253	257	261	265	120
130	269	273	277	282	286	290	295	299	303	307	130
140	312	317	321	325	330	335	339	344	349	353	140
150	358	363	368	373	378	383	387	392	397	402	150
160	407	413	418	423	428	433	439	444	449	454	160
170	460	465	471	476	482	487	493	499	504	510	170
180	516	521	527	533	539	565	551	557	562	569	180
190	574	581	587	593	590	605	611	618	624	630	190
200	637	643	650	656	662	669	675	682	689	695	200
210	702	709	715	722	729	736	743	750	756	763	210
220	770	777	784	792	799	806	813	820	827	834	220
230	842	849	857	864	871	879	886	894	902	909	230
240	917	924	932	940	947	955	963	971	979	987	240
250	990	-	-	-	-	-	-	-	-	-	250

Ara değerleri enterpole etmeğe lüzum yoktur.

