AYDIN BORU

DIN 2448 DİKİŞSİZ ÇELİK ÇEKME BORU BOYUT VE AĞIRLIKLARI

Toleranslar DIN 17175 / EN 10216'ya göre belirlenmiştir.

+15% -10%

+12.5% -10%

+9% -9%

+17.5% -12.5%

+12.5% -12.5%

+10% -10%

+22.5% -12.5%

+15% -12.5%

+12.5% -10%

da mm	S mm	1.6 0.063	1.8 0.071	2 0.079	2.3 0.091	2.6 0.102	2.9 0.114	3.2 0.126	3.6 0.142	4 0.157	4.5 0.177	5 0.197	5.6 0.22	6.3 0.248	7.1 0.28	8 0.315	8.8 0.346	10 0.394	11 0.433	12.5 0.492	14.2 0.559	16 0.63	17.5 0.689	20 0.787	22.5 0.874	25 0.984	28 1.102	30 1.181	32 1.26	36 1.417	40 1.575	45 1.172	50 1.969	55 2.165	60 2.362	65 2.5597	70 2.745	75 2.953	80 3.15	85 3.346	90 3.543	100 3.937
10.2	1.8	0.339	0.373	0.404	0.448	0.487																																					
13.5	1.8		0.519	0.567	0.635	0.699	0.758	0.813	0.879																																		
16	1.8		0.630	0.691	0.777	0.859	0.937	1.01	1.10	1.18																																	
17.2	1.8		0.684	0.750	0.845	0.936	1.02	1.10	1.21	1.30	1.41																																
19	2			0.838	0.947	1.05	1.15	1.25	1.37	1.48	1.61	1.73																															
20	2			0.888	1.00	1.12	1.22	1.33	1.46	1.58	1.72	1.85																															
21.3	2			0.952	1.08	1.20	1.32	1.43	1.57	1.71	1.86	2.01																															
25	2			1.13	1.29	1.44	1.58	1.72	1.90	2.07	2.28	2.47	2.68	2.91																													
25.4	2			1.15	1.31	1.46	1.61	1.75	1.94	2.11	2.31	2.52	2.73	2.97																													
26.9	2			1.23	1.40	1.56	1.72	1.87	2.07	2.26	2.49	2.70	2.94	3.20	3.47																												
30	2.3				1.57	1.76	1.94	2.11	2.34	2.56	2.83	3.08	3.37	3.68	4.01																												
31.8	2.3				1.67	1.87	2.07	2.26	2.50	2.74	3.03	3.30	3.62	3.96	4.32	4.70																											
33.7	2.3				1.78	1.99	2.20	2.41	2.67	2.93	3.24	3.54	3.88	4.26	4.66	5.07																											
38	2.6					2.27	2.51	2.75	3.05	3.35	3.72	4.07	4.47	4.93	5.41	5.92	6.34																											
42.4	2.6					2.55	2.82	3.09	3.44	3.79	4.21	4.61	5.08	5.61	6.18	6.79	7.29	7.99																										
44.5	2.3					2.69	2.98	3.26	3.63	4.00	4.44	4.87	5.37	5.94	6.55	7.20	7.75	8.51	9.09																									
48.3	2.6					2.93	3.25	3.56	3.97	4.37	4.86	5.34	5.90	6.53	7.21	7.95	8.57	9.45	10.1	11.0																								
51	2.6					3.10	3.44	3.77	4.21	4.64	5.16	5.67	6.27	6.94	7.69	8.48	9.16	10.1	10.9	11.9	12.9																							
54	2.6					3.30	3.65	4.01	4.47	4.93	5.49	6.04	6.68	7.41	8.21	9.08	9.81	10.9	11.7	12.8	13.9																							
57	2.9						3.87	4.25	4.74	5.23	5.83	6.41	7.10	7.88	8.74	9.67	10.5	11.6	12.5	13.7	15.0	16.2																						
60.3	2.9						4.11	4.51	5.03	5.55	6.19	6.82	7.55	8.39	9.32	10.3	11.2	12.4	13.4	14.7	16.1	17.5	18.5																					
63.5	2.9						4.33	4.76	5.32	5.87	6.55	7.21	8.00	8.89	9.88	10.9	11.9	13.2	14.2	15.7	17.3	18.7	19.9																					
70	2.9						4.80	5.27	5.90	6.51	7.27	8.01	8.89	9.90	11.0	12.2	13.3	14.8	16.0	17.7	19.5	21.3	22.7	24.7																				
73	2.9						5.01	5.51	6.16	6.81	7.60	8.38	9.31	10.4	11.5	12.8	13.9	15.5	16.8	18.7	20.6	22.5	24.0	26.1																				
76.1	2.9						5.24	5.75	6.44	7.11	7.95	8.77	9.74	10.8	12.1	13.4	14.6	16.3	17.2	19.6	21.7	23.7	25.3	27.7																				
82.5	2.9							6.26	7.00	7.74	8.66	9.56	10.6	11.8	13.2	14.7	16.0	17.9	19.4	21.6	23.9	26.2	28.1	30.8	33.0																			
88.9	3.2							6.76	7.57	8.38	9.37	10.3	11.5	12.8	14.3	16.0	17.4	19.5	21.1	23.6	26.2	28.8	30.8	34.0	36.5	39.4																		
101.6	3.6								8.70	9.63	10.8	11.9	13.3	14.8	16.50	18.5	20.1	22.6	24.6	27.5	30.6	33.8	36.3	40.2	43.5	47.2	50.8	53.0	54.9														
108	3.6								9.27	10.3	11.5	12.7	14.1	15.8	17.20	19.7	21.5	24.2	26.3	29.4	32.8	36.3	39.1	43.4	47.0	51.2	55.2	57.7	60.0	63.9													
114.3	3.6								9.83	10.9	12.2	13.5	15.0	16.8	18.10	21.0	22.9	25.7	28.0	31.4	35.1	38.8	41.8	46.5	50.4	55.5	59.6	62.7	64.9	69.5													
127	4									12.1	13.6	15.00	16.8	18.8	21.00	23.50	25.7	28.9	31.5	35.3	39.5	43.8	47.3	52.8	57.4	62.9	68.4	71.8	75.0	80.8	85.8												
133	4									12.7	14.3	15.8	17.6	19.7	22.0	24.7	27.0	30.3	33.1	37.1	41.6	46.2	49.8	55.7	60.7	66.6	72.5	76.2	79.7	86.1	91.7												
139.7	4									13.4	15.0	16.6	18.5	20.7	23.2	26.0	28.4	32.0	34.9	39.2	433.9	48.8	52.7	59.0	64.3	70.7	77.1	81.2	85.0	92.1	98.4	105										
152.4	4.5										16.4	18.2	20.3	22.7	25.4	28.5	31.2	35.1	38.4	43.1	48.4	53.8	58.2	65.3	71.3	78.5	85.9	90.6	95.0	103	111	119	126									
159	4.5										17.1	19.0	21.2	23.7	26.6	29.8	32.6	36.7	40.1	45.2	50.7	56.4	61.1	68.6	74.9	82.6	90.5	95.4	100	109	117	127	134									
168.3	4.5										18.2	20.1	22.5	25.2	28.2	31.6	34.6	39.0	42.7	48.0	54.0	60.1	65.1	73.1	80.0	88.3	96.9	102	108	117	127	137	146	154								
177.8	5											21.3	23.8	26.6	29.9	33.5	36.7	41.4	45.2	51.0	57.3	63.8	69.2	77.8	85.2	94.2	103	109	115	126	136	147	158	167								
193.7	5.6												26.0	29.1	32.7	36.6	40.1	45.3	49.6	55.9	62.9	70.1	76.0	85.7	93.9	104	114	121	128	140	152	165	177	188								
219.1	6.3													33.1	37.1	41.6	45.6	51.6	56.5	63.7	71.8	80.1	87.0	98.2	108	120	132	148	148	163	177	193	209	223	235	247	257					
244.5	6.3													37.0	41.6	46.7	51.2	57.8	63.3	71.5	80.6	90.2	98.0	111	122	135	149	159	168	185	202	221	240	257	273	288	301	314	325			
273	6.3													41.4	46.6	52.3	57.3	64.9	71.1	80.3	90.6	101	110	125	137	153	169	180	190	210	230	253	275	296	315	333	350	366	381	394		
323.9	7.1														55.5	62.3	684	77.4	84.9	96.0	108	121	132	150	165	184	204	217	230	256	280	310	338	365	390	415	438	460	481	501	519	552
355.6	8															68.6	75.3	85.2	93.5	106	120	134	146	166	183	204	226	241	255	284	311	345	377	408	437	466	493	519	544	567	590	630
406.4	8.8																86.3	97.8	107	121	137	154	168	191	210	235	261	278	295	329	361	401	439	477	513	547	581	613	644	674	702	756
457	10																	110	121	137	155	174	170	216	238	266	296	316	335	374	411	457	502	545	587	628	668	707	744	780	815	880
508	11																		135	153	173	194	212	241	266	298	331	354	376	419	462	514	565	614	663	710	756	801	844	887	928	1006
559	12.5																			168	191	214	234	266	294	329	367	391	416	464	512	570	628	684	738	792	844	895	945	994	1041	1132
610	12.5																			184	209	234	256	291	322	361	402	429	456	510	562	627	691	753	814	874	932	990	1046	1101	1154	1258
660	14.2																				226	254	277	316	349	392	436	466	496	554	612	683	752	821	888	954	1019	1082	1144	1205	1265	1381

İŞLETME SICAKLIĞI KARŞILAŞTIRMA TABLOSU

En Yüksek İşletme Sıcaklığı	EN 10216-2 Avrupa	ASTM Amerika	DIN 17175 Almanya	BS 3059 - 3601 3602 - 3603 3604 - 3606 İngiltere	AFNOR NF A 49 - 213 NF A 49 - 215 Fransa	JIS G 3456 G 3458 G 3461 G 3462 Japonya
-100°C -40°C		A 334 Gr. 3 A 334 Gr. 145		503 LT 430 LT	TU 10 N 14 TU 42 BT	
475 °C		A 179 A 106 Gr. A A 192	ST 35.8	320 360	TU 37 C	STPT 38 STB 35
	P265GH	A 106 Gr. B A 210 Gr. A1	ST 45.8	430	TU 42 C	STPT 42 STB 42
		A 106 Gr. C A 210 Gr. C	17Mn4	440	TU 48 C	STPT 49
			19Mn5	500 Nb	TU 52 C	STB 52
500 °C	16M03		15Mo3	243	TU 15 D 3	
	16Mo3	A 209 T1 A 335 P1	16Mo5 (VD TÜV)	245		STBA 12 STPA 12 STBA 13
550 °C		A 213 T2 A 335 P12			TU 15 CD 2.05	STBA 20 STPA 20
560 °C	13CrMo4-5	A 213 T2 A 335 P12	13CrMo44	620 - 460	TU 13 CD 4.04	STBA 22 STPA 22
560 °C		A 213 T11 A 335 P11		621	TU 10 CD 5.05	STBA 22 STPA 23
600 °C	X11CrMo5 10CrMo9-10	A 213 T5 A 335 P5 A 213 T22 A 335 P22	12CrMo195 10CrMo910	625 622 - 490	TU Z 10 CD 05.05 TU Z 12 CD 05.05 TU 10 C 9.10	STBA 25 STPA 25 STBA 24 STPA 24
			14MoV63			
625 °C	11CrMo9-10	A 213 T9 A 335 P9	X12CrMo91 (VD TÜV)	629 - 470 629 - 490	TU Z 10 CD 09	STBA 26 STPA 26
650 °C	X10CrMoVNb9-1	A 213 T91 A 335 P91	X10CrMoVNb9-1		TU Z 10 CDVNb 09.01 TU Z 10 CDNbV 09.02	

KARBON ÇELİKLERİN MEKANİK ÖZELLİKLERİ

API Specification I / ISO 3183 (PSL2) (2008)	ASTM A106-06a	ASTM A335-05	EN 10216-2 / 10216-3 10216-4 (2007-2002)	CSA Z 245.1-07
	Gr. A YS 205 / TS 330	Gr.1 (KV-45°C) YS 205/TS 380	P 235 GH (10216-2) YS 235/TS 350-500	
L245 veya BR YS 245-450/TS 415-760	Gr. B YS 240 / TS 415	Gr.6 (KV -45°C) YS 240/TS 415	P 265 GH (10216-2) YS 265/TS 410-570	Gr.241 YS 241-495/TS 414-760
		Gr.4 (KV-100°C) YS 240/TS 415	P 265 NI (10216-4) YS 265/TS 410-570	
		Gr.7 (KV-75°C) YS 240/TS 415		
		Gr.3 (KV-100°C) YS 240/TS 450		
	Gr. C YS 275 / TS 485		P 275 (10216-3) YS 275/TS 390-530	
L290R veya X42R YS 290-495 /TS 415-760				Gr.290 YS 290-495/TS 414-760
L320R veya X46R YS 320-525 /TS 435-760		Gr.9 (KV-75°C) YS 315/TS 435		
L360N veya X52R YS 360-530/TS 460-760			P 355 (10216-3) YS 355/TS 490-650	Gr.359 YS 359-530/TS 455-760
L390N veya X56N YS 390-545/TS 490-760				Gr.386 YS 386-540/TS 490-760
L4150 veya X600 YS 415-565 /TS 520-760				Gr.414 YS 414-565/TS 517-760
L4500 veya X650 YS 450-600/TS 535-760		Gr.10 (KV-60°C) YS 450/TS 550	P 460 (10216-3)* YS 460/TS 560-730	Gr.448 YS 448-600/TS 531-760
L4850 veya X70Q YS 485-635 /TS 570-760				Gr.483 YS 483-620/TS 565-760
		Gr.8 (KV-195°C) YS 515/TS 690		
L555Q veya X800 YS 555-705 /TS 625-825				Gr.550 YS 550-690/TS 620-830
			P 620 (10216-3) YS 620/TS 740-930	Gr.620 YS 620-760 /TS 690 - 900
			P 690 (10216-3) YS 690/TS 770-960	Gr.690 YS 690-825/TS 760-970
				Gr.825 YS 825-1050/TS 915-1145

YS: *Akma Dayanımı*
TS: *Kopma Dayanımı*
R: *Haddelenmiş*
N: *Normalize Edilmiş*
QT: *Sertleştirilmiş ve Temperlenmiş*

AYDIN BORU

Aydın Boru Endüstrisi A.Ş. Cevizli Mah. Tugay Yolu Cad.
Ofisim İstanbul Sitesi A Blok No:20A İç Kapı No:17
Maltepe/İstanbul

www.aydinboru.com

DN	NPS	Outsize Diameter (mm)	10	20	30	STD 40s	40	60	XS 80s	80	100	120	140	160	XXS	5s	5	10s	10
6	1/8	10.29				1.73 0.36	1.73 0.36		2.41 0.46	2.41 0.46								1.24 0.28	
8	1/4	13.72				2.24 0.63	2.24 0.63		3.02 0.8	3.02 0.8								1.65 0.5	
10	3/8	17.15				2.31 0.85	2.31 0.85		3.2 1.1	3.2 1.1								1.65 0.64	
15	1/2	21.34				2.77 1.27	2.77 1.27		3.73 1.62	3.73 1.62				4.78 1.95	7.47 2.55	1.65 0.8	1.65 0.8	2.11 1	2.11 1
20	3/4	26.67				2.87 1.68	2.87 1.68		3.91 2.19	3.91 2.19				5.56 2.89	7.82 3.63	1.65 1.02	1.65 1.02	2.11 1.28	2.11 1.28
25	1	33.4				3.38 2.5	3.38 2.5		4.55 3.23	4.55 3.23				6.35 4.23	9.09 5.45	1.65 1.29	1.65 1.29	2.77 2.09	2.77 2.09
32	1 1/4	42.16				3.56 3.38	3.56 3.38		4.85 4.47	4.85 4.47				6.35 5.6	9.7 7.76	1.65 1.65	1.65 1.65	2.77 2.7	2.77 2.7
40	1 1/2	48.26				3.68 4.05	3.68 4.05		5.08 5.41	5.08 5.41				7.14 7.24	10.16 9.55	1.65 1.9	1.65 1.9	2.77 3.1	2.77 3.1
50	2	60.33				3.91 5.44	3.91 5.44		5.54 7.48	5.54 7.48				8.74 11.11	11.07 13.45	1.65 2.39	1.65 2.39	2.77 3.93	2.77 3.93
65	2 1/2	73.03				5.16 8.62	5.16 8.62		7.01 11.41	7.01 11.41				9.53 14.91	14.02 20.39	2.11 3.68	2.11 3.68	3.05 5.26	3.05 5.26
80	3	88.9				5.49 11.29	5.49 11.29		7.62 15.27	7.62 15.27				11.13 21.33	15.24 27.67	2.11 4.51	2.11 4.51	3.05 6.46	3.05 6.46
90	3 1/2	101.6				5.74 13.57	5.74 13.57		8.08 18.62	8.08 18.62					16.15 34.03	2.11 5.17	2.11 5.17	3.05 7.41	3.05 7.41
100	4	114.3				6.02 16.07	6.02 16.07		8.56 22.31	8.56 22.31		11.13 28.3		13.49 33.53	17.12 41.02	2.11 5.84	2.11 5.84	3.05 8.37	3.05 8.37
125	5	141.3				6.55 21.78	6.55 21.78		9.53 30.95	9.53 30.95		12.7 40.28		15.88 49.09	19.05 57.42	2.77 9.46	2.77 9.46	3.4 11.56	3.4 11.56
150	6	168.28				7.11 28.26	7.11 28.26		10.97 42.56	10.97 42.56		14.27 54.2		18.26 67.55	21.95 79.18	2.77 11.31	2.77 11.31	3.4 13.82	3.4 13.82
200	8	219.08		6.35 33.31	7.04 36.79	8.18 42.53	8.18 42.53	10.31 53.09	12.7 64.63	12.7 64.63	15.09 75.89	18.26 90.43	20.62 100.93	23.01 111.25	22.23 107.87	2.77 14.71	2.77 14.71	3.76 19.96	3.4 13.82
250	10	273.05		6.35 41.77	7.8 51	9.27 60.29	9.27 60.29	12.7 81.54	12.7 81.54	15.09 95.97	18.26 114.74	21.44 133	25.4 155.1	28.58 172.25	25.4 155.1	3.4 22.61	3.4 22.61	4.19 27.78	4.19 27.78
300	12	323.85		6.35 49.72	8.38 65.2	9.53 73.82	10.31 79.72	14.27 108.96	12.7 97.44	17.48 132.01	21.44 159.85	25.4 186.92	28.58 208.04	33.32 238.72	25.4 186.92	3.96 31.24	4.19 33.03	4.57 35.98	4.57 35.98
350	14	355.6	6.35 54.69	7.92 67.94	9.53 81.28	9.53 81.28	11.13 94.49	15.09 126.68	12.7 107.38	19.05 158.08	23.83 194.9	27.79 224.6	31.75 253.53	35.71 281.68		3.96 34.34		4.78 41.35	6.35 54.68
400	16	406.4	6.35 62.64	7.92 77.86	9.53 93.21	9.53 93.21	12.7 123.29	16.66 160.12	12.7 123.29	21.44 203.48	26.19 245.5	30.96 286.62	36.53 333.11	40.49 365.3		4.19 41.56		4.7 47.34	6.35 62.63
450	18	457.2	6.35 70.51	7.92 87.79	11.13 122.36	9.53 105.14	14.2 155.91	19.05 205.8	12.7 139.19	23.83 254.49	29.36 309.76	34.93 363.65	39.67 408.45	45.24 459.51		4.19 46.81		4.78 53.33	6.35 70.59
500	20	508	6.35 78.55	9.53 117.07	12.7 155.1	9.53 177.07	15.09 183.37	20.62 247.85	12.7 155.1	26.19 311.18	32.54 381.53	38.1 441.59	44.45 508.11	50.01 564.61		4.78 59.32		5.54 68.64	6.35 78.54
550	22	558.8	6.35 86.54	9.53 129.01	12.7 171.01	9.53 129.01	15.88 212.52	22.23 294.14	12.7 171.01	28.57 373.57	34.92 451.13	41.27 526.7	47.62 600.28	53.98 671.88		4.78 65.31		5.54 75.58	6.35 86.5
600	24	609.6	6.35 94.53	9.53 140.94	14.27 209.54	9.53 140.94	17.48 255.14	24.61 355.02	12.7 186.92	30.96 441.51	38.89 547.33	46.02 639.58	52.37 719.63	59.54 807.27		5.54 82.53		6.35 94.45	6.35 94.45
650	26	660.4	7.92 127.36	12.7 202.83		9.53 152.87			12.7 202.83										7.92 127.5
700	28	711.2	7.92 137.32	12.7 218.73	15.88 272.18	9.53 164.8			12.7 218.73										7.92 137.42
750	30	762	7.92 147.28	12.7 234.64	15.88 292.06	9.53 176.73			12.7 234.64							6.35 118.31		7.92 147.36	7.92 147.36
800	32	812.8	7.92 157.24	12.7 250.55	15.88 311.95	9.53 188.66	17.48 342.7		12.7 250.55										7.92 157.28
850	34	863.8	7.92 167.2	12.7 266.46	15.88 331.83	9.53 200.59	17.48 364.58		12.7 266.46										7.92 167.2
900	36	914.4	7.92 176.96	12.7 282.36	15.88 351.72	9.53 212.52	19.05 420.56		12.7 282.36										7.92 177.13
950	38	965				9.53 224.54			12.7 298.24										
1000	40	1016				9.53 236.53			12.7 314.22										
1050	42	1067				9.53 248.52			12.7 330.19										
1100	44	1118				9.53 260.5													
1150	46	1160				9.53 270.37													
1200	48	1219				9.53 284.24													
1250	50	1270				9.53 296.22													
1300	52	1321				9.53 308.21													
1350	54	1372				9.53 320.19													
1400	56	1423				9.53 332.18													