

Boyut Standardı*Dimension Standart*

TS EN 10017

TS EN 10108

Müşteri talebi ile diğer boyutlar

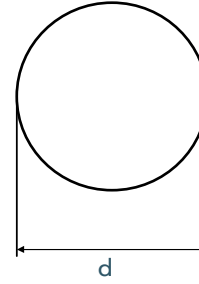
*Other dimensions according to customer's request***Kalite Standardı***Quality Standart*

Müşteri talebi ile diğer kaliteler

*Other qualities according to customer's request***Yüzey Kalitesi Standardı***Surface Quality Standart*

TS EN 10221

Müşteri talebi ile diğer kaliteler

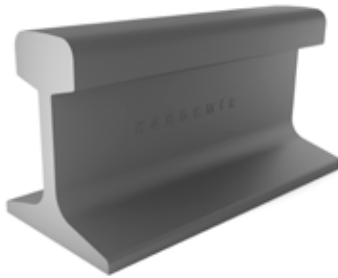
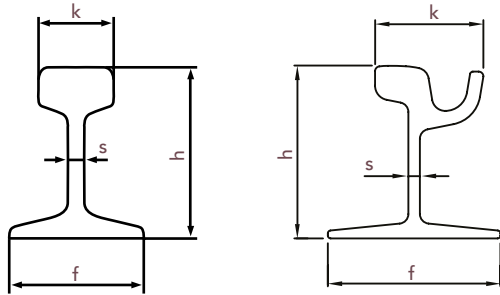
Other qualities according to customer's request

Anma Çapı Nominal Diameter (d) (mm)	Çap Toleransı Tolerance on Diameter (mm)
5,5	±0,3
6	±0,3
6,5	±0,3
7	±0,3
7,5	±0,3
8	±0,3
8,5	±0,3
9	±0,3
9,5	±0,3
10	±0,4
10,5	±0,4
11	±0,4
11,5	±0,4
12	±0,4
12,5	±0,4
13	±0,4
13,5	±0,4
14	±0,4
14,5	±0,4
15	±0,4
15,5	±0,4
16	±0,5
16,5	±0,5
17	±0,5
17,5	±0,5
18	±0,5
18,5	±0,5
19	±0,5
19,5	±0,5
20	±0,5
21	±0,5
22	±0,5
23	±0,5
24	±0,5
25	±0,5
26	±0,6
27	±0,6
28	±0,6
29	±0,6
30	±0,6
31	±0,6
32	±0,6
33	±0,6
34	±0,6
35	±0,6
36	±0,6
37	±0,6
38	±0,6
39	±0,6
40	±0,8
41	±0,8
42	±0,8
43	±0,8
44	±0,8
45	±0,8
46	±0,8
47	±0,8
48	±0,8
49	±0,8
50	±0,8
51	±1,0
52	±1,0
53	±1,0
54	±1,0
55	±1,0
56	±1,0

Ovalite Toleransı ^a / Tolerance of Ovality ^a (mm): Toplam çap toleransının 80%'i. 80% of the total tolerance on the diameter.

^a Aynı kesitteki maksimum ve minimum çap arasındaki fark
^a Difference between maximum and minimum diameter on the same cross-section

Ölçü, Tolerans ve Statik Parametreler Size, Tolerance and Static Parameters



Demiryolu Rayı Tipi Railway Rail Type	h (mm)		f (mm)		k (mm)		s (mm)		G (kg/m)
	Tolerans Tolerance		Tolerans Tolerance		Tolerans Tolerance		Tolerans Tolerance		
	X _{profil}	Y _{profil}	X _{profil}	Y _{profil}	X _{profil}	Y _{profil}	X _{profil}	Y _{profil}	
33 E1 – EN13674-4 – 33,47 kg/m	134	+ 0,5 - 1,0	105	+ 1,5 - 1,0	58	+ 0,6 - 0,5	11	+ 1,0 - 0,5	33,47
46 E2 – EN 13674-1 – 46,27 kg/m	145	± 0,5 + 0,5 - 1,0	134	± 1,0 + 1,5 - 1,0	62	± 0,5 + 0,6 - 0,5	15	+ 1,0 + 1,0 - 0,5 - 0,5	46,27
49 E1 – EN 13674-1 49,39 kg/m	149	± 0,5 + 0,5 - 1,0	125	± 1,0 + 1,5 - 1,0	67	± 0,5 + 0,6 - 0,5	14	+ 1,0 + 1,0 - 0,5 - 0,5	49,39
UIC49 – UIC 860.0 – 49,43 kg/m	149	± 0,5	125	± 1,0	67	± 0,5	14	+ 1,0 - 0,5	49,43
50 E4 – EN 13674-1 – 50,17 kg/m	152	± 0,5 + 0,5 - 1,0	125	± 1,0 + 1,5 - 1,0	70	± 0,5 + 0,6 - 0,5	15	+ 1,0 + 1,0 - 0,5 - 0,5	50,17
UIC 50 – UIC 860.0 – 50,46 kg/m	152	± 0,5	125	± 1,0	70	± 0,5	15	+ 1,0 - 0,5	50,46
R50 ,P50 – GOST R 51685-2000 – 51,80 kg/m	152	+ 0,6 - 0,5	132	± 0,8 ± 1,0	72	± 0,4 ± 0,5	16	± 0,4 + 0,8 - 0,5	51,80
54 E4 – EN 13674-1 – 54,31 kg/m	154	± 0,5 + 0,5 - 1,0	125	± 1,0 + 1,5 - 1,0	67	± 0,5 + 0,6 - 0,5	16	+ 1,0 + 1,0 - 0,5 - 0,5	54,31
UIC54 – UIC 860.0 – 54,43 kg/m	159	± 0,5	140	± 1,0	70	± 0,5	16	+ 1,0 - 0,5	54,43
54 E1 – EN 13674-1 – 54,77 kg/m	159	± 0,5 + 0,5 - 1,0	140	± 1,0 + 1,5 - 1,0	70	± 0,5 + 0,6 - 0,5	16	+ 1,0 + 1,0 - 0,5 - 0,5	54,77
60 E2 – EN 13674-1 – 60,03 kg/m	172	± 0,6 + 0,6 - 1,1	150	± 1,0 + 1,5 - 1,0	72	± 0,5 + 0,6 - 0,5	16,5	+ 1,0 + 1,0 - 0,5 - 0,5	60,03
60 E1 – EN 13674-1 – 60,21 kg/m	172	± 0,6 + 0,6 - 1,1	150	± 1,0 + 1,5 - 1,0	72	± 0,5 + 0,6 - 0,5	16,5	+ 1,0 + 1,0 - 0,5 - 0,5	60,21
UIC 60 – UIC 860.0 – 60,34 kg/m	172	± 0,6	150	+ 1,0 - 1,1	72	± 0,5	16,5	+ 1,0 - 0,5	60,34
59 R2 – EN 14811 (Oluklu Ray Grooved Rail) – 58,20 kg/m	180	± 1,5	180	± 1,0 - 3,0	55,83	± 1,0	12	+ 1,0 - 0,5	58,20
60 R1 – EN 14811 (Oluklu Ray Grooved Rail) – 60,59 kg/m	180	± 1,5	180	± 1,0 - 3,0	56	± 1,0	12	+ 1,0 - 0,5	60,59
60 R2 – EN 14811 (Oluklu Ray Grooved Rail) – 59,75 kg/m	180	± 1,5	180	± 1,0 - 3,0	55,83	± 1,0	12	+ 1,0 - 0,5	59,75



SERTLEŞTİRİLMİŞ RAYLAR

Müşteri talebine göre R350HT kalitesinde üretim yapılabilmektedir.

HAD HARDENED RAILS

R350HT quality can be produced according to customer needs.

I Profiller I Profiles

Boyut Standardı

Dimension Standart

TS EN 10024

Müşteri talebi ile diğer boyutlar

Other dimensions according to customer's request

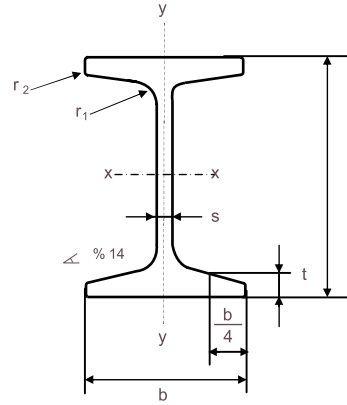
Kalite Standardı

Quality Standart

TS EN 10025-1 / 2

Müşteri talebi ile diğer kaliteler

Other qualities according to customer's request



Anma Ölçüsü Nominal Size NPI	Boyutlar ve Toleranslar Dimensions & Tolerances										Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Eğme Eksenleri İçin For Bending Axes						S_x	S_y
	h		b		s		t		r_1	r_2				x-x			y-y				
	h	±	b	±	s	±	t	±	r_1	r_2				I_x	W_x	i_x	I_y	W_y	i_y		
160	160	± 2,0	74	± 1,5	6,3	+0,5/-1,0	9,5	+2/-1	6,3	3,8	22,8	17,9	0,575	935	117	6,40	54,7	14,8	1,55	68	13,7
180	180	± 2,0	82	± 2,0	6,9	+0,5/-1,0	10,4	+2,5/-1,5	6,9	4,1	27,9	21,9	0,640	1450	161	7,20	81,3	19,8	1,71	93,4	15,5
200	200	± 2,0	90	± 2,0	7,5	+0,7/-1,5	11,3	+2,5/-1,5	7,5	4,5	33,4	26,2	0,709	2140	214	8,0	117	26,0	1,87	125	17,2
220	220	± 3,0	98	± 2,0	8,1	+0,7/-1,5	12,2	+2,5/-1,5	8,1	4,9	39,5	31,1	0,775	3060	278	8,8	162	33,1	2,02	162	18,9
240	240	± 3,0	106	± 2,5	8,7	+0,7/-1,5	13,1	+2,5/-1,5	8,7	5,2	46,1	36,2	0,884	4250	354	9,59	221	41,7	2,20	206	20,6
260	260	± 3,0	113	± 2,5	9,4	+0,7/-1,5	14,1	+2,5/-1,5	9,4	5,6	53,3	41,9	0,906	5740	442	10,4	288	51,0	2,32	257	22,3
280	280	± 3,0	119	± 2,5	10,1	+1,0/-2,0	15,2	+2,5/-1,5	10,1	6,1	61,0	47,9	0,966	7590	542	11,1	364	61,2	2,45	316	24,0
300	300	± 3,0	125	± 2,5	10,8	+1,0/-2,0	16,2	+2,5/-1,5	10,8	6,5	69,0	54,2	1,03	9800	653	11,9	451	72,2	2,56	381	25,7
320	320	± 3,0	131	± 3,0	11,5	+1,0/-2,0	17,3	+2,5/-1,5	11,5	6,9	77,7	61,0	1,09	12510	782	12,7	555	84,7	2,67	457	27,4
340	340	± 3,0	137	± 3,0	12,2	+1,0/-2,0	18,3	+2,5/-1,5	12,2	7,3	86,7	68,0	1,15	15700	923	13,5	674	98,4	2,80	540	29,1
360	360	± 3,0	143	± 3,0	13,0	+1,0/-2,0	19,5	+2,5/-1,5	13,0	7,8	97,0	76,1	1,21	19610	1090	14,2	818	114,0	2,90	638	30,7
380	380	± 3,0	149	± 3,0	13,7	+1,0/-2,0	20,5	+2,5/-2	13,7	8,2	107,0	84,0	1,27	24010	1260	15,0	975	131,0	3,02	741	32,4
400	400	± 3,0	155	± 3,0	14,4	+1,0/-2,0	21,6	+2,5/-2	14,4	8,5	118,0	92,4	1,33	29210	1460	15,7	1160	149,0	3,13	857	34,1
450	450	± 4,0	170	± 3,0	16,2	+1,0/-2,0	24,3	+2,5/-2	16,2	9,7	147,0	115,0	1,48	45850	2040	17,7	1730	203,0	3,43	1200	38,3
500	500	± 4,0	185	± 3,0	18,0	+1,0/-2,0	27,0	+2,5/-2	18,0	10,8	179,0	141,0	1,63	68740	2750	19,6	2480	268,0	3,72	1620	42,4

I : Alanın ikinci momenti Second moment of area

W : Kesit modülü Section modulus

i : Atalet yarıçapları (ait olduğu eğme eksenlerine göre) Radii of gyration (subscript x and y denoting the relevant axis)

S_x : Yarım kesitin statik momenti Moment of first order of half the cross section

$S_x = I_x / S_x$: Basma ve çekme merkezleri arasındaki mesafe Distance between centers of compression and tension.

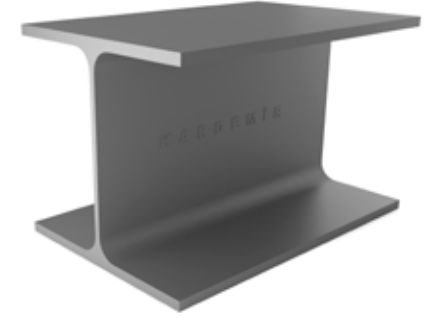
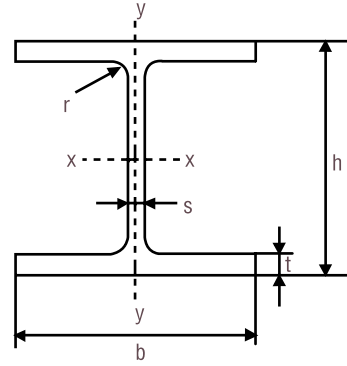
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. Section, weight, surface area and static values are calculated according to the values in the table.

HEA Profiller

HEA Profiles

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü Nominal Size HEA	Boyutlar ve Toleranslar Dimensions & Tolerances									Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters						S_x	S_y	
	h		b		s		t		r				x-x			y-y					
													I_x cm ⁴	W_x cm ³	i_x cm	I_y cm ⁴	W_y cm ³	i_y cm			cm ³
120	114	+3/-2	120	+4/-2	5,0	±0,7	8,0	+2/-1	12,0	25,3	19,9	0,677	606	106	4,89	231	38,5	3,02	59,7	10,1	
140	133	+3/-2	140	+4/-2	5,5	±0,7	8,5	+2/-1	12,0	31,4	24,7	0,794	1030	155	5,73	389	55,6	3,52	86,7	11,9	
160	152	+3/-2	160	+4/-2	6,0	±0,7	9,0	+2/-1	15,0	38,8	30,4	0,906	1670	220	6,57	616	76,9	3,98	123,0	13,6	
180	171	+3/-2	180	+4/-2	6,0	±0,7	9,5	+2/-1	15,0	45,3	35,5	1,02	2510	294	7,45	925	103,0	4,52	162,0	15,5	
200	190	+4/-2	200	+4/-2	6,5	±0,7	10,0	+2,5/-1,5	18,0	53,8	42,3	1,14	3690	389	8,28	1340	134,0	4,98	215,0	17,2	
220	210	+4/-2	220	+4/-4	7,0	±1,0	11,0	+2,5/-1,5	18,0	64,3	50,5	1,26	5410	515	9,17	1950	178,0	5,51	284,0	19,0	
240	230	+4/-2	240	+4/-4	7,5	±1,0	12,0	+2,5/-1,5	21,0	76,8	60,3	1,37	7660	675	10,10	2770	231,0	6,00	372,0	20,9	
260	250	+4/-2	260	+4/-4	7,5	±1,0	12,5	+2,5/-1,5	24,0	86,8	68,2	1,48	10450	836	11,0	3670	282,0	6,50	460,0	22,7	
280	270	+4/-2	280	+4/-4	8,0	±1,0	13,0	+2,5/-1,5	24,0	97,3	76,4	1,60	13670	1010	11,9	4760	340,0	7,00	556,0	24,6	
300	290	+4/-2	300	+4/-4	8,5	±1,0	14,0	+2,5/-1,5	27,0	112,0	88,3	1,72	18260	1260	12,7	6310	421,0	7,49	692,0	26,4	
320	310	+4/-2	300	+4/-4	9	±1,0	15,5	+2,5/-1,5	27,0	124,0	97,6	1,76	22930	1480	13,6	6990	466,0	7,49	814,0	28,2	
340	330	+4/-2	300	+4/-4	9,5	±1,0	16,5	+2,5/-1,5	27,0	133,0	105,0	1,79	27690	1680	14,4	7440	496,0	7,46	925,0	29,9	
360	350	+4/-2	300	+4/-4	10	±1,5	17,5	+2,5/-1,5	27,0	143,0	112,0	1,83	33090	1890	15,2	7890	526,0	7,43	1040,0	31,7	
400	390	+4/-2	300	+4/-4	11	±1,5	19	+2,5/-1,5	27,0	159,0	125,0	1,91	45070	2310	16,8	8560	571,0	7,34	1280,0	35,2	
450	440	+5/-3	300	+4/-4	11,5	±1,5	21	+2,5/-2,0	27,0	178,0	140,0	2,01	63720	2900	18,9	9470	631,0	7,29	1610,0	39,6	
500	490	+5/-3	300	+4/-4	12	±1,5	23	+2,5/-2,0	27,0	198,0	155,0	2,11	86970	3550	21,0	10370	691,0	7,24	1970,0	44,1	

I : Atalet momenti *Moment of Inertia*

W : Kesit modülü *Section modulus*

i : Atalet yarıçapları (ait olduğu eğme eksenlerine göre) *Radii of gyration (subscript x and y denoting the relevant axis)*

S_x, S_y : Yarım kesitin statik momenti *Moment of first order of half the cross section*

$S_x = S_y$: Basma ve çekme merkezleri arasındaki mesafe *Distance between centers of compression and tension*

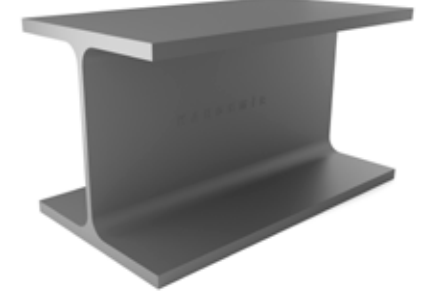
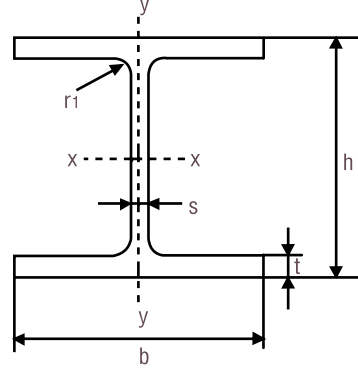
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. *Section, weight, surface area and static values are calculated according to the values in the table.*

HEB Profiller

HEB Profiles

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü Nominal Size HEB	Boyutlar ve Toleranslar Dimensions & Tolerances									Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters				
	h		b		s		t		r				x-x		y-y		
	h		b		s		t		r						I_x cm ⁴	W_x cm ³	i_x cm
120	120	+3/-2	120	+4/-2	6,5	±0,7	11,0	+2,5/-1,5	12,0	34,0	26,7	0,686	864	144	5,04	52,9	3,06
140	140	+3/-2	140	+4/-2	7,0	±1,0	12,0	+2,5/-1,5	12,0	43,0	33,7	0,805	1510	216	5,93	78,5	3,58
160	160	+3/-2	160	+4/-2	8,0	±1,0	13,0	+2,5/-1,5	15,0	54,3	42,6	0,918	2490	311	6,78	111,0	4,05
180	180	+3/-2	180	+4/-2	8,5	±1,0	14,0	+2,5/-1,5	15,0	65,3	51,2	1,04	3830	426	7,66	151,0	4,57
200	200	+4/-2	200	+4/-2	9,0	±1,0	15,0	+2,5/-1,5	18,0	78,1	61,3	1,15	5700	570	8,54	200,0	5,07
220	220	+4/-2	220	+4/-4	9,5	±1,0	16,0	+2,5/-1,5	18,0	91,0	71,5	1,27	8090	736	9,43	258,0	5,59
240	240	+4/-2	240	+4/-4	10,0	±1,5	17,0	+2,5/-1,5	21,0	106,0	83,2	1,38	11260	938	10,3	327,0	6,08
260	260	+4/-2	260	+4/-4	10,0	±1,5	17,5	+2,5/-1,5	24,0	118,0	93,0	1,50	14920	1150	11,2	395,0	6,58
280	280	+4/-2	280	+4/-4	10,5	±1,5	18,0	+2,5/-1,5	24,0	131,0	103,0	1,62	19270	1380	12,1	421,0	7,09
300	300	+4/-2	300	+4/-4	11,0	±1,5	19,0	+2,5/-1,5	27,0	149,0	117,0	1,73	25170	1680	13,0	571,0	7,58
320	320	+4/-2	300	+4/-4	11,5	±1,5	20,5	+2,5/-2,0	27,0	161,0	127,0	1,77	30820	1930	13,8	616,0	7,57
340	340	+4/-2	300	+4/-4	12	±1,5	21,5	+2,5/-2,0	27,0	171,0	134,0	1,81	36660	2160	14,6	646,0	7,53
360	360	+4/-2	300	+4/-4	12,5	±1,5	22,5	+2,5/-2,0	27,0	181,0	142,0	1,85	43190	2400	15,5	676,0	7,49
400	400	+4/-2	300	+4/-4	13,5	±1,5	24	+2,5/-2,0	27,0	198,0	155,0	1,93	57680	2880	17,1	721,0	7,40
450	450	+5/-3	300	+4/-4	14	±1,5	26	+2,5/-2,0	27,0	218,0	171,0	2,03	79890	3550	19,1	781,0	7,33
500	500	+5/-3	300	+4/-4	14,5	±1,5	28	+2,5/-2,0	27,0	239,0	187,0	2,12	107200	4290	21,2	842,0	7,27

I : Alanın ikinci momenti *Second moment of area*

W : Kesit modülü *Section modulus*

i : Atalet yarıçapları (ait olduğu eğme eksenlerine göre) *Radii of gyration (subscript x and y denoting the relevant axis)*

S_x : Yarım kesitin statik momenti *Moment of first order of half the cross section*

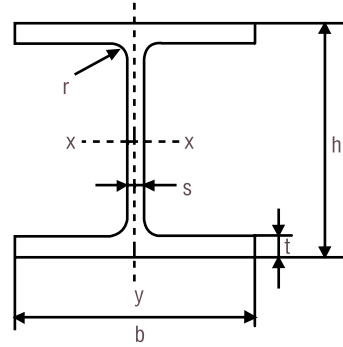
$S_x = I_x / S_x$: Basma ve çekme merkezleri arasındaki mesafe *Distance between centers of compression and tension.*

Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. *Section, weight, surface area and static values are calculated according to the values in the table.*

HEM Profiller - Geniş I Profiller / Takviyeli HEM Profiles - Wide I Profiles / Reinforced

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü Nominal Size HEM	Boyutlar ve Toleranslar Dimensions & Tolerances									Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters						S _x	S _x
	h		b		s		t		r				x-x			y-y				
	h		b		s		t		r				I _x cm ⁴	W _x cm ³	i _x cm	I _y cm ⁴	W _y cm ³	i _y cm		
120	140	+3/-2	126	+4/-2	12,5	±1,5	21,0	+2,5/-2,0	12,0	66,4	52,1	0,738	2020	288	5,51	703	112	3,25	175	11,5
140	160	+3/-2	146	+4/-2	13,0	±1,5	22,0	+2,5/-2,0	12,0	80,6	63,2	0,857	3290	411	6,39	1140	157	3,77	247	13,3
160	180	+3/-2	166	+4/-2	14,0	±1,5	23,0	+2,5/-2,0	15,0	97,1	76,2	0,970	5100	566	7,25	1760	212	4,26	337	15,1
180	200	+4/-2	186	+4/-2	14,5	±1,5	24,0	+2,5/-2,0	15,0	113,0	88,9	1,09	7480	748	8,13	2580	277	4,77	442	16,9
200	220	+4/-2	206	+4/-2	15,0	±1,5	25,0	+2,5/-2,0	18,0	131,0	103,0	1,20	10640	967	9,00	3650	354	5,27	568	18,7
220	240	+4/-2	226	+4/-4	15,5	±1,5	26,0	+2,5/-2,0	18,0	149,0	117,0	1,32	14600	1220	9,89	5010	444	5,79	710	20,6
240	270	+4/-2	248	+4/-4	18,0	±1,5	32,0	+2,5/-2,5	21,0	200,0	157,0	1,46	24290	1800	11,00	8150	657	6,39	1060	22,9
260	290	+4/-2	268	+4/-4	18,0	±1,5	32,5	+2,5/-2,5	24,0	220,0	172,0	1,57	31310	2160	11,90	10450	780	6,90	1260	24,8
280	310	+4/-2	288	+4/-4	18,5	±1,5	33,0	+2,5/-2,5	24,0	240,0	189,0	1,69	39550	2550	12,80	13160	914	7,40	1480	26,7
300	340	+4/-2	310	+4/-4	21,0	±2,0	39,0	+2,5/-2,5	27,0	303,0	238,0	1,83	59200	3480	14,00	19400	1250	8,00	2040	29,0

I : Atalet momenti Moment of Inertia

W : Kesit modülü Section modulus

i : Atalet yarıçapları (ait olduğu eğme eksenlerine göre) Radii of gyration (subscript x and y denoting the relevant axis)

S_x : Yarım kesitin statik momenti Moment of first order of half the cross section

S_x=I_x/S_x : Basma ve çekme merkezleri arasındaki mesafe Distance between centers of compression and tension.

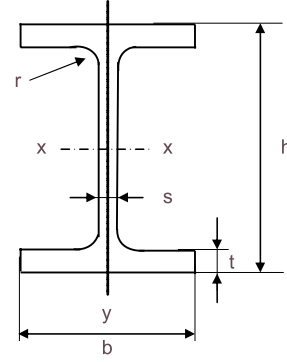
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. Section, weight, surface area and statical values are calculated according to the values in the table.

IPE Profiller - Orta Geniş I Profiller / Takviyeli

IPE Profiles - Mid Wide I Profiles / Reinforced

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü Nominal Size (IPE)	Boyutlar ve Toleranslar Dimension and Tolerances									Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters						S _x	S _y
	h		b		s	t	r	x-x					y-y							
	cm	mm	cm	mm	mm	mm	mm	I _x cm ⁴	W _x cm ³				İ _x cm	I _y cm ⁴	W _y cm ³	İ _y cm	cm ³	cm		
IPE A 120	117,6	+3/-2	64	+4/-1	3,8	± 0,7	5,1	+1,5/-0,5	7,0	11,03	8,7	0,472	257	44	4,83	22,4	7,00	1,42	-	-
IPE 120	120	+3/-2	64	+4/-1	4,4	± 0,7	6,3	+1,5/-0,5	7,0	13,20	10,4	0,475	318	53	4,90	27,7	8,65	1,45	30,4	10,5
IPE A 140	137,4	+3/-2	73	+4/-1	3,8	± 0,7	5,6	+1,5/-0,5	7,0	13,39	10,5	0,547	435	63	5,70	36,4	9,98	1,65	-	-
IPE 140	140	+3/-2	73	+4/-1	4,7	± 0,7	6,9	+2,0/-1,0	7,0	16,40	12,9	0,551	541	77,3	5,74	44,9	12,3	1,65	44,2	12,3
IPE A160	157	+3/-2	82	+4/-1	4,0	± 0,7	5,9	+1,5/-0,5	9,0	16,18	12,7	0,619	689	88	6,53	54,4	13,3	1,83	-	-
IPE 160	160	+3/-2	82	+4/-1	5,0	± 0,7	7,4	+2,0/-1,0	9,0	20,10	15,8	0,623	869	109	6,58	68,3	16,7	1,84	61,9	14,0
IPE A180	177	+3/-2	91	+4/-1	4,3	± 0,7	6,5	+2,0/-1,0	9,0	19,58	15,4	0,694	1063	120	7,37	81,9	18,0	2,05	-	-
IPE 180	180	+3/-2	91	+4/-1	5,3	± 0,7	8,0	+2,0/-1,0	9,0	23,90	18,8	0,698	1320	146	7,42	101	22,2	2,05	83,2	15,8
IPE A 200	197	+4/-2	100	+4/-1	4,5	± 0,7	7,0	+2,0/-1,0	12,0	23,47	18,4	0,764	1591	162	8,23	117	23,4	2,23	-	-
IPE 200	200	+4/-2	100	+4/-1	5,6	± 0,7	8,5	+2,0/-1,0	12,0	28,50	22,4	0,768	1940	194	8,26	142	28,5	2,24	110	17,6
IPE A 220	217	+4/-2	110	+4/-1	5,0	± 0,7	7,7	+2,0/-1,0	12,0	28,26	22,2	0,843	2317	214	9,05	171	31,2	2,46	-	-
IPE 220	220	+4/-2	110	+4/-1	5,9	± 0,7	9,2	+2,0/-1,0	12,0	33,40	26,2	0,848	2770	252	9,11	205	37,3	2,48	143	19,4
IPE A 240	237	+4/-2	120	+4/-2	5,2	± 0,7	8,3	+2,0/-1,0	15,0	33,31	26,2	0,918	3290	278	9,94	240	40,0	2,68	-	-
IPE 240	240	+4/-2	120	+4/-2	6,2	± 0,7	9,8	+2,0/-1,0	15,0	39,10	30,7	0,922	3890	324	9,97	284	47,3	2,69	183	21,2
IPE A 270	267	+4/-2	135	+4/-2	5,5	± 0,7	8,7	+2,0/-1,0	15,0	39,20	30,7	1,037	4917	368	11,2	358	53,0	3,02	-	-
IPE 270	270	+4/-2	135	+4/-2	6,6	± 0,7	10,2	+2,5/-1,5	15,0	45,90	36,1	1,040	5790	429	11,2	420	62,2	3,02	242	23,9
IPE A 300	297	+4/-2	150	+4/-2	6,1	± 0,7	9,2	+2,0/-1,0	15,0	46,50	36,5	1,156	7173	483	12,4	519	69,2	3,34	-	-
IPE 300	300	+4/-2	150	+4/-2	7,1	± 1,0	10,7	+2,5/-1,5	15,0	53,80	42,2	1,16	8360	557	12,5	604	80,5	3,35	314	26,6
IPE A 330	327	+4/-2	160	+4/-2	6,5	± 0,7	10	+2,5/-1,5	18,0	54,70	43,0	1,25	10230	626	13,7	685	85,6	3,54	-	-
IPE 330	330	+4/-2	160	+4/-2	7,5	± 1,0	11,5	+2,5/-1,5	18,0	62,60	49,1	1,25	11770	713	13,7	788	98,5	3,55	402	29,3
IPE A 360	357,6	+4/-2	170	+4/-2	6,6	± 0,7	11,5	+2,5/-1,5	18,0	64,00	50,2	1,35	14520	812	15,1	944	111	3,84	-	-
IPE 360	360	+4/-2	170	+4/-2	8,0	± 1,0	12,7	+2,5/-1,5	18,0	72,70	57,1	1,35	16270	904	15,0	1040	123	3,79	510	31,9
IPE A 400	397	+4/-2	180	+4/-2	7,0	± 1,0	12	+2,5/-1,5	21,0	73,10	57,4	1,46	20290	1022	16,7	1144	130	4,00	-	-
IPE 400	400	+4/-2	180	+4/-2	8,6	± 1,0	13,5	+2,5/-1,5	21,0	84,50	66,3	1,47	23130	1160	16,5	1320	146	3,95	654	35,4
IPE A 450	447	+5/-3	190	+4/-2	7,6	± 1,0	13,1	+2,5/-1,5	21,0	85,60	67,2	1,60	29760	1331	18,7	1502	158	4,19	-	-
IPE 450	450	+5/-3	190	+4/-2	9,4	± 1,0	14,6	+2,5/-1,5	21,0	98,80	77,6	1,61	33740	1500	18,5	1680	176	4,12	851	39,7
IPE A 500	497	+5/-3	200	+4/-2	8,4	± 1,0	14,5	+2,5/-1,5	21,0	101,0	79,4	1,74	42930	1728	20,6	1939	194	4,38	-	-
IPE 500	500	+5/-3	200	+4/-2	10,2	± 1,5	16,0	+2,5/-1,5	21,0	116,0	90,7	1,74	48200	1930	20,4	2140	214	4,31	1100	43,9
IPE A 550	547	+5/-3	210	+4/-2	9,0	± 1,0	15,7	+2,5/-1,5	24,0	117,0	92,1	1,88	59980	2193	22,6	2432	232	4,55	-	-
IPE 550	550	+5/-3	210	+4/-2	11,1	± 1,5	17,2	+2,5/-1,5	24,0	134,0	106,6	1,88	67120	2440	22,4	2670	254	4,45	1390	48,2
IPE A 600	597	+5/-3	220	+4/-4	9,8	± 1,0	17,5	+2,5/-1,5	24,0	137,0	108,0	2,01	82920	2778	24,6	3116	283	4,77	-	-
IPE 600	600	+5/-3	220	+4/-4	12,0	± 1,5	19,0	+2,5/-1,5	24,0	156,0	122,0	2,01	92080	3070	24,3	3390	308	4,66	1760	52,4

I : Atalet momenti Moment of Inertia

W : Kesit modülü Section modulus

İ : Atalet yarıçapları (ait olduğu eğme eksenlerine göre) Radii of gyration (subscript x and y denoting the relevant axis)

S_x : Yarım kesitin statik momenti Moment of first order of half the cross section

S_x=I_x/S_x : Basma ve çekme merkezleri arasındaki mesafe Distance between centers of compression and tension.

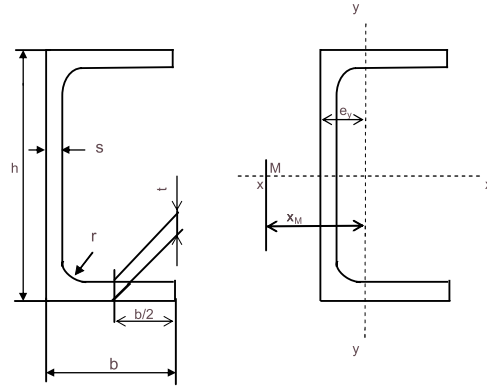
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. Section, weight, surface area and static values are calculated according to the values in the table.

Paralel Flanşlı U Profiller (UPE / UAP)

Parallel Flange U Profiles (UPE / UAP)

Boyut Standardı
Dimension Standart
TS EN 10279

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü Nominal Size (UPE)	Boyutlar ve Toleranslar Dimensions & Tolerances								Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters						S _x cm ³	S _y cm	Boyut Dimensions		
	h		b		s		t ¹⁾					x-x			y-y					e _y cm	x _M cm	
	mm	±	mm	±	mm	±	mm	±				mm	mm	cm	cm ⁴	cm ³	cm					cm ⁴
80	80	± 2,0	50	± 1,5	4,0	± 0,50	7,0	-0,5	10	10,1	7,90	0,343	107	26,8	3,26	25,5	8,0	1,59	15,6	6,87	1,82	3,71
100	100	± 2,0	55	± 2,0	4,5	± 0,50	7,5	-0,5	10	12,5	9,82	0,402	207	41,4	4,07	38,3	10,6	1,75	24,0	8,62	1,91	3,93
120	120	± 2,0	60	± 2,0	5,0	± 0,50	8,0	-0,5	12	15,4	12,1	0,460	364	60,6	4,86	55,5	13,8	1,90	35,2	10,3	1,98	4,12
140	140	± 2,0	65	± 2,0	5,0	± 0,50	9,0	-0,5	12	18,4	14,5	0,520	600	85,6	5,71	78,8	18,2	2,07	49,4	12,1	2,17	4,54
160	160	± 2,0	70	± 2,0	5,5	± 0,50	9,5	-0,5	12	21,7	17,0	0,579	911	114	6,48	107	22,6	2,22	65,8	13,9	2,27	4,76
180	180	± 2,0	75	± 2,0	5,5	± 0,50	10,5	-1,0	12	25,1	19,7	0,639	1350	150	7,34	144	28,6	2,39	86,5	15,7	2,47	5,19
200	200	± 2,0	80	± 2,0	6,0	± 0,50	11,0	-1,0	13	29,0	22,8	0,697	1910	191	8,11	187	34,5	2,54	110	17,4	2,56	5,41
220	220	± 3,0	85	± 2,0	6,5	± 0,50	12,0	-1,0	13	33,9	26,6	0,756	2680	244	8,90	247	42,5	2,70	141	19,1	2,70	5,70
240	240	± 3,0	90	± 2,0	7,0	± 0,50	12,5	-1,0	15	38,5	30,2	0,813	3600	300	9,67	311	50,1	2,84	173	20,8	2,79	5,91
270	270	± 3,0	95	± 2,0	7,5	± 0,50	13,5	-1,0	15	44,8	35,2	0,892	5250	389	10,80	401	60,7	2,99	226	23,3	2,89	6,14
300	300	± 3,0	100	± 2,0	9,5	± 0,50	15,0	-1,0	15	56,6	44,4	0,968	7820	522	11,80	538	75,6	3,08	307	25,5	2,89	6,03
330	330	± 3,0	105	± 2,5	11,0	± 0,70	16,0	-1,5	18	67,8	53,2	1,043	11010	667	12,70	682	89,7	3,17	396	27,8	2,90	6,00
360	360	± 3,0	110	± 2,5	12,0	± 0,70	17,0	-1,5	18	77,9	61,2	1,121	14830	824	13,80	844	105	3,29	491	30,2	2,97	6,12
400	400	± 3,0	115	± 2,5	13,5	± 0,70	18,0	-1,5	18	91,9	72,2	1,218	20980	1050	15,10	1050	123	3,37	631	33,2	2,98	6,06

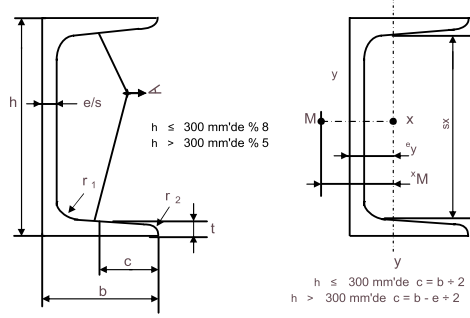
- 1) : Müsaade edilen t(±) toleransı, ağırlık toleransı ile sınırlanmıştır. t(±) tolerance is limited weight tolerances
J : Atalet momenti Moment of inertia
W : Kesit modülü Section modulus
i : Jirasyon yarıçapı Radius of gyration
S_x : Yarım kesitin statik momenti Moment of first order of half the cross section
S_x=J_x/S_x : Basma ve çekme merkezleri arasındaki mesafe Distance between centers of compression and tension.
x_M : Kesme merkezinin (M) y-y eksenine mesafesi Distance of shear centre (M) from y-y axis

NPU Profiller

NPU Profiles

Boyut Standardı
Dimension Standart
TS EN 10279

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



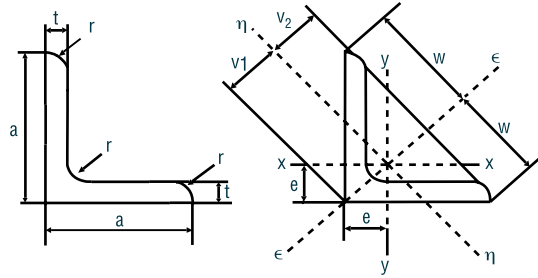
Anma Ölçüsü Nominal Size (NPU)	Boyutlar ve Toleranslar Dimensions & Tolerances								Kesit Alanı Section F (cm ²)	Birim Kütle Unit Mass G (kg/m)	Yüzey Alanı Surface Area U (m ² /m)	Eğme Eksenleri için ²⁾ For Bending Axes ²⁾						S _x ³⁾ cm ³	S _y ⁴⁾ cm	y-y Eksenli Uzaklığı Axis Distance e _y cm	X _m ⁵⁾
	h	b	s	t ¹⁾	r ₁	r ₂	x-x					y-y									
							J _x cm ⁴	W _x cm ³				i _x cm	J _y cm ⁴	W _y cm ³	i _y cm						
120	120 ± 2,0	55 ± 2,0	7,0 ± 0,5	9,0 -0,5	9,0	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 ± 2,0	60 ± 2,0	7,0 ± 0,5	10,0 -0,5	10,0	5,0	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 ± 2,0	65 ± 2,0	7,5 ± 0,5	10,5 -1	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 ± 2,0	70 ± 2,0	8,0 ± 0,5	11,0 -1	11,0	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 ± 2,0	75 ± 2,0	8,5 ± 0,5	11,5 -1	11,5	6,0	32,2	25,3	0,661	1910	191	7,70	148	27,0	2,14	114	16,8	2,01	3,94		
220	220 ± 3,0	80 ± 2,0	9,0 ± 0,5	12,5 -1	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 ± 3,0	85 ± 2,0	9,5 ± 0,5	13,0 -1	13,0	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 ± 3,0	90 ± 2,0	10,0 ± 0,5	14,0 -1	14,0	7,0	48,4	37,9	0,834	4820	371	9,99	317	47,7	2,56	221	21,8	2,36	4,66		
280	280 ± 3,0	95 ± 2,0	10,0 ± 0,5	15,0 -1	15,0	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 ± 3,0	100 ± 2,0	10,0 ± 0,5	16,0 -1,5	16,0	8,0	58,8	46,2	0,950	8030	535	11,7	495	67,8	2,90	316	25,4	2,70	5,41		
320	320 ± 3,0	100 ± 2,0	14,0 ± 0,7	17,5 -1,5	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 ± 3,0	100 ± 2,0	14,0 ± 0,7	16,0 -1,5	16,0	8,0	77,3	60,6	1,05	12840	734	12,9	570	75,0	2,72	459	28,6	2,40	4,45		
380	380 ± 3,0	102 ± 2,5	13,5 ± 0,7	16,0 -1,5	16,0	8,0	80,4	63,1	1,11	15760	829	14,0	615	78,7	2,77	507	31,1	2,38	4,58		
400	400 ± 3,0	110 ± 2,5	14,0 ± 0,7	18,0 -1,5	18,0	9,0	91,5	71,8	1,18	20350	1020	14,9	846	102	3,04	618	32,9	2,65	5,11		

- 1) Müsaade edilen artı toleransı, ağırlık toleransları ile sınırlandırılmıştır. Allow (+) tolerance is limited weight tolerances.
2) J : Atalet Momenti. Moment of inertia.
W : Mukavemet momenti. Moment of resistance.
i : Atalet yarıçapları, ait olduğu eğme eksenlerine göredir. Radius of gyration, subscripts x and y denoting the relevant axis.
3) S_x : Yarım kesitin statik momenti. Moment of first order of half cross section.
4) S_x : j_x / S_y : Basma ve çekme orta noktaları uzaklıkları. Distance between centres of compression and tension.
5) X_M : M Kesme merkezinin y-y eksenine olan uzaklığı. Distance of share centre M from y-y axis.

Eşkenar Köşebentler Equal Angles (Leq)

Boyut Standardı
Dimension Standart
EN 10056

Kalite Standardı
Quality Standart
EN 10025-1 / 2



Anma Ölçüsü Nominal Size (Leq)	Boyutlar ve Toleranslar Dimensions & Tolerances			Kesit Alanı Section	Birim Kütle Unit Mass	Ağırlık Merkezinden Uzaklık Distance From Center of Gravity					Eksenlerin Kesit Özellikleri Section Specifications of Axes							
											x-x = y-y			u-u		v-v		
	a	t	r	F (cm ²)	G (kg/m)	$c_x = c_y$ cm	c_u cm	c_v cm	$I_x = I_y$ cm ⁴	$r_x = r_y$ cm	$z_x = z_y$ cm ³	I_u cm ⁴	r_u cm	I_v cm ⁴	r_v cm	Z_v cm ³		
120x120x10	120	± 3,0	10	± 0,75	13,0	23,2	18,2	3,31	8,49	4,69	313	3,67	36,0	497	4,63	129	2,36	27,5
120x120x12	120	± 3,0	12	± 1,00	13,0	27,5	21,6	3,40	8,49	4,80	368	3,65	42,7	584	4,60	152	2,35	31,6
130x130x12	130	± 3,0	12	± 1,00	14,0	30,0	23,6	3,64	9,19	5,15	472	3,97	50,4	750	5,00	194	2,54	37,7
150x150x10	150	± 3,0	10	± 0,75	16,0	29,3	23,0	4,03	10,60	5,71	624	4,62	56,9	990	5,82	258	2,97	45,1
150x150x12	150	± 3,0	12	± 1,00	16,0	34,8	27,3	4,12	10,60	5,83	737	4,60	67,7	1170	5,80	303	2,95	52,0
150x150x15	150	± 3,0	15	± 1,00	16,0	43,0	33,8	4,25	10,60	6,01	898	4,57	83,5	1430	5,76	370	2,93	61,6
160x160x15	160	± 4,0	15	± 1,00	17,0	46,1	36,2	4,49	11,30	6,35	1100	4,88	95,6	1750	6,15	453	3,14	71,3
180x180x16	180	± 4,0	16	± 1,20	18,0	55,4	43,5	5,02	12,70	7,11	1680	5,51	130,0	2690	6,96	679	3,50	95,5
180x180x18	180	± 4,0	18	± 1,20	18,0	61,9	48,6	5,10	12,70	7,22	1870	5,49	145,0	2960	6,92	768	3,52	106,0
200x200x16	200	± 4,0	16	± 1,20	18,0	61,8	48,5	5,52	14,10	7,81	2340	6,16	162,0	3720	7,76	960	3,94	123,0
200x200x18	200	± 4,0	18	± 1,20	18,0	69,1	54,3	5,60	14,10	7,92	2600	6,13	181,0	4150	7,75	1050	3,90	133,0
200x200x20	200	± 4,0	20	± 1,20	18,0	76,3	59,9	5,68	14,10	8,04	2850	6,11	199,0	4530	7,70	1170	3,92	146,0
200x200x24	200	± 4,0	24	± 1,20	18,0	90,6	71,1	5,84	14,10	8,26	3330	6,06	235,0	5280	7,64	1380	3,90	167,0

I : Atalet momenti / Moment of inertia

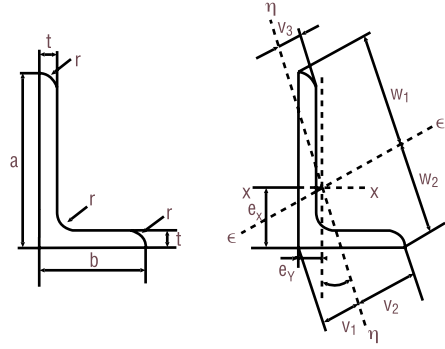
Z : Kesit modülü / Section modulus

r : Jirasyon yarıçapı (X,Y,U ve V eksenlerdir) / Radius of gyration (X,Y,U ve V axes)

Çeşitkenar Köşebentler Unequal Angels (Luneq)

Boyut Standardı
Dimension Standart
EN 10056

Kalite Standardı
Quality Standart
EN 10025-1 / 2



Anma Ölçüsü Nominal Size (Luneq)	Boyutlar ve Toleranslar Dimension and Tolerances				Kesit Alanı Section F (cm ²)	Birim Kütle Unit Mass (kg/m)	Ağırlık Merkezinden Uzaklık Distance From Center of Gravity				Eksenlerin Kesit Özellikleri Section Specifications of Axes								V - V Eksenlerinin Eğimi Slope of Axes Tan α					
	a	b	t	r			C _x cm	C _y cm	C _u cm	C _v cm	x-x		y-y		u-u		v-v							
											I _x cm ⁴	r _x cm	Z _x cm ³	I _y cm ⁴	r _y cm	Z _y cm ³	I _u cm ⁴	r _u cm		I _v cm ⁴	r _v cm			
120x80x8	120	±3.0	80	±2.0	8	± 0.75	11	15,5	12,2	3,83	1,87	8,23	4,23	226	3,82	27,6	80,8	2,28	13,2	260	4,10	46,6	1,74	0,437
120x80x10	120	±3.0	80	±2.0	10	± 0.75	11	19,1	15,0	3,92	1,95	8,19	4,21	276	3,80	34,1	98,1	2,26	16,2	317	4,07	56,8	1,72	0,435
120x80x12	120	±3.0	80	±2.0	12	± 1.0	11	22,7	17,8	4,00	2,03	8,15	4,20	323	3,77	40,4	114	2,24	19,1	371	4,04	66,7	1,71	0,431
125x75x8	125	±3.0	75	±2.0	8	± 0.75	11	15,5	12,2	4,14	1,68	8,44	4,20	247	4,00	29,6	67,6	2,09	11,6	274	4,21	40,9	1,63	0,360
125x75x10	125	±3.0	75	±2.0	10	± 0.75	11	19,1	15,0	4,23	1,76	8,39	4,17	302	3,97	36,5	82,1	2,07	14,3	334	4,18	49,9	1,61	0,357
125x75x12	125	±3.0	75	±2.0	12	± 1.0	11	22,7	17,8	4,31	1,84	8,33	4,15	354	3,95	43,2	95,5	2,05	16,9	391	4,15	58,5	1,61	0,354
135x65x8	135	±3.0	65	±2.0	8	± 0.75	11	15,5	12,2	4,78	1,34	8,79	3,95	291	4,34	33,4	45,2	1,71	8,75	307	4,45	29,4	1,38	0,245
135x65x10	135	±3.0	65	±2.0	10	± 0.75	11	19,1	15,0	4,88	1,42	8,72	3,91	356	4,31	41,3	54,7	1,69	10,8	375	4,43	35,9	1,37	0,243
150x75x9	150	±3.0	75	±2.0	9	± 0.75	12	19,6	15,4	5,26	1,57	9,82	4,50	455	4,82	46,7	77,9	1,99	13,1	483	4,96	50,2	1,60	0,261
150x75x10	150	±3.0	75	±2.0	10	± 0.75	12	21,7	17,0	5,31	1,61	9,79	4,48	501	4,81	51,6	85,6	1,99	14,5	531	4,95	55,1	1,60	0,261
150x75x12	150	±3.0	75	±2.0	12	± 1.0	12	25,7	20,2	5,40	1,69	9,72	4,44	588	4,78	61,3	99,6	1,97	17,1	623	4,92	64,7	1,59	0,258
150x75x15	150	±3.0	75	±2.0	15	± 1.0	12	31,7	24,8	5,52	1,81	9,63	4,40	713	4,75	75,2	119	1,94	21,0	753	4,88	78,6	1,58	0,253
150x90x10	150	±3.0	90	±2.0	10	± 0.75	12	23,2	18,2	5,00	2,04	10,1	5,03	533	4,80	53,3	146	2,51	21,0	591	5,05	88,3	1,95	0,360
150x90x12	150	±3.0	90	±2.0	12	± 1.0	12	27,5	21,6	5,08	2,12	10,1	5,00	627	4,77	63,3	171	2,49	24,8	694	5,02	104	1,94	0,358
150x90x15	150	±3.0	90	±2.0	15	± 1.0	12	33,9	26,6	5,21	2,23	9,98	4,98	761	4,74	77,7	205	2,46	30,4	841	4,98	126	1,93	0,354
150x100x10	150	±3.0	100	±2.0	10	± 0.75	12	24,2	19,0	4,81	2,34	10,3	5,29	553	4,79	54,2	199	2,87	25,9	637	5,13	114	2,17	0,438
150x100x12	150	±3.0	100	±2.0	12	± 1.0	12	28,7	22,5	4,89	2,42	10,2	5,28	651	4,76	64,4	233	2,85	30,7	749	5,11	134	2,16	0,436
200x100x10	200	±4.0	100	±2.0	10	± 0.75	15	29,2	23,0	6,93	2,01	13,2	6,05	1220	6,46	93,2	210	2,68	26,3	1290	6,65	135	2,15	0,263
200x100x12	200	±4.0	100	±2.0	12	± 1.0	15	34,8	27,3	7,03	2,10	13,1	6,00	1440	6,43	111	247	2,67	31,3	1530	6,63	159	2,14	0,262
200x100x15	200	±4.0	100	±2.0	15	± 1.0	15	43,0	33,75	7,16	2,22	13,0	5,84	1758	6,4	137	299	2,64	38,5	1864	6,59	193	2,12	0,260
200x150x12	200	±4.0	150	±3.0	12	± 1.0	15	40,8	32,0	6,08	3,61	13,9	7,34	1650	6,36	119	803	4,44	70,5	2030	7,04	430	3,25	0,552
200x150x15	200	±4.0	150	±3.0	15	± 1.0	15	50,5	39,6	6,21	3,73	13,9	7,33	2022	6,33	147	979	4,40	86,9	2476	7,00	526	3,23	0,551

I : Atalet momenti / Moment of inertia

Z : Kesit modülü / Section modulus

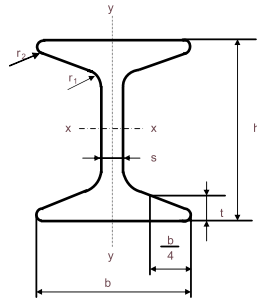
r : Jirasyon yarıçapı (X,Y,U ve V eksenlerdir) / Radius of gyration (X,Y,U ve V axes)

GI ve TH Maden Direkleri

GI and TH Sections for Mine Support

Boyut Standardı
Dimension Standart
DIN 21541

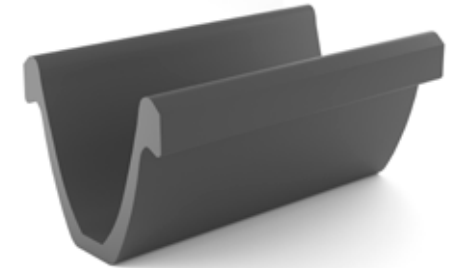
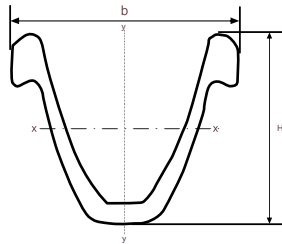
Kalite Standardı
Quality Standart
EN 10025-1 / 2



Kesiti Section GI	Boyutlar ve Toleranslar Dimensions & Tolerances										Eğim Slope %	Kesit Alanı Section F (cm ²)	Birim Kütle Unit Mass G (kg/m)	Statik Parametler Static Parameters							
	h mm		b mm		s mm		t mm		r1					r2		x-x			x-y		
		±		±		±		±		±					±	L _x cm ⁴	W _x cm ³	i _x cm	L _y cm ⁴	W _y cm ³	i _y cm
GI 110	110	±2,0	84	±1,5	10,0	±0,6	14,0	-1,0	14,0	5,0	33,0	31,1	24,5	570	103	4,28	103	24,5	1,82		
GI 140	140	±2,0	110	±1,5	12,0	±0,7	19,0	-1,5	17,0	8,0	33,0	31,0	41,6	1568	227	5,47	305	57,3	2,44		

Boyut Standardı
Dimension Standart
DIN 21530

Kalite Standardı
Quality Standart
EN 10025

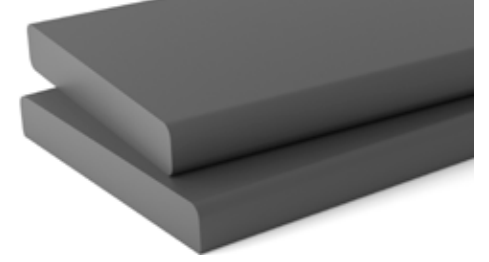
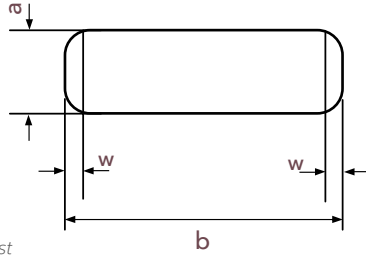


Kesiti Section TH	Boyutlar ve Toleranslar Dimensions & Tolerances								Kesit Alanı Section F (cm ²)	Birim Kütle Unit Mass G (kg/m)	Statik Parametler Static Parameters					
	H mm		B mm		b mm		h1				h2		x-x		x-y	
		±		±		±		±				±	W _x cm ³	L _x cm	W _y cm ³	L _y cm
70/29	124,0	±2,0	150	±1,5	44,0	33,0	15,0	37,0	29,0	94	616	103	775			
70/34	136,5	±2,0	171	±1,5	51,0	34,0	15,5	43,1	33,8	128	892	141	1205			

Platinalar Platinas

Boyut Standardı
Dimension Standart
DIN 59200

Kalite Standardı
Quality Standart
EN 10025-1/2
Müşteri talebi ile diğer kaliteler
Other qualities according to customer's request



Nominal Et Kalınlığı <i>Nominal Thickness</i>		Sapma Değerleri <i>Tolerances</i>	
≥ mm	≤ mm	A Sınıf <i>Class A</i>	B Sınıf <i>Class B</i>
20	25	+ 0,9	+ 1,1
		- 0,5	- 0,3
25	30	+ 1,0	+ 1,3
		- 0,6	- 0,3
30	40	+ 1,1	+ 1,5
		- 0,7	- 0,3
40	50	+ 1,1	+ 1,7
		- 0,9	- 0,3
50	60	+ 1,2	+ 1,9
		- 1,0	- 0,3
60	80	+ 1,6	+ 2,3
		- 1,0	- 0,3
80		+ 3,0	+ 3,7
		- 1,0	- 0,3

Nominal Kalınlık <i>Nominal Thickness</i> a mm	Maks. W, Sapması <i>Max W, Deviation</i>	
	Normal Sapma <i>Normal Deviation</i>	Daraltılmış Sapma <i>Reduced Deviation</i>
≤ 13	2,0	0,5
13 - 18	3,0	0,75
> 18	3,5	0,9

Nominal Genişlik <i>Nominal Width</i>		Maksimum Kalınlık Değişimi <i>Maximum Thickness Variation</i>
≥ mm	≤ mm	
150	520	0,5

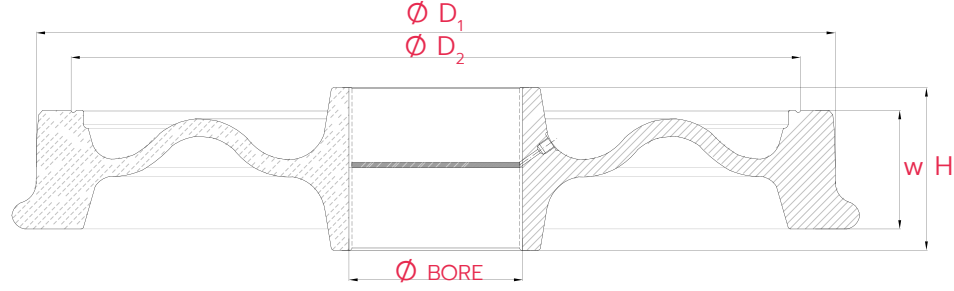
* Tolerans sınıfı, sipariş aşamasında belirtilmelidir.

* The tolerance class must be specified at the ordering stage.

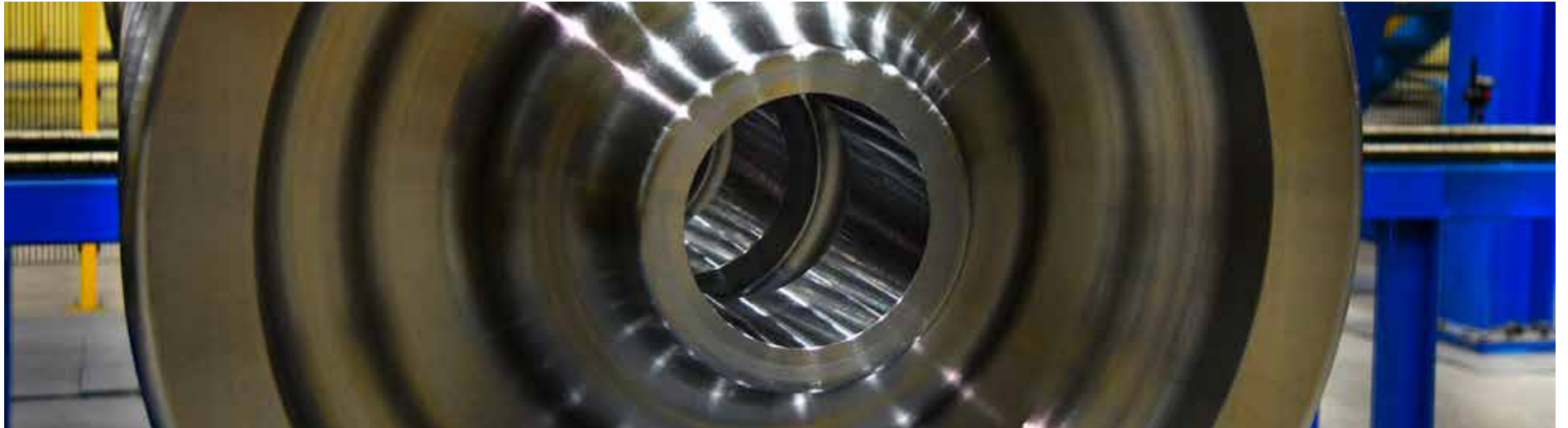
Demiryolu Tekerleri Railway Wheels

Kalite Standardı
Quality Standart
EN 13262+A2

Çelik Kaliteleri
Steel Grades
ER7
ER8



Teker Tipi Wheel Type	Ürün Product	Dış Çap Kapsamı Tread Diameter (D ₁)	İç Çap Kapsamı Center Diameter (D ₂)	İspit Geniřlięi Rim Width (w)	Göbek Çapı Hub Width (BORE)	Göbek Geniřlięi Hub Width (H)	Çelik Kalitesi Steel Grade	Standart Standard	Aks Yüğü Axle Load (t)
BA 004	Yük Vagonu Freight Wagon	920 mm	840 mm	135 mm	200 mm	185 mm	ER7	EN 13262+A2	22,5
BA 303	Yük Vagonu Freight Wagon	920 mm	840 mm	135 mm	205 mm	186 mm	ER7	EN 13262+A2	25
78-K-140	Yük Vagonu Freight Wagon	920 mm	840 mm	135 mm	185 mm	185 mm	ER7	EN 13262+A2	20
78-K-139	Marmaray Marmaray	860 mm	785 mm	135 mm	204 mm	178 mm	ER8	EN 13262+A2	18

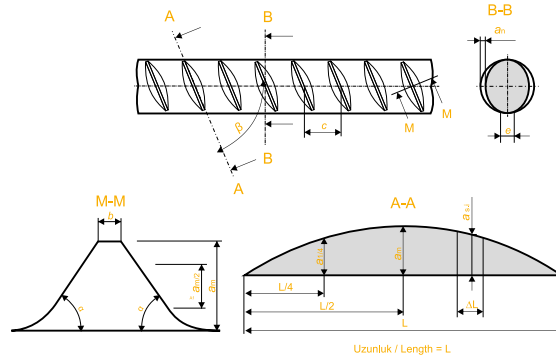


Nervürlü - Beton Donatı Çelikleri

Rebar - Reinforcing Steels of Concrete

Boyut Standardı
Dimension Standart
TS 708

Kalite Standardı
Quality Standart
TS 708



Nervür Ölçü ve Toleransları
Rib Dimension and Tolerance

Nervür Çapı Rib Diameter (d)	Boyuna Nervür (Fital) Yüksekliği Longitudinal Rib Height Max.	Enine Nervür Yüksekliği Latitudinal Rib Height (h)	Enine Nervür Aralığı Latitudinal Rib Space (c)	Nervür Eğimi Aralığı Latitudinal Rib Inclination Space (β)
8	1,20	0,24-1,10	3,2-9,6	35°-75°
10	1,50	0,30-1,50	4,0-12,0	35°-75°
12	1,80	0,36-1,80	4,8-14,4	35°-75°
14	2,10	0,42-2,10	5,6-16,8	35°-75°
16	2,40	0,48-2,40	6,4-19,2	35°-75°
18	2,70	0,54-2,70	7,2-21,6	35°-75°
20	3,00	0,60-3,00	8,0-24,0	35°-75°
22	3,30	0,66-3,30	8,8-26,4	35°-75°
25	3,75	0,75-3,75	10,0-30,0	35°-75°
26	3,90	0,78-3,90	10,4-31,2	35°-75°
28	4,20	0,84-4,20	11,2-33,6	35°-75°
30	4,50	0,90-4,50	12,0-36,0	35°-75°
32	4,80	0,96-4,80	12,8-38,4	35°-75°
34	5,10	1,02-5,10	13,6-40,8	35°-75°
36	5,40	1,08-5,40	14,4-43,2	35°-75°
38	5,70	1,14-5,70	15,2-45,6	35°-75°
40	6,00	1,20-6,00	16,8-48,0	35°-75°

Nervürlü - Beton Donatı Çelikleri

Rebar - Reinforcing Steels of Concrete

Mekanik Özellikler

Mechanical Specifications

Tip Type	Düz Yüzeyle Non-Ribbed			Nervürlü Ribbed		
	Sınıf Class	S220	S420	B420B	B420C	B500B
Akma Dayanımı Yield Strength Re (N/mm ²)(Min.)	220	420	420	420	500	500
Çekme Dayanımı Tensile Strength Rm (N/mm ²)(Min.)	340	500	-	-	-	-
Rm / Re	min. 1,20	min. 1,15	min. 1,08	≥1,15 ≤1,35	min.1,08	≥1,15 ≤1,35
Deneysel Akma Dayanımı / Karakteristik Akma Dayanımı Oranı React./Renom. (Max)	-	1,30	-	1,30	-	1,30
Kopma Uzunluğu Elongation (Min) A ₅ (%)	18	10	12	12	12	12
Maks. Yükte Toplam Uzunluk Max. Load Total Elongation (Min.) Agt(%)	-	-	5	7,5	5	7,5

Ürün Sıcak Markalamamız

Product Hot Marking

X : TSE 708-2016 Standardı Gereği TSE 708-2016 Standard Requirement

9 : Ülke kodu (Türkiye) Country Code (Turkey)

G : G Uygunluk belgesi sonrasında kullanılan işaret G Conformity Certificate Sign

1 : Şirketimizin kodu (*) Our Company Code (*)

(*) Belgelendirme kuruluşunun şirketimize verdiği kod. Ülkemizde ilk G uygunluk alan şirket olduğumuzdan dolayı 1 numara verilmiştir.

It is the code given by the Certification Body to our company. Since we are the first company in our country that has the certificate of G conformity, we are given the number 1.



Ayrıca ürünlerimizin üzerine ayırt edilebilmesi için aşağıdaki şekilde markamız yazılmaktadır. In addition, our brand is written on our products to distinguish them in the following way.



Anma Çapı ve Birim Kütle Toleransı

Nominal Diameter and Weight Tolerance

Anma Çapı Nominal Diameter (d)	Anma Kütle Nominal Weight (g/m)	Kesit Alanı Section Area (mm ²)
8	0,395	50,3
10	0,617	78,5
12	0,888	113,0
14	1,210	154,0
16	1,580	201,0
18	2,000	254,4
20	2,470	314,0
22	2,985	380,0
25	3,850	491,0
26	4,168	531,0
28	4,830	616,0
30	5,550	706,5
32	6,310	804,0
34	7,124	907,5
36	7,986	1017,4
38	8,898	1133,5
40	9,860	1256,0



Boyut Standardı

Dimension Standart

TS 9914

TS 9016

Kalite Standardı

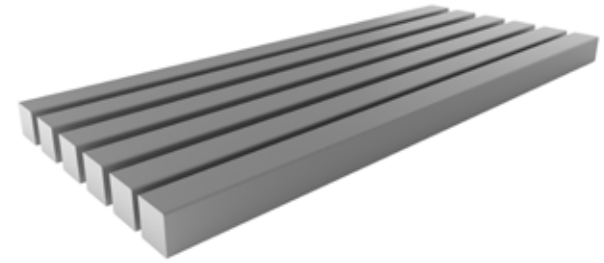
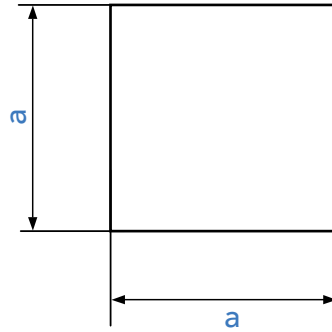
Quality Standart

EN 10025

TS 708

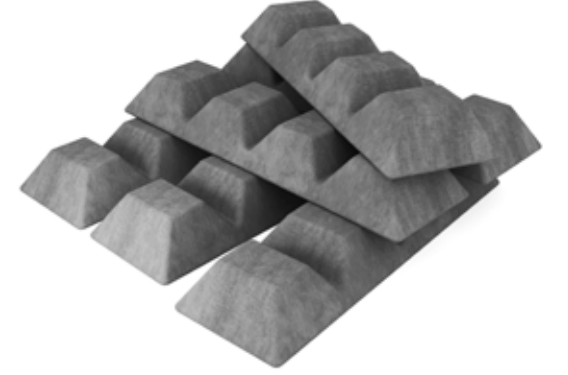
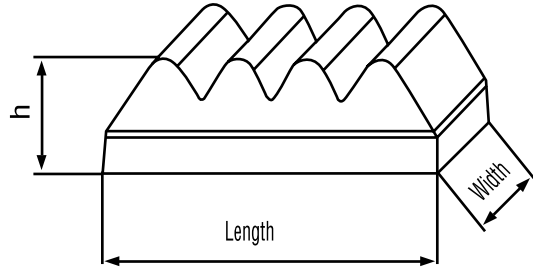
Müşteri talebi ile diğer kaliteler

Other qualities according to customer's request



Anma Ölçüsü Nominal Size	Boyutlar Dimension	Anma Ölçüsü Toleransı	Kesit Alanı Section	Birim Kütle Unit Mass	Boy* Finished Length*	Tolerans Tolerance	Köşe Radyus Corner Radius
	a (mm)	± (mm)	S (cm ²)	G (Kg/m)	L (m)	± (mm)	R max.(mm)
100x100	100	2.5	98,76	77,53	6-12	100	12
120x120	120	2.5	142,76	112,07	6-12	100	12
130x130	130	3.0	167,76	132,76	6-12	100	12
150x150	150	3.0	223,06	180,00	6-12	100	15
170x170	170	3.0	287,05	224,05	6-12	100	15
200x200	200	3.0	398,05	310,05	6-12	100	15

Pikler Pig Irons



Pik Kimyasal Analizleri (Sınıflandırılması)
Pig Chemical Analysis (Classification)

Cinsi Type	Si	Mn	S	C	P
K.SFERO-1	0,90 (Max.)	0,25 (Max.)	0,015 (Max.)	3,5-4,5	0,060 (Max.)
K.SFERO-2	0,90 (Max.)	0,25-0,40	0,015-0,020	3,5-4,5	0,060 (Max.)
K.SFERO-3	0,90 (Max.)	0,40-0,60	0,020-0,025	3,5-4,5	0,060 (Max.)
H1	2,01 (Min.)	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
H2 ÖZEL H2 SPECIAL	1,70-2,00	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
H2	1,40-1,70	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
H2 YK H2 HS	1,40-1,70	0,6-1,2	0,060 (Min.)	3,5-4,5	0,200 (Max.)
Ç1	1,00-1,39	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
Ç1 YK Ç1 HS	1,00-1,39	0,6-1,2	0,060 (Min.)	3,5-4,5	0,200 (Max.)
Ç2	0,99 (Max.)	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
Ç2 YK Ç2 HS	0,99 (Max.)	0,6-1,2	0,060 (Min.)	3,5-4,5	0,200 (Max.)