



ASTM A213/A213M

ASTM A213/A213M specification covers seamless ferritic and austenitic steel boiler, superheater, and heat-exchanger tubes.

Manufacture: tubes shall be made by the seamless process and shall be either hot finished or cold finished, as specified.

Heat Treatment: full or isothermal anneal, normalize and temper.

Inspection & Test: chemistry composition analysis, tensile test, hardness test, flattening test, flaring test, NDT, surface inspection and dimension check.

SA213 T5/T5b/T5c Alloy Steel Tube Chemical Composition

Grade	C≤	Mn	P≤	S≤	Si≤	Mo
T5	0.15	0.30~0.60	0.025	0.025	1.0-2.0	0.45~0.65
T5b	0.15 max	0.30~0.60	0.025	0.025	1.0-2.0	0.45~0.65
T5c	0.12 max	0.30~0.60	0.025 max	0.025 max	0.50 max	0.45~0.65

Alloy Steel T5/T5b/T5c Tube Mechanical Properties

Grade	Tensile Strength, MPa	Yield Strength, MPa	Elongation, %	Hardness, HB
T5	415 min	205 min	30 min	179 max
T5b	415 min	205 min	30 min	179 max
T5c	415 min	205 min	30 min	163 max

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Alloy Steel T5/T5b/T5c Seamless Tube Outside Diameter and Toleranc

Hot rolled	Outside Diameter, mm	Tolerance, mm
	OD \leq 101.6	+0.4/-0.8
	101.6<OD \leq 190.5	+0.4/-1.2
	190.5<OD \leq 228.6	+0.4/-1.6
Cold Drawn	Outside Diameter, mm	Tolerance, mm
	OD<25.4	\pm 0.10
	25.4 \leq OD \leq 38.1	\pm 0.15
	38.1<OD<50.8	\pm 0.20
	50.8 \leq OD<63.5	\pm 0.25
	63.5 \leq OD<76.2	\pm 0.30
	76.2 \leq OD \leq 101.6	\pm 0.38
	101.6<OD \leq 190.5	+0.38/-0.64
	190.5<OD \leq 228.6	+0.38/-1.14

Wall thickness & Tolerance

Hot rolled	Outside Diameter, mm	Tolerance, %
	OD \leq 101.6, WT \leq 2.4	+40/-0
	OD \leq 101.6, 2.4<WT \leq 3.8	+35/-0
	OD \leq 101.6, 3.8<WT \leq 4.6	+33/-0
	OD \leq 101.6, WT>4.6	+28/-0
	OD>101.6, 2.4<WT \leq 3.8	+35/-0
	OD>101.6, 3.8<WT \leq 4.6	+33/-0
	OD>101.6, WT>4.6	+28/-0
Cold Drawn	Outside Diameter, mm	Tolerance, %
	OD \leq 38.1	+20/-0
	OD>38.1	+22/-0

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