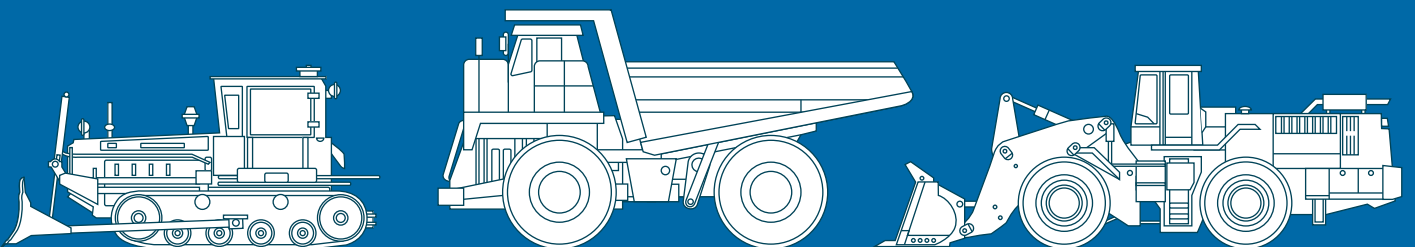




# PIPES AND TUBES FOR MECHANICAL ENGINEERING





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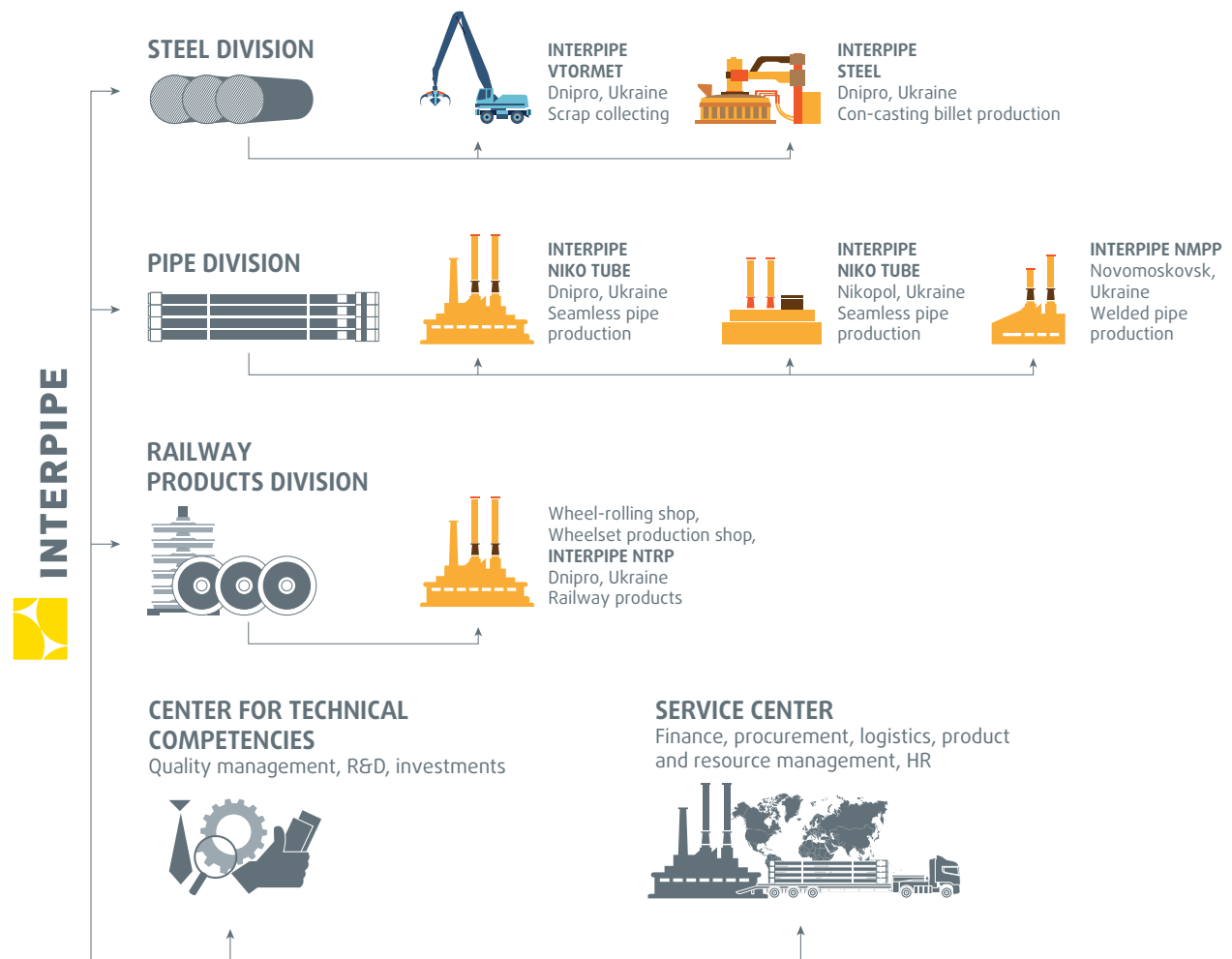
# INTERPIPE IS A GLOBAL STEEL PIPE PRODUCER AND SUPPLIER

Interpipe is a global steel pipe producer for all major application – oil & gas exploration and transportation, power generation, mechanical and structural use.

The company's products are supplied to 80 countries all over the world through a chain of commercial offices located in Ukraine, Europe, the USA and the Middle East.

Interpipe structure includes production facilities located in Dnipro region, one of the major industrial centers of Ukraine. The company continues to invest heavily in the development and modernization of its mills.

Interpipe includes 3 operating divisions – Steel, Pipe and Railway Products. The company controls product quality at every stage: from manufacturing of raw materials to delivery of final products to customers.



## SELLING TO CUSTOMERS GLOBALLY – KEY MARKETS



# INTERPIPE STEEL: IN-HOUSE GREEN STEEL PRODUCTION

INTERPIPE COMPANY NEEDS FOR STEEL BILLETS IS 100% COVERED BY OWN FACILITIES – INTERPIPE STEEL PLANT. INTERPIPE STEEL – IS AN INNOVATIVE EAF COMPLEX, LAUNCHED IN 2012 WITH BEST AVAILABLE TECHNOLOGIES FROM DANIELI.

A few years before the European Green Deal emerged, Interpipe made the largest environmental investment in the Ukrainian industry, investing \$1 billion into the construction of the innovative electric steel-making complex Interpipe Steel. It enabled Interpipe to achieve one of the lowest greenhouse gas emission intensity in the global steel industry – lower than 200 kg per ton of steel billets – that reflects low carbon nature of Interpipe production.



## LOW CARBON FOOTPRINT

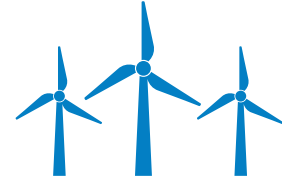
<110 kg/ton of steel (Scope 1)

<230 kg/ton of steel (Scope 2)



## RECYCLING DEVELOPMENT

100% of steel produced from scrap



## CLEAN ENERGY USAGE

Over 62% of energy comes from environmentally sustainable sources

INNOVATIVE DANIELI TECHNOLOGIES AT INTERPIPE STEEL ENABLES TO PRODUCE 1,320,000 TONS OF STEEL BILLET ANNUALLY

Electric arc furnace, 160 tons	Twin tank vacuum-degasser
Twin position ladle furnace	Two continuous casting machines

INTERPIPE STEEL IS THE LARGEST “GREEN” INVESTMENT INTO UKRAINIAN STEEL INDUSTRY DURING THE LAST 30 YEARS

State-of-the-art gas collection and purification system allows the efficient collection of gas and dust, generated during the steel-melting process

Completely closed circulating water supply system of the mill, without any industrial wastewater discharge

INTERPIPE STEEL ENSURES 100% NEEDS IN STEEL BILLETS FOR RAILWAY PRODUCTS MANUFACTURING. THE MILL HAS DEVELOPED WIDE PRODUCT PORTFOLIO OF PIPE STEEL GRADES FOR INTERPIPE CUSTOMERS.



## EXPERT PIPE SOLUTIONS FOR MECHANICAL ENGINEERING

Our product strategy in the mechanical pipes sector is defined by a thorough market analysis and investigation of our clients' needs in the automotive, shipbuilding and power generation industries.

The company produces machinery use products as basic elements for the manufacture of vehicles of different configurations, hydraulic cylinders, bearings, axles, mining equipment and high-precision parts of aeronautical engineering and cars.

Basic car components for vehicles are manufactured from our products



# EN 10297-1 SEAMLESS PIPES FOR MECHANICAL APPLICATIONS

## Dimensional range

OD, mm	Wall thickness, mm																																					
	2,6	2,9	3,2	3,6	4	4,5	5	5,4	5,6	6,3	7,1	8	8,8	10	11	12,5	14,2	16	17,5	20	22,2	25	28	30	32	36	40	42	45	50	55	60	65	70	75			
33,7																																						
38																																						
42,4																																						
44,5																																						
48,3																																						
51																																						
54																																						
57																																						
60,3																																						
63,5																																						
70																																						
73																																						
76,1																																						
82,5																																						
88,9																																						
101,6																																						
108																																						
114,3																																						
121																																						
127																																						
133																																						
139,7																																						
141,3																																						
152,4																																						
159																																						
168,3																																						
177,8																																						
193,7																																						
203																																						
219,1																																						
229																																						
244,5																																						
273																																						
298,5																																						
323,9																																						
355,6																																						
368																																						
406,4																																						
419,0 (426,0)																																						
457,0																																						

- Hot rolled
  - Cold rolled
  - Hot & cold rolled

Special dimensions or intermediate dimensions on request.

## Dimensional tolerances

Outside diameter, mm	Permissible deviation of Outside Diameter	Permissible deviation of Wall Thickness		
		OD/WT < 0,025	0,025 < OD/WT ≤ 0,05	OD/WT > 0,05
≤ 219,1	± 1% or 0,5 mm - the greatest value	± 12,5 % or ± 0,4 mm - the greatest value		
> 219,1	± 1%	± 20%	± 15%	± 12,5%

## Lengths

Random lengths: 4500-11000 mm.

Fixed lengths: within random lengths range upon request.

## Protection

Pipes are supplied:

- black and bare
- external varnished with black or clear lacquer
- oiled

Upon request pipes ends are protected with plastic caps.

## Marking

Pipes are supplied with marking according to standards and customer requests.

Marking is painted and/or hard stenciled on pipes ends. The same data, as well as additional information according to customer's request, are indicated on the bundle tags.

## Certification

Pipes are supplied with 3.1. inspection certificate, in conformity with EN 10204.

## Chemical composition

Steel grade	Elements content, %												
	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	N	Nb	V
E235	≤0,17	≤0,35	≤1,20	≤0,030	≤0,035								
E275	≤0,21	≤0,35	≤1,40	≤0,030	≤0,035								
E315	≤0,21	≤0,30	≤1,50	≤0,030	≤0,035								
E355	≤0,22	≤0,55	≤1,60	≤0,30	≤0,035								
E470	0,16-0,22	0,10-0,50	1,30-1,70	≤0,030	≤0,035				≥ 0,010		≤ 0,020	≤ 0,07	0,08-0,15
E275K2	≤0,20	≤0,40	0,50-1,40	≤0,030	≤0,035	≤0,030	≤0,010	≤0,030	≥ 0,020	≤0,035	≤ 0,015	≤ 0,05	≤ 0,05
E355K2	≤0,20	≤0,50	0,90-1,65	≤0,030	≤0,035	≤0,030	≤0,010	≤0,050	≥ 0,020	≤0,035	≤ 0,015	≤ 0,05	≤ 0,12
E420J2	0,16-0,22	0,10-0,50	1,30-1,70	≤0,030	≤0,035	≤0,030	≤0,080	≤0,040	≥ 0,010	≤0,030	≤ 0,020	≤ 0,07	0,08-0,15
E460K2	≤0,20	≤0,60	1,00-1,70	≤0,030	≤0,035	≤0,030	≤0,010	≤0,080	≥ 0,020	≤0,070	≤ 0,025	≤ 0,05	≤ 0,02
E590K2	0,16-0,22	0,10-0,50	1,30-1,70	≤0,030	≤0,035	≤0,030	≤0,080	≤0,040	≥ 0,010	≤0,030	≤ 0,020	≤ 0,07	0,08-0,15
E730K2	≤0,20	≤0,50	1,40-1,70	≤0,030	≤0,035	≤0,030	0,30-0,45	0,30-0,70	≥ 0,020	≤0,020	≤ 0,020	≤ 0,05	≤ 0,12
C22E	0,17-0,24	≤0,40	0,40-0,70	≤0,035	≤0,035								
25CrMo4	0,22-0,29	≤0,40	0,60-0,90	≤0,035	≤0,035	0,9-1,2	0,15-0,30						
34CrMo4	0,30-0,37	≤0,40	0,60-0,90	≤0,035	≤0,035	0,9-1,2	0,15-0,30						
42CrMo4	0,38-0,45	≤0,40	0,60-0,90	≤0,035	≤0,035	0,9-1,2	0,15-0,30						
C15E	0,12-0,18	≤0,40	0,30-0,60	≤0,035	≤0,035								





## Mechanical properties

Steel grade	Delivery condition	Yield strength, $R_{eH}$ , N/mm <sup>2</sup>				Tensile strength $R_m$ , N/mm <sup>2</sup>				Elongation A, %		Impact test, KV, J	
		Wall thickness $T_n$ , mm				Wall thickness $T_n$ , mm						Test temperature -20°C	
		<16	16< $T_n$ ≤40	40< $T_n$ ≤65	65< $T_n$ ≤80	≤16	16< $T_n$ ≤40	40< $T_n$ ≤65	65< $T_n$ ≤100	Longitudinal direction	Transverse direction	Longitudinal direction	Transverse direction
		Not less											
E235	+AR or +N	235	225	215	205	360	360	360	340	25	23	-	
E275	+AR or +N	275	265	255	245	410	410	410	380	22	20	-	
E315	+AR or +N	315	305	295	280	450	450	450	420	21	19	-	
E355	+AR or +N	355	345	335	315	490	490	490	470	20	18	-	
E470	+AR	470	430	-	-	650	600	-	-	17	15	-	
E275K2	+N	275	265	255	245	410	410	410	380	22	20	40	27
E355K2	+N	355	345	335	315	490	490	470	470	20	18	40	27
E420J2	+N	420	400	390	370	600	560	530	500	19	17	27	20
E460K2	+N	460	440	430	410	550	550	550	520	19	17	40	27
E590K2	+QT*	590	540	480	455	700	650	570	520	16	14	40	27
E730K2	+QT*	730	670	620	580	790	750	700	680	15	13	40	27

Steel grade	Delivery condition	Yield strength, $R_{eH}$ , N/mm <sup>2</sup>			Tensile strength $R_m$ , N/mm <sup>2</sup>			Elongation A, %				Impact test, KV, J Test temperature -20°C					
		Wall thickness $T_n$ , mm						<16		16< $T_n$ ≤40		<8		8< $T_n$ ≤20		20< $T_n$ ≤60	
		<16	16< $T_n$ ≤40	40< $T_n$ ≤80	<16	16< $T_n$ ≤40	40< $T_n$ ≤80	l		l		l		l		l	
		Not less															
C22E	+N	240	210	210	430	410	410	24	22	25	23	50	50	32	40	27	

Steel grade	Delivery condition	Yield strength, $R_{eH}$ , N/mm <sup>2</sup>				Tensile strength $R_m$ , N/mm <sup>2</sup>				Elongation A, %						Impact test, KV, J Test temperature +20°C							
		Wall thickness $T_n$ , mm								<8		8< $T_n$ ≤20		20< $T_n$ ≤50		50< $T_n$ ≤80		<8		8< $T_n$ ≤20		20< $T_n$ ≤50	
		<8	8< $T_n$ ≤20	20< $T_n$ ≤50	50< $T_n$ ≤80	<8	8< $T_n$ ≤20	20< $T_n$ ≤50	50< $T_n$ ≤80	l		l		l		l		l		l			
		Not less																					
25CrMo4	+QT*	700	600	450	400	900	800	700	700	12	10	14	12	15	13	16	14	45	50	32	50	32	
34CrMo4	+QT**	800	650	550	500	1000	900	800	750	11	9	12	10	14	12	15	13	35	40	25	45	27	
42CrMo4	+QT	900	750	650	550	1100	1000	900	800	10	8	11	9	12	10	13	10	30	35	22	35	22	

### Note:

l – Longitudinal sample, t – Transversal sample

\* - at +QT conditions pipes with outside diameter ≥100 mm and wall thickness ≤ 28 mm may be produced, for pipes with other dimensions +QT conditions are modeled on samples.

\*\* - pipes are supplied at +AR conditions, +QT conditions are modeled on samples.

\*\*\*- pipes are supplied at +A conditions, +QT conditions are modeled on samples.



## Chemical composition

Steel grade	Elements content, %												
	C	Si	Mn	S	V	P	Cr	Ni	Mo	Cu	Al	Nb	Ti
E470	0,16-0,22	0,10-0,50	1,30-1,70	0,015-0,050	0,08-0,15	0,030	-	-	-	-	0,010	0,07	-

## Mechanical properties

Steel grade	Delivery condition	Yield strength $R_{eH}$ , N/mm <sup>2</sup>				Tensile strength $R_m$ , N/mm <sup>2</sup>				Elongation A, %	Impact test, KV, J Test temperature -20°C
		Wall thickness $T_n$ , mm				Wall thickness $T_n$ , mm					
		<16	16< $T_n$ ≤25	25< $T_n$ ≤40	40< $T_n$ ≤50	<16	16< $T_n$ ≤25	25< $T_n$ ≤40	40< $T_n$ ≤50		
E470	+AR	470	460	430,000	430	650	620	600	550	17	-



# EN 10210-1, 2

## Hollow sections for steel construction made of unalloyed and fine grain steels

### Chemical composition

Steel grade	Elements content, %, max.						Maximal carbon equivalent value CEV %				
	C For nominal wall thickness, mm		Si	Mn	P	S	N	For nominal wall thickness, mm			
	≤40	>40						≤16	>16 ≤40	>40 ≤65	> 65≤ 120
S235JRH	0,17	0,20	-	1,40	0,040	0,040	0,009	0,37	0,39	0,41	0,44
S275J0H	0,20	0,22	-	1,50	0,035	0,035	0,009	0,41	0,43	0,45	0,48
S275J2H	0,20	0,22	-	1,50	0,030	0,030	-	0,41	0,43	0,45	0,48
S355J0H	0,22	0,22	0,55	1,60	0,035	0,035	0,009	0,45	0,47	0,50	0,53
S355J2H	0,22	0,22	0,55	1,60	0,030	0,030	-	0,45	0,47	0,50	0,53
S355K2H	0,22	0,22	0,55	1,60	0,030	0,030	-	0,45	0,47	0,50	0,53

Steel grade	Elements content, %														Maximal carbon equivalent value CEV %	
	C max	Si max	Mn	P max	S max	Nb max	V max	Al min	Ti max	Cr max	Ni max	Mo max	Cu max	N max	For nominal wall thickness, mm	
															≤ 16	> 16 ≤ 65
S275NH	0,20	0,40	0,50-1,40	0,035	0,030	0,050	0,08	0,020	0,03	0,30	0,30	0,10	0,35	0,015	0,40	0,40
S355NH	0,20	0,50	0,90-1,65	0,035	0,030	0,050	0,12	0,020	0,03	0,30	0,50	0,10	0,35	0,020	0,43	0,45

### Mechanical properties

Steel grade	Yield strength, R <sub>eh</sub> MPa Not less				Tensile strength R <sub>m</sub> , MPa		Elongation A, % Not less			Impact test, KV, J Not less		
	Nominal wall thickness, mm				≤3	>3 <100	≤40	>40 ≤63	>63	Test temperature, °C		
	≤16	>16 ≤40	>40 ≤63	>63						-20	0	+20
	Not less											
S235JRH	235	225	215	215	360-510	360-510	26	25	24	-	-	27
S275J0H	275	265	255	245	430-580	410-560	23	22	21	-	27	-
S275J2H	275	265	255	245	430-580	410-560	23	22	21	27	-	-
S355J0H	355	345	335	325	510-680	470-630	22	21	20	-	27	-
S355J2H	355	345	335	325	510-680	470-630	22	21	20	27	-	-
S355K2H	355	345	335	325	510-680	470-630	22	21	20	40	-	-

Steel grade	Yield strength, R <sub>eh</sub> MPa Not less			Tensile strength R <sub>m</sub> , MPa	Elongation A, % Not less		Impact test, KV, J Not less	
	Nominal wall thickness, mm			Nominal wall thickness, ≤65 mm	longitudinal		transverse	
	≤16	>16 ≤40	>40 ≤65				-50	-20
S275NH	275	265	255	370-510	24	22	-	40
S355NH	355	345	335	470-630	22	20	-	40



## Dimensions

Outside diameter	Wall thickness																																					
	2,6	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2	15,0	16,0	17,0	17,5	20,0	22,2	25,0	28,0	30,0	32,0	36,0	40,0	45,0	50,0	55,0	60,0	65,0	70,0	75,0				
33,7																																						
35,0																																						
38,0																																						
40,0																																						
42,4																																						
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193,7																																						
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219,1																																						
229,0																																						
244,5																																						
254,0																																						
267,0																																						
273,0																																						
298,5																																						
305,0																																						
323,9																																						
330,0																																						
340,0																																						
343,0																																						
355,6																																						
368,0																																						
406,4																																						
419,0																																						
426,0																																						

## Dimensional tolerances

Outside diameter permissible deviation	Wall thickness permissible deviation
±1 % (but not less than ±0.5 mm and not more than ±10 mm)	- 10 %, + 15%

## Lengths

Pipes are supplied with lengths according to standard requirements.  
Any lengths different from the standard ones are subject to additional negotiations.

## Protection

Pipes are supplied:  
- black and bare  
- external varnished with black or clear lacquer  
- oiled  
Upon request pipes ends are protected with plastic caps.

## Marking

Pipes are supplied with marking according to standard and customer request.  
Marking is painted and/or hard stenciled on pipe ends. The same data, as well as additional information according to customer's request, are indicated on the bundle tags.

## Certification

Pipes are supplied with 3.1. inspection certificate, in conformity with EN 10204.

# ASTM A 519

## Seamless Carbon and Alloy Steel Mechanical Tubing

### Chemical composition

Steel grade	Elements content, %							
	C	Mn	P	S	Si	Ni	Cr	Mo
1026	0.22-0.28	0.60-0.90	≤0.025%	≤0.025%				
4130	0.28-0.33	0.40-0.60	≤0.025%	≤0.025%	0.15-0.35	-	0.80-1.10	0.15-0.25
4140	0,38-0,43	0,75-1,0	≤0.025%	≤0.025%	0.15-0.35	-	0,80-1,10	0,15-0,25

### Typical Tensile Properties and Hardness

Grade Designation	Delivery condition	Tensile strength		Yield strength		Elongation A, %	Hardness, HRB
		ksi	MPa	ksi	MPa		
		Not less					
1026	HR	55	379	35	241	25	60
	CW	75	517	65	448	5	80
	SR	70	483	55	379	8	75
	A	53	365	30	207	25	57
	N	55	379	36	248	22	60
4130	HR	90	621	70	483	20	89
	SR	105	724	85	586	10	95
	A	75	517	55	379	30	81
	N	90	621	60	414	20	89
4140	HR	120	855	90	621	15	100
	SR	120	855	100	689	10	100
	A	80	552	60	414	25	85
	N	120	855	90	621	20	100

HR- hot-rolled, CW- cold-worked, SR- stress relieved, A - annealed, N- normalized



## Hot rolled

Wall thickness								
inch		0,500	0,625	0,750	0,875	1,000	1,250	1,500
OD (inch)	OD (mm)	12,7	15,88	19,05	22,23	25,4	31,75	38,1
4,000	101,6							
4,250	107,95							
4,500	114,3							
4,750	120,65							
5,000	127							
5,250	133,35							
5,500	139,7							
5,750	146,05							
5,980	152,4							
6,250	158,75							
6,500	165,1							
6,750	171,45							
7,000	177,8							
7,250	184,15							
7,500	190,5							

**Note:**

Order placement for pipes made of alloy steel and intermediate pipe dimensions not listed in the datasheet should be previously agreed with the mill

## Dimensional tolerances

Outside diameter, inch (mm)	Outside diameter permissible deviation, inch (mm)	
	more	less
Up to 2.999 (76.17)	0.020 (0.51)	0.020 (0.51)
3.000-4.499 (76.20-114.27)	0.025 (0.64)	0.025 (0.64)
4.500-5.999 (114.30-152.37)	0.031 (0.79)	0.031 (0.79)
6.000-7.499 (152.40-190.47)	0.037 (0.94)	0.037 (0.94)
7.500-8.999 (190.50-228.57)	0.045 (1.14)	0.045 (1.14)
9.000-10.750 (228.60-273.05)	0.050 (1.27)	0.050 (1.27)

Wall thickness as a percentage outside diameter	Wall thickness permissible deviation		
	OD < 2.999 (76.19)	3.000 (76.20) < OD < 5.999 (152.37)	6.00 (152.40) < OD < 10.750 (273.05)
Less than 15	+/- 12.5 %	+/- 10.0 %	+/- 10.0 %
15 and more	+/- 10.0 %	+/- 7.5 %	+/- 10.0 %

## Lengths

Pipes are supplied with lengths according to standard requirements.

Any lengths different from the standard ones are subject to additional negotiations.

## Protection

Pipes are supplied:

- black and bare
- external varnished with black or clear lacquer
- oiled

Upon request pipes ends are protected with plastic caps.

## Marking

Pipes are supplied with marking according to standards and customer requests.

Marking is painted and/or hard stenciled on pipe ends. The same data, as well as additional information according to customer's request, are indicated on the bundle tags.

## Certification

Pipes are supplied with 3.1. inspection certificate, in conformity with EN 10204.

**Interpipe Europe**

Via San Salvatore 13 - P.O. Box 745  
CH-6902 Paradiso - Lugano, Switzerland  
Tel.: **+41 91 261 39 00**  
Fax: **+41 91 261 39 01**  
E-mail: [info@eu.interpipe.biz](mailto:info@eu.interpipe.biz)

**Interpipe Central Trade**

Corneliusstrasse 34,  
60325 Frankfurt-am-Main, Germany  
Tel.: **+49 695 050 25 850**

**Interpipe Middle East**

Office №: LB191008, P.O. Box 262810,  
Jebel Ali, Dubai - UAE  
Tel.: **+971 4 812 5500**  
Fax: **+971 4 885 7412**  
E-mail: [info@ae.interpipe.biz](mailto:info@ae.interpipe.biz)

**North American Interpipe**

1800 West Loop South, Suite 1350,  
Houston, Texas, 77027 - USA  
Tel.: **+1 713 333 0333**  
Fax: **+1 713 333 0330**  
E-mail: [info@us.interpipe.biz](mailto:info@us.interpipe.biz)

**Interpipe Ukraine**

1A, Pysarzhevskiyi street  
49000 Dnipro, Ukraine  
Tel.: **+380 56 736 60 06**  
Fax: **+380 562 389 482, 389 580**  
E-mail: [info@ua.interpipe.biz](mailto:info@ua.interpipe.biz)  
[www.interpipe.biz](http://www.interpipe.biz)