

EN 10294-1

Hollow bars for machining: Non alloy and alloy steels.

Chemical composition

Steel grade	Elements content, %												
	C	Si	Mn	S	V	P	Cr	Ni	Mo	Cu	Al	Nb	Ti
E355	≤0.22	≤0.5	≤1.5	0,015-0,050	≤0,10	0,045	0.30	0,40	0,08	0,30	0,06	0,05	0,05
20MnV6	0,16-0,22	0,10-0,50	1,30-1,70	0,015-0,050	0,08-0,15	0,045	0,30	0,40	0,08	0,30	0,06	0,07	0,05

Mechanical properties

Steel grade	Delivery condition	Yield strength, R _{EH} , N/mm ²				Tensile strength R _m , N/mm ²				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		
		Not less than									
E355	+AR	355	345	335	335	490	490	470	470	18	-
	+N	355	345	335	335	490	490	470	470	20	27
20MnV6	+AR	470	460	430	430	650	620	600	550	17	-
	+N	420	400	380	380	600	560	530	530	19	27
	+QT *	590	540	480	480	700	650	570	570	16	40

Note:

* - at +QT conditions pipes with outside diameter ≥100 mm and wall thickness ≤ 28 mm can be produced.

Cold-rolled



OD (mm)	Wall thickness, mm													
	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	16,0
33,7														
35,0														
38,0														
40,0														
42,4														
44,5														
48,3														
51,0														
54,0														
57,0														
60,3														
63,5														
70,0														
73,0														
76,1														
82,2														

Hot-rolled

OD (mm)	Wall thickness, mm																			
	7	8	9	10	11	12	14,2	16	17,5	20	22,2	25	28	30	32	36	40	45	50	
82,5																				
83,9																				
101,6																				
108																				
114,3																				
127																				
133																				
139,7																				
152,4																				
159																				
168,3																				
177,8																				
193,7																				
203,0																				

Dimensional tolerances

Outside diameter permissible deviation		Wall thickness permissible deviation	
OD ≤ 75	± 0,5 mm	OD ≤ 180 mm, WT ≤ 15 mm	±12,5 % or ±0,4 mm - the greatest value
75 < OD ≤ 180	± 0,75 mm	WT > 15	± 10 %
OD > 180	± 1 %	OD > 180 mm, WT ≤ 30 mm	±12,5 %
		WT > 30 mm	± 10 %

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 pipe 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.