

SA333 Gr. 6 Seamless Pipe

A333 Gr. 6 Seamless Pipes

ASTM A333 covers nominal (average) wall seamless and welded carbon and alloy steel pipe intended for use at low temperatures. Several grades of ferritic steel are included.

ASTM A333 LTCS Pipe Material Size Standard And Specification

Standards	ASTM, ASME
Type	Seamless / Welded /
Size	1/2" NB to 36" NB
Form	Round, Hydraulic Etc
Thickness	3-50mm
End	Beveled End, Plain End,
Schedules	Schedule 40, 80, 160, XS, XXS
Additional Testing	NACE TM0177, NACE MR0175, NACE TM0284, SSC TEST, HIC TEST, H2 SERVICE,
Length	Minimum 3 Meters, Maximum 18 Meters
Specialized in	Large Diameter ASTM A333 Grade 6 Pipe

ASTM A333 Gr.6 Pipes Chemical Composition

Grade	C	Mn	P	S	Si	N
6	0.30	0.29 – 1.06	0.025	0.025	0.10 min	-

ASTM A333 Grade 6 Pipes Mechanical Properties

Element	Tensile strength, min, psi (MPa)	Yield strength, min, psi (MPa)
Gr.6	60,000 (415)	35,000 (240)

ASTM A333 Gr.6 Pipes Charpy V-notch Impact Tests

Impact Requirements for Grades 1, 3, 4, 6, 7, 9, 10, and 11				
Size of Specimen	*A		*B	
mm	ft·lbf	J	ft·lbf	J
10 by 10	13	18	10	14
10 by 7.5	10	14	8	11
10 by 6.67	9	12	7	9
10 by 5	7	9	5	7
10 by 3.33	5	7	3	4
10 by 2.5	4	5	3	4

*A denotes minimum average notched bar impact value of each set of three specimens.

*B denotes minimum notched bar impact value of one specimen only of a set.

Minimum Impact Test Temperature of ASTM A333		
Grade	°F	°C
1	-50	-45
3	-150	-100
4	-150	-100
6	-50	-45
7	-100	-75
8	-320	-195
9	-100	-75

Minimum Impact Test Temperature of ASTM A333

10	-75	-60
11	-320	-195

* Impact tests specified for temperatures lower than 70 °F [20 °C] should be made with precautions.

4. Heat Treatment

All seamless and welded pipes manufactured to ASTM A333, other than Grades 8 and 11, shall be heat treated to control their microstructure in accordance with one of the following methods:

1. Normalize by heating to a uniform temperature of not less than 1500 °F [815 °C] and cool in air or in the cooling chamber of an atmosphere controlled furnace. Or normalize as above-mentioned, and, at the discretion of the manufacturer, reheat to a suitable tempering temperature.
2. For the seamless process only, reheat and control hot working and the temperature of the hot-finishing operation to a finishing temperature range from 1550 to 1750 °F [845 to 945 °C] and cool in air or in a controlled atmosphere furnace from an initial temperature of not less than 1550 °F [845 °C]. Or treat as above-mentioned, and, at the discretion of the manufacturer, reheat to a suitable tempering temperature.
3. Seamless pipe of Grades 1, 6, and 10 may be heat treated by heating to a uniform temperature of not less than 1500 °F [815 °C], followed by quenching in liquid and reheating to a suitable tempering temperature.

ASTM A333 Grade 8 pipe shall be heat treated by the manufacturer by either of the following methods: quenched + tempered; double normalized + tempered. When required, Grade 11 shall be annealed and then normalized in the range of 1400 to 1600 °F [760 to 870 °C].

Marking Requirements

Rolled, die stamped, or paint stenciled (manufacturer's option).

- Manufacturer's name, brand, or trademark
- A333 Gr. 6
- Hydrostatic test pressure and/or NDE, or NH if neither is specified
- Size, length, weight per foot (NPS 4 and larger)
- ANSI schedule number or weight class or wall thickness
- Additional "S" if tested supplementary requirements



Wall Thickness of ASTM A333 Grade 6 Carbon Steel Seamless Pipe

NPS (in)	Outside Diameter (in)	ASTM A333 Grade 6 Carbon Steel Seamless Pipes Schedule												
		SC H 10	SC H 20	SC H 30	SCH STD	SCH 40	SCH 60	SC H XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	SCH XXS
		Wall Thickness (in)												
1/8	0.405				0.068	0.068		0.095	0.095					
1/4	0.540				0.088	0.088		0.119	0.119					
3/8	0.675				0.091	0.091		0.126	0.126					
1/2	0.840				0.109	0.109		0.147	0.147				0.187	0.294
3/4	1.050				0.113	0.113		0.154	0.154				0.219	0.308
1	1.315				0.133	0.133		0.179	0.179				0.250	0.358
1 1/4	1.660				0.140	0.140		0.191	0.191				0.250	0.382
1 1/2	1.900				0.145	0.145		0.200	0.200				0.281	0.400
2	2.375				0.154	0.154		0.218	0.218				0.344	0.436
2 1/2	2.875				0.203	0.203		0.276	0.276				0.375	0.552
3	3.500				0.216	0.216		0.300	0.300				0.438	0.600

3 1/2	4.000				0.226	0.226		0.318	0.318					
4	4.500				0.237	0.237		0.337	0.337		0.438		0.531	0.674
5	5.563				0.258	0.258		0.375	0.375		0.500		0.625	0.750
6	6.625				0.280	0.280		0.432	0.432		0.562		0.719	0.864
8	8.625		0.250	0.277	0.322	0.322	0.406	0.500	0.500	0.594	0.719	0.812	0.906	0.875
10	10.750		0.250	0.307	0.365	0.365	0.500	0.500	0.594	0.719	0.844	1.000	1.125	1.000
12	12.750		0.250	0.330	0.375	0.406	0.562	0.500	0.688	0.844	1.000	1.125	1.312	1.000
14	14.000	0.250	0.312	0.375	0.375	0.438	0.594	0.500	0.750	0.938	1.094	1.250	1.406	
16	16.000	0.250	0.312	0.375	0.375	0.500	0.656	0.500	0.844	1.031	1.219	1.438	1.594	
18	18.000	0.250	0.312	0.438	0.375	0.562	0.750	0.500	0.938	1.156	1.375	1.562	1.781	
20	20.000	0.250	0.375	0.500	0.375	0.594	0.812	0.500	1.031	1.281	1.500	1.750	1.969	
22	22.000	0.250	0.375	0.500	0.375		0.875	0.500	1.125	1.375	1.625	1.875	2.125	
24	24.000	0.250	0.375	0.562	0.375	0.688	0.969	0.500	1.219	1.531	1.812	2.062	2.344	
30	30.000	0.312	0.500	0.625	0.375			0.500						
32	32.000	0.312	0.500	0.625	0.375	0.688								
34	34.000	0.312	0.500	0.625	0.375	0.688								
36	36.000	0.312	0.500	0.625	0.375	0.750								
42	42.000		0.500	0.625	0.375	0.750								

ASME SA333 Grade 6 Pipe Equivalent

Grade	Pipe	Tube	Fittings	Flanges	Bar	Forgings	EN	Material
Low Temp C.S. Gr. 1	A333 GR. 1	A333 GR. 1	A420 WPL1/6	A350 LF2	A516	A350 LF2		
Low Temp C.S. Gr. 3	A333 GR. 3	A333 GR. 3	A420 WPL3	A350 L3	A516	A350 LF3		
Low Temp C.S. Gr. 6	A333 GR. 6	A333 GR. 6	A420 WPL6	A350 LF2	A516	A350 LF2	EN 10216-4	P265NL

DIN	EN	BS	NFA	ASTM	ASME
DIN 17178 Grade FGP 28	EN P265NL Grade 10216-4	NFA A 36-2051) Grade A 42 AP	ASTM A333 Grade6	ASME SA 333 Grade 6	UNI C20