



<b>Kullanım Alanı</b>	Düşük Sıcaklık Hizmeti Basınç amaçlı ince taneli çelik borular, enerji mühendisliği ve ilgili alanlarda kullanılır. Yüksek basınçlı tesisatlarda ve ayrıca değişik sıcaklıktaki çeliğin uygun esnekliğini garanti etmesinin önemli olduğu tesisatlarda kullanılırlar.	<b>Field of application</b>	Low-temperature service. Fine grain steel pipes for pressure purposes are used in power engineering and in associated fields of industry. They are used as pipes in elevated pressure installations as well as in installation where it is important to guarantee the appropriate resilience of steel in varying temperature.
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Standartlar	Çelik Kalitesi / Steel Grade	Standards
ASTM A333	GRADE 1, GRADE 3, GRADE 6	ASTM A333
EN 10216-4	P215NL, P265NL	EN 10216-4
EN 10216-3	P275NL1, P355NL1, P460NL1, P275NL2, P355NL2, P460NL2	EN 10216-3

<b>Ebatlar</b>		<b>Dimensions</b>	
<b>Dış Çap</b>	21,3 mm den 609,6 mm'e kadar ( 1/2" den 24" e kadar )	<b>Outer diameter</b>	21.3 mm up to 609,6 mm ( 1/2" up to 24" )
<b>Et kalınlığı</b>	2,3 mm den 40 mm'e kadar	<b>Wall thickness</b>	2,3 mm up to 40 mm

<b>Boru Boyu</b>	- 6 ve 12 metre (19,69 ile 39,8ft ) - 5 – 12 m ( 16,4 ile 39,8 ft arası ) istediğiniz boyda ( özel üretim ise ) - Tolerans : +100/-0mm (+3.94/-0 in)	<b>Lengths</b>	- 6 and 12 meters - 5-12m(16.4-39.8 ft) with respect to customer demand for special production - Tolerances: +100/-0mm (+3.94/-0 in)
<b>Koruma</b>	- Korumasız - Siyah Vernikli - İki ucu Plastik Tapalı	<b>Protection</b>	- Unprotected - External varnished with black or clear lacquer - the tubes is delivered with plastic caps at both ends
<b>Markalama</b>	Standartın gerektirdiği gibi Ya da özel üretilenlerde müşteri talebine göre	<b>Marking</b>	According to standard or per customer request for special production
<b>Sertifika</b>	Genellikle EN 10204 3.1'e göredir. Özel üretimlerde sipariş esnasında belirtilir ise EN 10204 3.2 "ye göre verilebilir.	<b>Certification</b>	Mill test reports are issued to customer requirements. Usually they comply with EN 10204 3.1 ( If it is wanted during order for special production then EN 10204 3.2 issued)

## Toleranslar / Tolerances

Standartlar Standards	Dış Çap Outer Diameter	Et Kalınlıkları Wall Thickness
EN 10216 4, Sıcak Çekim Hot finished	±1.0% or ±0.5 mm (hangisi büyükse) (which is higher)	±12.5% or ±0.4mm (hangisi büyükse) (which is higher)
EN 10216-4, Soğuk Çekim Cold finished	±0.5% or ±0.3mm (hangisi büyükse) (which is higher)	±10% or ±0.2 mm (hangisi büyükse) (which is higher)
EN 10216-3, Sıcak Çekim Hot finished	+/- 1% ya da +/- 0.5mm (hangisi büyükse) (which is higher)	D≤219.1 ± 12.5% ya da 0.4 mm (hangisi büyükse) (which is higher) D>219.1, WT/OD≤ 0.025 -20%, WT/OD>0.025,≤0.050 -15% WT/OD>0.050,≤0.10 -12.5%, WT/OD>0.10 -10%
EN 10216-3, Soğuk Çekim Cold finished	±0.5%, min.± 0.3 mm	±10%, min.±0.2 mm
ASTM A333	OD≤48.3; +0.4/-0.8mm 48.3<OD≤114.3; ±0.8mm 114.3<OD≤219.1; +1.6/-0.8mm	+12.5%/-10%
ASTM A334 , Sıcak Çekim Hot finished	OD≤100; +0.4/-0.8mm 100<OD≤200; +0.4/-1.2mm 200<OD≤225; +0.4/-1.6mm	OD≤100 and WT≤2.4; +40%/0 OD≤100 & 2.4<WT≤3.8; +35%/0 OD≤100 & 3.8 <WT≤4.6; +33%/0 OD≤100 and WT>4.6; +28%/0 OD>100 & 2.4<WT≤3.8; +35%/0 OD>100 & 3.8 <WT≤4.6; +33%/0 OD>100 & WT>4.6; +28%/0
ASTM A334 , Soğuk Çekim Cold finished	OD<25; +0.1/-0.1mm 25≤OD≤40; +0.15/- 0.15mm 40<OD<50; +0.2/-0.2mm 50≤OD<65; +0.25/-0.25mm 65≤OD<75; +0.3/-0.3mm 75≤OD<100; +0.38/-0.38mm 100<OD≤200; +0.38/-0.64mm 200<OD≤225; +0.38/-1.14mm	OD≤38.1; +20%/0 OD>38.1; +22%/0

OD : Dış Çap / Outer Diameter WT : Et Kalınlığı / Wall Thickness

## KİMYASAL VE FİZİKSEL ÖZELLİKLER CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

Standartlar Standarts	Çelik Kalitesi Steel Grade	KİMYASAL ÖZELLİKLER / CHEMICAL COMPOSITION											MEKANİK ÖZELLİKLER / MECHANICAL PROPERTIES				
		C max	Si max	Mn max	Pmax max	Smax max	Cr max	Ni max	Mo max	Cu max	Diğer Other	Akma Mukavemeti Yield Strength Mpa	Çekme Mukavemeti Tensile Strength Min.Mpa	Çekme Mukavemeti Tensile Strength Max.Mpa	Uzama Elongation min %		
ASTM A333 ASTM A334	Grade 1	0.30		0.40-1.06	0.025	0.025								380			35
	Grade 3	0.19	0.18-0.37	0.31-0.64	0.025	0.025		3.18-3.82						450			30
	Grade 6	0.30	min.0.10	0.29-1.06	0.025	0.025								415			30
EN 10216-4	P215NL	0.15	0.35	0.40-1.20	0.030	0.020	0.30	0.30	0.08	0.30				215	360	480	25
	P265NL	0.20	0.40	0.60-1.40	0.030	0.020	0.30	0.30	0.08	0.30				265	410	570	24
EN 10216-3	P275NL1&NL2	0.16	0.40	0.50-1.50	0.025	0.020	0.30	0.30	0.08	0.30				275	390	530	24
	P355NL1&NL2	0.18	0.50	0.90-1.70	0.025	0.020	0.30	0.30	0.08	0.30				355	490	650	22
	P460NL1&NL2	0.20	0.60	1.00-1.70	0.025	0.020	0.30	0.30	0.10	0.70				460	560	730	19