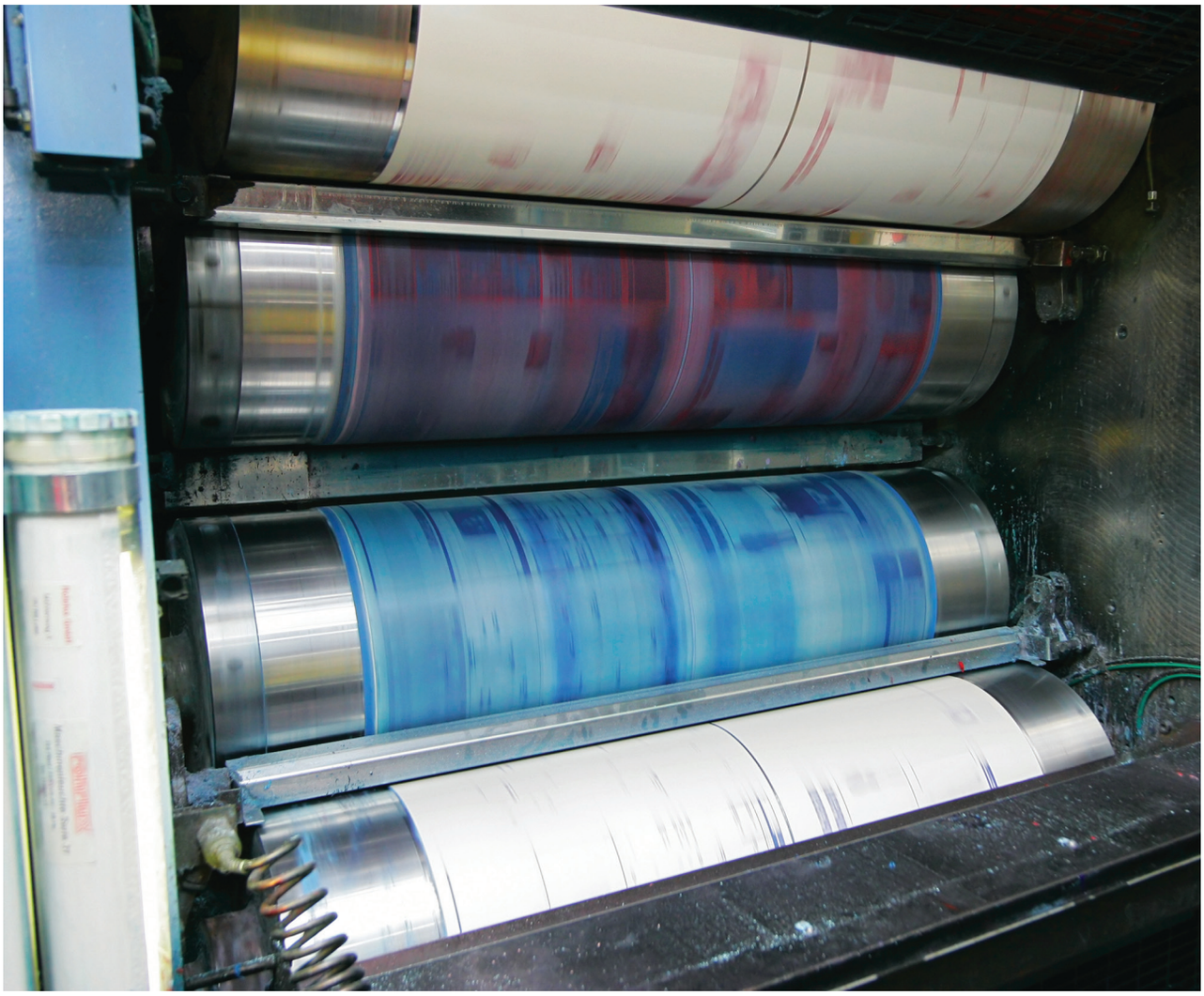
GOST 23270-89
Tube-billets for mechanical treatment

Chemical composition

Steel Grade	Elements content, %								
	C, %	Si, %	Mn, %	Cr, % not more than	S, P	Cu	Mo	Ni	Al
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15					
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25					
35	0.32-0.40	0.17-0.37	0.50-0.80	0.25					
45	0.42-0.50	0.17-0.37	0.50-0.80	0.25					
10G2	0.07-0.15	0.17-0.37	1.20-1.60	-					
20G	0,17-0,24	0,17-0,37	0,70-1,00	-					
50G	0,48-0,56	0,17-0,37	0,70-1,00	-					
20H	0.17-0.23	0.17-0.37	0.50-0.80	0.70-1.00					
40H	0.36-0.44	0.17-0.37	0.50-0.80	0.80-1.10					
30HGSA	0,28-0,34	0,90-1,20	0,80-1,10	0,80-1,10					
15HM	0.11-0.18	0.17-0.37	0.40-0.70	0.80-1.10					
30HMA	0,26-0,34	0,17-0,37	0,40-0,70	0,80-1,10			0,15-0,25		
12HN2	0,09-0,16	0,17-0,37	0,30-0,60	0,60-0,90				1,50-1,90	
09G2S	≤0,12	0,50-0,80	1,30-1,70	≤0,30					
32HA	0.32- 0.35	0.17- 0.37	0.55-0.85	1.00-1.10	≤0.025	≤0.20		≤0.20	≥ 0.02
38H2MUA	0.35-0.42	0.20-0.45	0.30-0.60	1.35-1.65					



Mechanical properties

Grade designation	Tensile strength, σ_B, kgs/mm² (MPa)	Yield strength, σ_T, kgs/mm² (MPa)	Elongation, δ_5, %	Brinell hardness (wall thickness 10 mm)	
	Not less than			Imprint diameter , mm, not less than	Hardness number HB, not more than
10	36 (353)	22 (216)	24	5,1	137
20	42 (412)	25 (245)	21	4,8	156
35	52 (510)	30 (294)	17	4,4	187
45	60 (588)	33 (323)	14	4,2	207
10G2	48 (470)	27 (265)	21	4,3	197
20G	46 (450)	28 (275)	24	4,5	179
50G	66 (650)	40 (390)	13	4,0	229
20H	44 (431)	29(284)	16	4,5	179
40H	67 (657)	36 (352)	9	3,7	269
30HGSA	70 (686)	41 (402)	11	4,0	229
15HM	44 (431)	23 (226)	21	4,5	179
30HMA	60 (588)	40 (392)	13	4,0	229
12HN2	55 (539)	40 (392)	14	4,2	207

Grade designation	Tensile strength, σ_B, MPa	Yield strength, σ_T, MPa	Percent elongation, δ_5, %	Impact work, KCU J/sm²			Impact work, KCV, J/sm²
				Longitudinal direction			
				t=20°C	t=-40°C	t=-70°C	t=-60°C
	Not less than						
09Г2С	450	325	21	59	39	29	29

Grade designation	Tensile strength, σв, MPa	Yield strength, σт, MPa	Percent elongation, δ_5, %	Necking, Ψ, %	Impact work, KV, J t=-20°C	Hardness, HB
	Not less than					
32XA*	830	730	12	40	27	269-311

Note:

* - Mechanical properties after quenching and tempering. Quenched and tempered pipes with outside diameter ≥ 100 mm and wall thickness ≤28 mm can be produced. Mechanical properties of pipes with other dimensions are defined on heat-treated samples.

Mechanical properties on heat-treated samples

Steel designation	Tensile strength, σв, MPa (kgs/mm²)	Percent elongation, δ_5, %	Necking for wall thickness more than 5 mm, Ψ, %	Impact toughness for wall thickness more than 12 mm, a_K kgs/sm²	Brinell hardness (imprint diameter), mm
	Not more than				
38H2MUA	980 (100)	14	50	9	3,4-3,7

Outside diameter, mm	Wall thickness																																											
	3	3,2	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	11	12	13	14	15	16	17	18	19	20	22	24	25	26	28	30	32	34	35	36	38	40	42	45	48	50	56	60	63	65	70
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Outside diameter, mm	Wall thickness																																											
	3	3,2	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	11	12	13	14	15	16	17	18	19	20	22	24	25	26	28	30	32	34	35	36	38	40	42	45	48	50	56	60	63	65	70
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Dimensional tolerances

Outside diameter, mm	Permissible deviation of outside diameter	
	Enhanced accuracy	Usual accuracy
Less than 50	± 5 mm	± 5 mm
50 – 219	± 0,8 %	± 1,0 %
More than 219	± 1,0 %	± 1,25 %

Outside diameter, mm	Wall thickness, mm	Permissible deviation for wall thickness	
		Enhanced accuracy	Usual accuracy
Less than 219	S ≤ 15	± 12,5 %	+12,5/-15 %
	15 < S ≤ 30	+10/-12,5 %	±12,5%
	S > 30	± 10	+10/-12,5 %
More than 219	S ≤ 15	+12,5/-15,0 %	
	15 < S ≤ 30	±12,5 %	
	S > 30	+10,0/-12,5%	

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.