



# ARTROM STEEL TUBES S.A.

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 Subscribed and Paid Share Capital: 291.587.538,34 lei

## SEAMLESS TUBES FOR BOILER & HIGH TEMPERATURE SERVICE

### 1. Standards

DIN 17175, EN 10216-2, ASTM A 106, ASTM A179, NF A 49-211, ASTM A210, ASTM A213, ASTM A335

### 2. Used for

Construction for: boiler, pipe lines, pressure vessels, equipment for high temperature and pressure, equipment for heat-exchanger and condenser.

### 3. Dimensions

According EN 10216-2 or ASME B36.10M in dimensional range corresponding to the workshop CPE (Tab.1 and Tab.2) or ASSEL (Tab.3) or Cold rolling and drawing (Tab.4)

### 4. Tolerances

Standard	Outside Diameter	Wall Thickness	Weight
ASTM A 106 NF A 49-211	OD $\leq$ 48.3; $\pm$ 0.40mm 48.3<OD $\leq$ 114.3; $\pm$ 0.8mm 114.3<OD $\leq$ 219.1; +1.6/-0.8mm OD>219.1; +2.4/-0.8mm	+12.5%	+10/-3.5% for any length of pipe
EN 10216-2 hot rolled	$\pm$ 1.0% or $\pm$ 0.5mm (which is higher)	$\pm$ 12.5% or $\pm$ 0.4mm (which is higher)	
DIN 17175 hot rolled	OD $\leq$ 100 $\pm$ 0.75% (minimum $\pm$ 0.5mm) 100<OD $\leq$ 320 $\pm$ 0.9%	OD $\leq$ 130; WT $\leq$ 2Sn; +15/-10% OD $\leq$ 130; 2Sn<WT $\leq$ 4Sn; +12.5/-10% OD $\leq$ 130; WT>4Sn; $\pm$ 9% 130<OD $\leq$ 320; WT $\leq$ 0.05OD; +17.5/-12.5% 130<OD $\leq$ 320; 0.05OD <WT $\leq$ 0.11OD; $\pm$ 12.5% 130<OD $\leq$ 320; WT>0.11OD; $\pm$ 10% Sn- Nominal wall thickness according to DIN 2448	+10/-8% for each tube $\pm$ 7.5% for a lots over 10t
ASTM A210 hot rolled	OD $\leq$ 101.6+0.4/-0.8mm 101.6<OD $\leq$ 190.5+0.4/-1.2mm 190.50<OD $\leq$ 228.6+0.4/-1.6mm	OD $\leq$ 101.6 and WT $\leq$ 2.4; +40%/0 OD $\leq$ 101.6 and 2.4<WT $\leq$ 3.8; +35%/0 OD $\leq$ 101.6 and 3.8 <WT $\leq$ 4.6; +33%/0 OD $\leq$ 101.6 and WT>4.6; +28%/0 OD>101.6 and 2.4<WT $\leq$ 3.8; +35%/0 OD>101.6 and 3.8 <WT $\leq$ 4.6; +33%/0 OD>101.6 and WT>4.6; +28%/0	+16%/0
Standard	Outside Diameter	Wall Thickness	Weight

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API:  
5CT-2357  
5L-1271

LRQA:  
ISO 9001  
ISO 14001  
ISO 45001

TUV:  
PED/AD-2000 W0/W4  
Vd TUV

TUV CPR:  
EN 10210-1,2  
EN 10255

DNV  
RINA

LRQA:  
IATF 16949

<b>ASTM A213 hot rolled</b>	OD≤100mm: +0.4mm / -0.8 mm 100<OD ≤ 200mm: +0.4 /- 0.8 mm 200<OD ≤ 225mm: +0.4mm /-1.6 mm	<b>Average wall thickness:</b> 10.3<WT≤73mm: +20%/-12.5% WT<73 mm & (WT/OD)≤5%: +22.5%/-12.5% WT<73 mm & (WT/OD)>5%: +15%/-12.5%  <b>Minim wall thickness:</b> WT ≤ 2.4 mm (only for OD ≤ 114.3 mm): + 40 % / -0% 2.4<WT≤3.8 mm: +35 %/-0% 3.8<WT≤4.6 mm: +33% / -0% WT>4.6 mm: +28% / -0%	-
<b>ASTM A213 Cold finished</b>	OD ≤25: +0.10 mm/-0.11 mm 25<OD ≤40mm: ±0.15 mm 40<OD <50mm: ±0.20 mm 50≤OD < 65mm: ±0.25 mm 65≤OD < 75 mm: ±0.30 mm 75≤OD ≤100 mm: ±0.38 mm 100<OD ≤200mm:+0.38/-0.64 mm 200<OD ≤225mm:+0.38 /-1.14 mm	<b>Average wall thickness:</b> ±10%  <b>Minim wall thickness:</b> For OD ≤38.1mm => WT = +20% / -0 For OD >38.1mm => WT= +22% / -0	
<b>ASTM A335 hot rolled</b>	<b>For pipe ordered to NPS [DN] or outside diameter:</b> 10.3<OD≤48.3mm: ±0.4 mm 48.3<OD ≤114.3mm: ± 0.8 mm 114.3<OD≤219.1 mm:+1.59 /-0.79mm 219.1<OD≤323.9mm:+2.38 mm /-0.79mm <b>For pipe ordered to inside diameter:</b> ±1%	10.3<WT≤73mm: +20%/-12.5% WT<73 mm & (WT/OD)≤5%: +22.5%/-12.5% WT<73 mm & (WT/OD)>5%: +15%/-12.5%	
<b>DIN 17175 cold rolled</b>	OD≤120±0.6%(minimum±0.25mm) OD>120±0.75%	OD ≤130; WT ≤ 2Sn; +15/-10% OD ≤130; 2Sn<WT≤4Sn; +12.5/-10% OD ≤130; WT>4Sn; ±9% 130<OD≤320; WT ≤0.05OD; +17.5/-12.5% 130<OD≤320; 0.05OD <WT≤0.11OD; ±12.5% 130<OD≤320; WT>0.11OD; ±10% Sn - Nominal wall thickness according to DIN 2448	+10/-8% for each tube ±7.5% for a lots over 10t
<b>EN 10216-2 cold rolled</b>	±0.5% or ±0.3mm (which is higher)	±10% or ±0.2 mm (which is higher)	
<b>ASTM A179 and ASTM A210 cold rolled</b>	OD<25.4; ±0.10 25.4<=OD<=38.1; ±0.15 38.1<OD<50.8; ±0.20 50.8>=OD<63.5; ±0.25 63.5>=OD<76.2; ±0.30	OD≤38.1; +20% OD>38.1; +22%	OD≤38.1; +12% OD>38; +13%



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5L-1271

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ISO 14001  
ISO 45001

TUV:  
PED/AD-2000 W0/W4  
Vd TUV

TUV CPR:  
EN 10210-1,2  
EN 10255

DNV  
RINA

LRQA:  
IATF 16949

## 5. Chemical Composition (%)

Steel Group	C	Si	Mn	P max	S max	Cr	Mo	Ni	Sn
Grade A, TU E275	max 0.25	min 0.10	0.27÷0.93	0.035	0.035				
Grade B	max 0.30	min 0.10	0.29÷1.06	0.035	0.035				
St35.8, TU E220	max 0.17	0.10÷0.35	0.40÷0.80	0.040	0.040				
St45.8, TU E250	max 0.21	0.10÷0.35	0.40÷1.20	0.040	0.040				
P195GH	max.0.13	max.0.35	max.0.70	0.025	0.020	max 0.30	max 0.08	max 0.30	
P235GH	max.0.16	max.0.35	max.1.20	0.025	0.020	max 0.30	max 0.08	max 0.30	
P265GH	max.0.20	max0.40	max.1.40	0.025	0.020	max 0.30	max 0.08	max 0.30	
16Mo3	0.12÷0.20	max0.35	0.40÷0.90	0.025	0.020	max 0.30	0.25÷0.35	max.0.30	
13CrMo4-5	0.10÷0.17	max0.35	0.40÷0.70	0.025	0.020	0.70 ÷1.15	0.40÷0.60	max.0.30	
10CrMo9-10	0.08-0.14	max 0.50	0.30÷0.70	0.020	0.010	2.0 ÷2.50	0.90÷1.10	max.0.30	
ASTM A179	0.06÷0.18	-	0.27÷0.63	0.035	0.035				
Grade A-1	max0.27	min. 0.10	max. 0.93	0.035	0.035				
T11	0.05-0.15	0.30-0.60	0.30-0.60	0.025	0.025	1.00-1.50	0.44-0.65		
T22	0.05-0.15	0.30-0.60	0.30-0.60	0.025	0.025	1.90-2.60	0.87-1.13		
P5	max. 0.15	max. 0.50	0.30-0.60	max. 0.025	0.025	4.00-6.00	0.45-0.65		
P11	0.05-0.15	0.50-1.00	0.30-0.60	max. 0.025	max. 0.025	1.00-1.50	0.44-0.65		
P22	0.05-0.15	max. 0.50	0.30-0.60	max. 0.025	max. 0.025	1.90-2.60	0.87-1.13		

## 6. Mechanical Properties

Steel Group	Yield Strength, min.	Tensile Strength	Elongation	Impact	
	N/mm <sup>2</sup>	N/mm <sup>2</sup>	min. (%)	J	(°C)
Grade A, TU E275	205	min. 330	Calculation acc. to		
Grade B	240	min 415	the wall thickness		
St35.8, TU E220	235	360÷480	25		
St45.8, TU E250	255	410÷530	21		
P195GH	195	320÷440	27	28	-10
P235GH	225	360÷500	25	28	-10
P265GH	255	410÷570	23	28	-10
16Mo3	270	450÷600	22	40	20
13CrMo4-5	290	440÷590	22	40	20
10CrMo9-10	280	480÷630	22	40	20
ASTM A179	180	325	36	HRB = max 72	
Grade A-1	255	415	30	HRB = max 79	
T11	205	415	30	85HRB/250HBW/170HV	
T22	205	415	30	85HRB/250HBW/170HV	
P5	205	415	30		
P11	205	415	30		-
P22	205	415	30		-

## 7. Lengths

Random lengths or fixed lengths in length range corresponding to the -workshop CPE (Tab.1 and Tab.2) or ASSEL (Tab.3) or Cold rolling and drawing (Tab.4).



## 8. Protection

- Unprotected;
- external varnished with black or clear lacquer;
- If required, the tubes can be delivered with plastic caps at both ends.

## 9. Marking

According to standard or per customer request.

## 10. Delivery

Bundles up to: - 2000 kg (4400 lbs) - cold drawn tubes;  
- 4000 kg (8800 lbs) - hot rolled tubes.

## 11. Mill test report

Mill test reports are issued to customer requirements. Usually they comply with DIN 50049, EN 10204.

## 12. Quality certified:

TUV-PED, AD



API:  
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5L-1271

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ISO 14001  
ISO 45001

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