

ASTM F1554 - Anchor Bolts - Abstract - Page 1

GRADES	
F1554 Grade 36	Low Carbon, 36 ksi Yeild
F1554 Grade 55	High Strength, Low Alloy, 55 ksi Yeild
F1554 Grade 105	Heat Treated, Alloy, High Strength 105 ksi Yeild

Supplementary Testing

Supplementary requirements shall apply only when specified in/on the purchase order.




S1: Weldable version of the Grade 55 specification. Through chemical composition restrictions and by a carbon equivalency formula, S1 provides assurance of weldability. When S1 is not specified, the Grade 55 material may or may not be weldable.

S2: Permanent manufacturer's identification on the end of the anchor bolt that projects from the concrete, in lieu of color-coding.

S3: Permanent grade identification on the end of the anchor bolt that projects from the concrete, in lieu of color-coding.

S4: Charpy Impact requirements at +40°F(+5°C) for grades 55 and 105. The minimum Charpy V-notch energy requirement is an average of 15ft-lbs for three specimens, with no one specimen falling below 12ft-lbs. Charpy Impact requirements at -20°F(-29°C) for grad 105. The minimum Charpy V-notch energy requirement is an average of 15ft-lbs for three specimens, with no one specimen falling below 12ft-lbs.

Mechanical Properties

Marking	Grade	Size (Inches)	Yeild, ksi min	Tensile, ksi min	Elong. % min	RA % Min	Yeild, Mpa min
	36	1/2 -- 4	58-80	36	23	40	248
		1/2 -- 2	75-95	55	21	30	380
		2-1/4 -- 2-1/2	75-95	55	21	30	380
		2-3/4 -- 3	75-95	55	21	30	380
	3-1/4 -- 4	75-95	55	21	30	380	
	105	1/2 -- 3	125-150	105	15	45	724

- Stamping of F1554 bolts with manufacturer's identification is supplemental requirement (S2)
- Color coding is required unless the grade is stamped in accordance with the supplemental requirement (S3)
- When Grade 36 is specified, a weldable Grade 55 may be furnished at the supplier's option.




Chemical Properties

Element	Grade 36			Grade 55 and 105
	Sizes up to 3/4	Sizes Over 3/4 to 1-1/2	Sizes Over 1-1/2 to 4	
Carbon (max)	0.26%	0.27%	0.28%	
Manganese	*	0.60-0.90%	0.60-0.90%	
Phosphorus (max)	0.04%	0.04%	0.04%	0.04%
Sulfur (max)	0.05%	0.05%	0.05%	0.05%
Copper (min)(when specified)	0.20%	0.20%	0.20%	0.20%

*Optional with the manufacturer but shall be compatible with weldable steel

ASTM F1554 - Anchor Bolts - Abstract - Page 2

Recommended Hardware

Marking	Grade	Size (Inches)	Recommended A563 Nut				Washer
			Plain Finish		Hot-Dip or Mech Zinc Coated		
			Grade	Style	Grade	Style	
	36	1/2 -- 1-1/2	A	HEX	A	HEX	F436
		1-5/8 -- 4	A	HEAVY HEX	A	HEAVY HEX	
	55	1/2 -- 1-1/2	A	HEX	A	HEAVY HEX	F436
		1-5/8 -- 4	A	HEAVY HEX	A	HEAVY HEX	
	105	1/2 -- 1-1/2	D ¹	HEAVY HEX	DH ²	HEAVY HEX	F436
		1-5/8 -- 3	DH ²	HEAVY HEX	DH ²	HEAVY HEX	

¹ A563 Grade D nuts are rarely available. A563 Grade DH or A194 Grade 2H should be substituted.

² The availability of A563 Grade DH nuts in nonminal sizes 1" & larger is limited and generally available only on special orders of large quantities, for smaller quantities where A563 Grade DH is not available, A194 Grade 2H should be considered.