Steel grades according to Russian standards

Mechanical properties

Standard		Minimum yield strength R_{eH}, MPa					Tensile strength R_m, MPa		Minimum elongation $A\ L_0 = 5{,}65 * \sqrt{S_0}$ %			Bend test		Notch impact test								
														Min. absorbed energy								
														Temperature	KCU J/cm²				after artificial ageing KCU J/cm²			
		Nominal thickness (mm)					Nominal thickness (mm)		Nominal thickness (mm)					°C	Nominal thickness (mm)				Nominal thickness (mm)			
		≤10	>10 ≤20	>20 ≤40	>40 ≤100	>100	≤10	>10	≤20	>20 ≤40	>40	≤20	>20		>3 ≤5	>5 ≤10	>10 ≤26	>26 ≤40	>3 ≤5	>5 ≤10	>10 ≤26	>26 ≤40
GOST 535-2005	St3ps* cat 5	245	245	235	225	205	370-480	370-480	26	25	23	d=a	d=2a	-20	49	49	29	-	9,8	-	-	-
GOST 535-2005	St3sp* cat 5	255	245	235	225	205	380-490	370-480	26	25	23	d=a	d=2a									

Standard	Grades	≤10	>10 ≤20	>20 ≤140			≤10	>10	≤20	>20 ≤40	>40	≤20	>20			≤10	>10 ≤20	>20 ≤140		≤10	>10 ≤20	<20 ≥140
GOST 19281-2014	09G2S*	345	345	345			480	480	21	21	21	d= 2a	d=2a	-40		39	29	29		29	29	29

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* Available upon agreement.

Chemical composition

Standard		Ladle analysis										
		C %	Mn %	S max. %	P max. %	Si %	Cu max %	Ni max %	Cr max %	V max %	CE max. %	Other elements
GOST 380-2005	St3ps cat 5	0,14-0,22	0,40-0,65	0,050	0,040	0,05-0,15	0,30	0,30	0,30			1)
GOST 380-2005	St3sp cat 5	0,14-0,22	0,40-0,65	0,050	0,040	0,15-0,30	0,30	0,30	0,30			1)
GOST 19281-2014	09G2S	≤0,12	1,3-1,7	0,035	0,030	0,5-0,8	0,30	0,30	0,30	0,12	0,46 2)	1)

1) Max. Nitrogen should not exceed 0,012%. Non-binding Nitrogen content should not exceed 0,008%.
It is allowed to use Al up to 0,05% and Ti up to 0,03%.

2) CE = C + Mn/6 + Si/24 + Cr/5 + Ni/40 + Cu/13 + V/14 + P/2

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