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WINTER 2021 VOL. 2

Pipe Fabrication : Specifications & Standards



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Understanding the differences in **steel pipe** specifications can be a confusing task. The type of steel pipe is identified by a combination of letters, acronyms, and numbers and sorting through this alphabet soup of abbreviations can be perplexing.

Consultants and drillers alike should be aware that casing and screen for water wells can be manufactured through different fabrication processes, but ultimately lead to the same end product. Having a basic understanding of the similarities and differences of these processes is paramount.

Who Certifies the Specifications? **Specs**

- ▶ **ASTM - American Society for Testing and Materials**
International standards organization that develops and publishes voluntary consensus technical specifications for a wide range of materials and products. ASTM specifications represent a consensus among producers, specifiers, fabricators, and users of steel mill products.
- ▶ **AWWA - American Water Works Association**
International non-profit, scientific and educational association founded to improve water quality and supply. AWWA establishes the acceptable standards for materials used and the drilling operations of production water wells in the U.S.

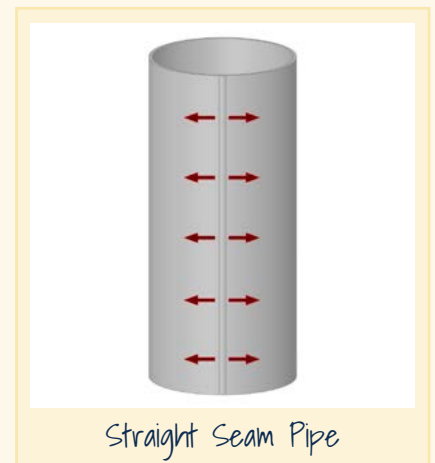
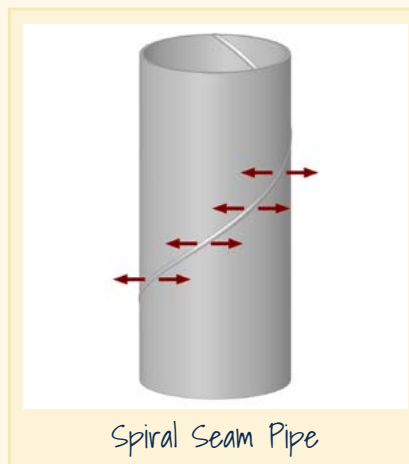
Specification vs Standard

- Specification
 - A certified process that must
 - be followed to be accepted
- Standard
 - A minimum that must be
 - attained or adhered to

What are the Most Commonly Used Pipe Specifications for Water Well Applications?

Today's water well casing is most commonly produced in one of two ways: spirally welded or straight seam welded. Because of the different production methods, separate ASTM numbers must be designated to identify the process. The actual ASTM number bears no significance to the product itself, but rather is an arbitrary sequentially assigned number, with the finished products being almost identical.

	SPIRAL SEAM	STRAIGHT SEAM
STEEL TYPE	ASTM SPEC	ASTM SPEC
MILD STEEL	A 139	A 53
STAINLESS STEEL	A 778	A 312



What are the Accepted Pipe Standards for the U.S. Water Well Industry?

The current AWWA A-100 Standard for Water Wells (A100-20) recognizes the following:

Manufacturing Standards for Single-Ply Carbon-Steel Well Casing

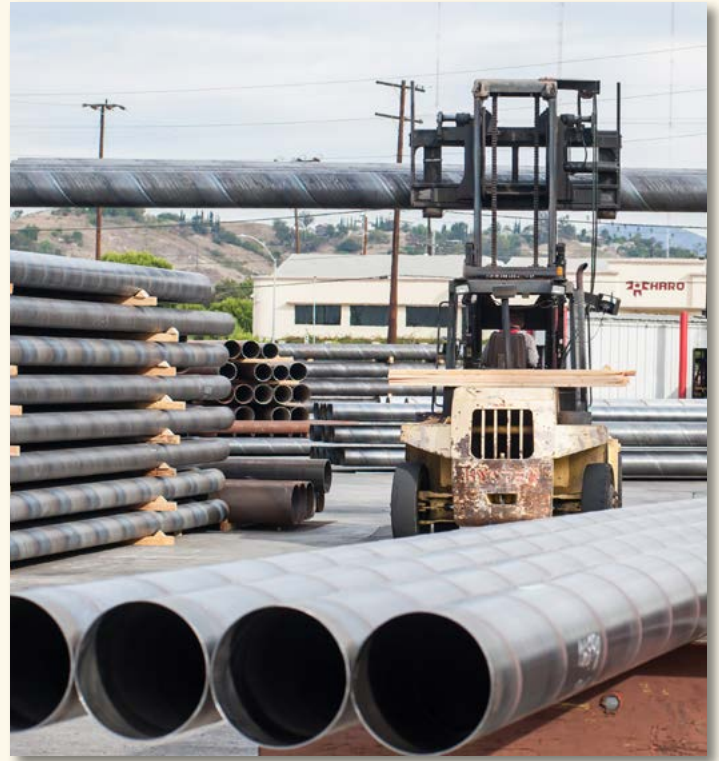
ASTM A 53 Grade B

ASTM A 139 Grade B

The current AWWA A-100 Standard for Water Wells (A100-20) recognizes the following:

Manufacturing Standards for Single-Ply Stainless Steel Well Casing

ASTM A 778



spec Comparison Tables

Table 1 compares the minimum requirements and allowable variances of A53 and A139 steel pipe.

	A53	A139
STEEL	Carbon	Carbon, HSLA, Copper Bearing
WELD	Straight Seam/Seamless	Helical/Spiral/Straight Seam
TENSILE	60,000 psi	60,000 psi
YIELD	35,000 psi	35,000 psi
VARIANCE		
WEIGHT	+/- 10%	+10%, -5.5%
DIAMETER	+/- 1%	+/- 1%
THICKNESS	not less than 12.5%	not less than 12.5%

Table 2 compares the minimum requirements and allowable variances of A312 and A778 steel pipe.

	A312	A778
STEEL	Stainless	Stainless
WELD	Straight Seam/Seamless	Helical/Spiral/Straight Seam
TENSILE	75,000 psi	75,000 psi
YIELD	30,000 psi	30,000 psi
VARIANCE		
WEIGHT	N/A	N/A
DIAMETER	4-8" PS: +1/16", -1/32" 10-18" PS: +3/32", -1/32" 20-26" PS: +1/8", -1/32"	4-8" PS: +1/16", -1/32" 10-18" PS: +3/32", -1/32" 20-26" PS: +1/8", -1/32"
THICKNESS	< / = 18" PS: +15%, -12.5% >20" PS: +17.5%, -12.5%	+/- 12.5%

ASTM reviews and publishes its set of specifications annually. Please contact Roscoe Moss Company with any questions or clarifications regarding water well casing manufacturing.